

**SOUTH AUSTRALIA**  
**DEPARTMENT OF MINES AND ENERGY**



**OPEN FILE ENVELOPE NO. 8302**

**EL 1653 - LAKE MAURICE, EL 1654 - NURRAI LAKES,  
EL 1655 - WYOLA LAKE**

**PROGRESS AND FINAL REPORTS FOR THE PERIOD  
30/4/90 TO 29/4/91**

**Submitted by**

**BHP Minerals Ltd**

**1991**

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## ENVELOPE 8302

**TENEMENT:** EL 1653 - Lake Maurice  
EL 1654 - Nurrai Lakes  
EL 1655 - Wyola Lake

**TENEMENT HOLDER:** BHP Minerals Ltd

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**SEPARATELY HELD DATA**

**Drillhole Samples (held by SADME Core Library):**

For up to date information on available drillhole samples, contact the Supervisor, SADME Core Library and quote the Exploration Licence and drillhole number/s you wish to query.



CR 7056  
EXPLORATION LICENCES  
1653, 1654 AND 1655  
REPORT FOR THE QUARTER  
ENDED 30 JULY 1990

P. R. DARBY  
MELBOURNE  
AUGUST 1990

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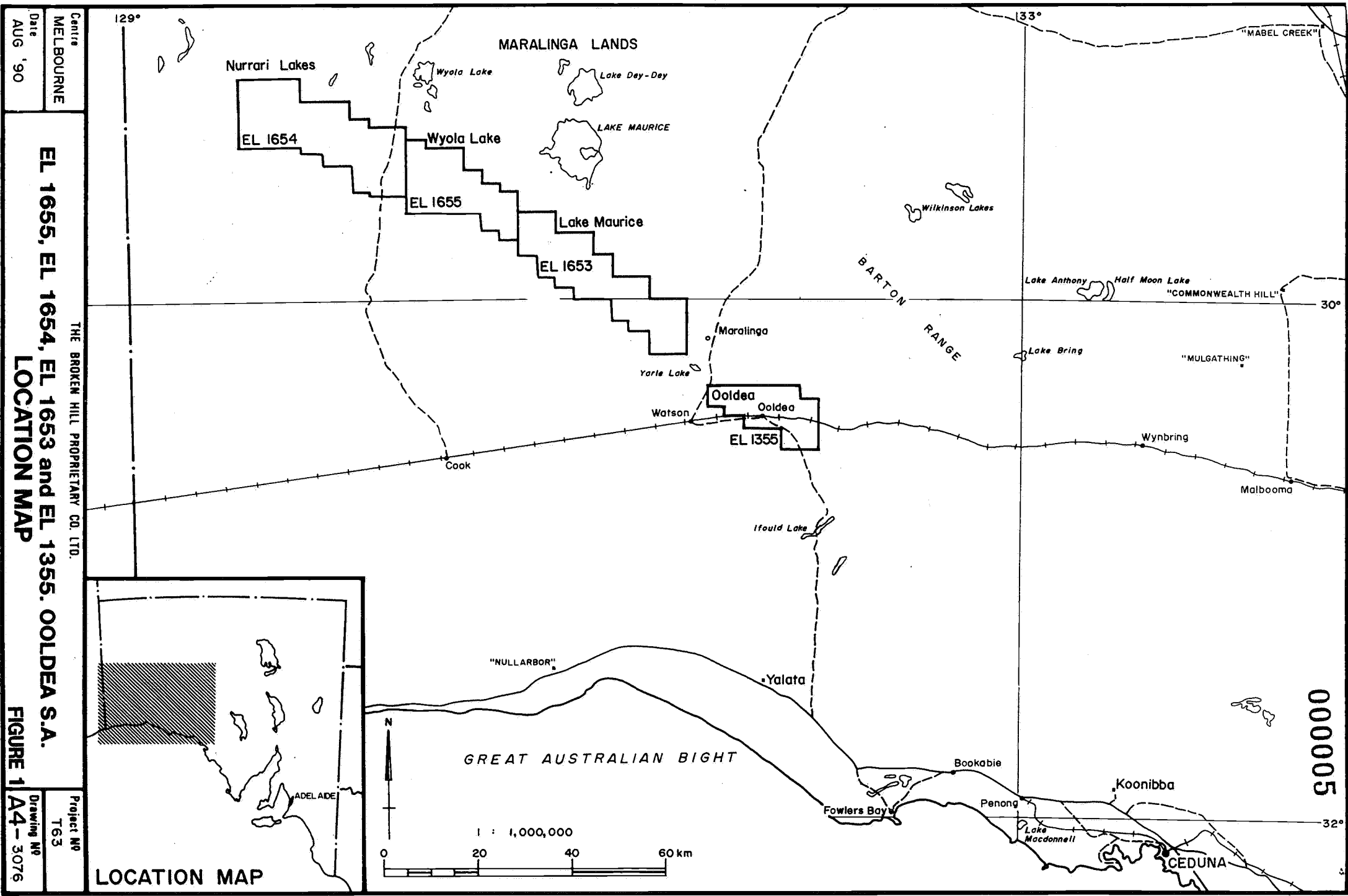
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Figure 2 Regional Geological setting of the Ooldea Range  
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(from Benbow, 1988)

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## 1. INTRODUCTION

Exploration Licences 1653 Lake Maurice, 1654 Nurrai Lakes and 1655 Wyola Lakes were applied for in order to explore for heavy mineral sands. They are located in the far west of south Australia, immediately to the north of the Nullarbor Plain (Figure 1). The licences cover the Ooldea Range, a 650 km long by 15 to 20 km wide sand ridge which is interpreted as a palaeo-beach ridge system. The Ooldea Range and adjacent sands are thought to be a potential host for heavy mineral sand deposits.

## 2. TITLE

The applications for ELs 1653, 1654 and 1655 were lodged in March and April 1986. Following negotiations with the Maralinga - Tjarutja People (in whose land the licences are wholly located) the licenses were granted on 30th April 1990. Each licence was granted for an initial term of 12 months, with expenditure commitments of \$100,000, \$150,000 and \$120,000 respectively for ELs 1653, 1654 and 1655.

## 3. GEOLOGY

The geology of the western part of South Australia is described in the Handbook of South Australian Geology and the 1:1,000,000 geological map of South Australia, both published by South Australia Department of Mines and Energy. More recent work and with particular emphasis on the Ooldea Range, has been undertaken by Benbow (1988). The following is summarised from Benbow (1988).

### 3.1 Regional Geological Setting

The regional geological setting of the Ooldea Range is shown in Figure 2. It marks the north eastern boundaries between the Eucla Basin and the older Officer Basin and Arckaringa Basin. To the east of the Ooldea Range is the Precambrian Gawler Craton.

The Eucla Basin formed in response to the separation of Australia and Antarctica. During the Tertiary, the Eucla Basin was primarily a carbonate platform with an inner margin dominated by terrigenous clastics. Precambrian cratonic rocks underlie the eastern and western margins of the basin and much of it is underlain by Proterozoic - Palaeozoic sediments of the Officer Basin and Mesozoic sediments of the Arckaringa Basin.

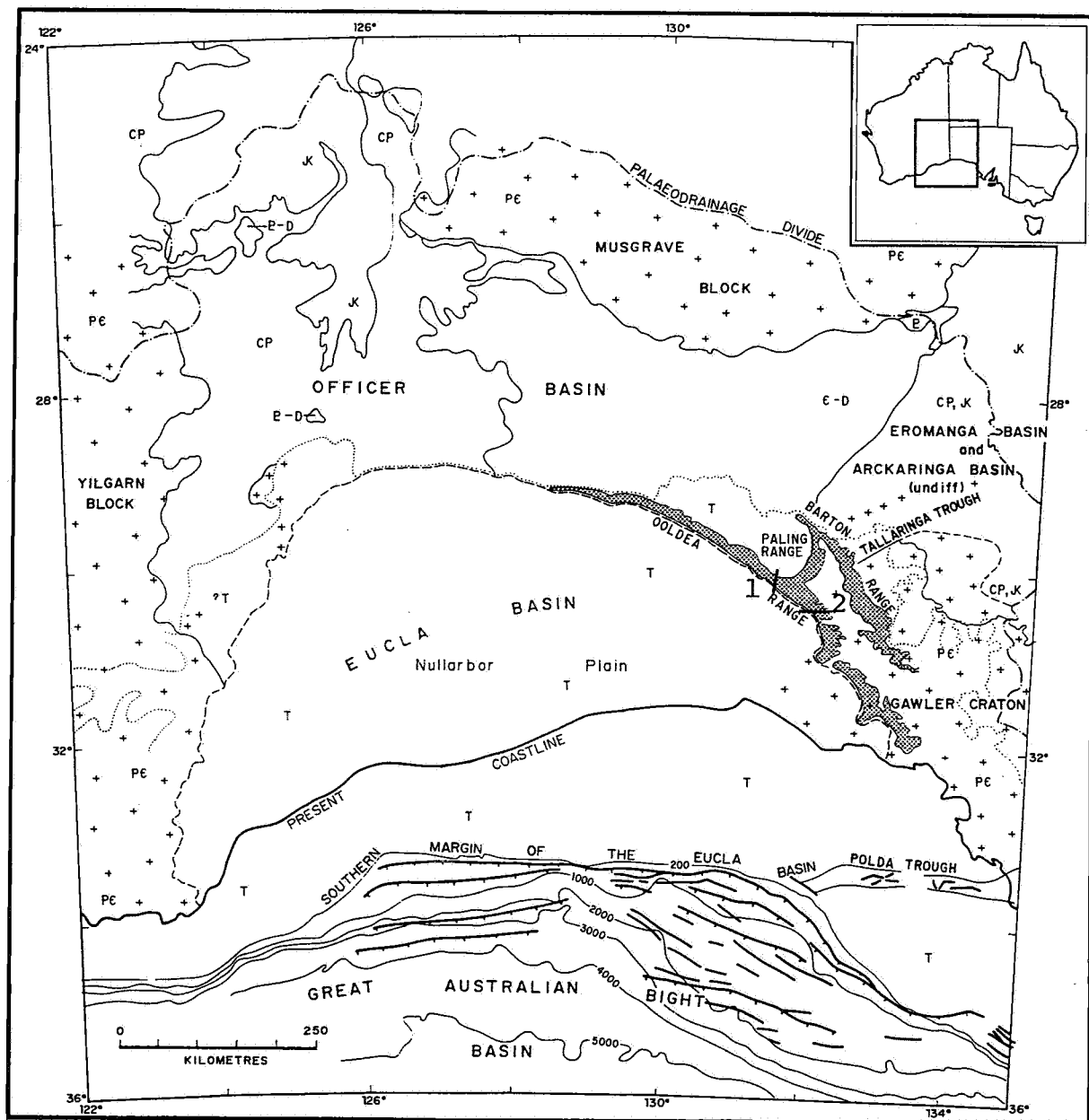


Figure 2. Regional Geological setting of the Ooldea Range. Middle to Late Eocene transgression is marked by the dotted line and Middle Miocene transgression is marked by the dashed line. The lines numbered 1 and 2 refer to the sections in Figure 3. The diagram is from Benbow (1988).

### 3.2 Geology of the Ooldea Range

The Ooldea Range is described in considerable detail by Benbow (1988). What follows is a brief summary of his work. The range is 650 km long by 15 to 20 km wide (on average) and stands 40 to 180 metres above the present surface of the Eucla Basin.

At various intervals along its length are low saddles or breaches which represent palaeochannels. The most obvious such breach is located at latitude 29°15', longitude 129°20' on Figure 4. The range has also been sub-divided into 3 segments based on its morphology. Briefly, segment 1 comprises the north western end where the range has a broad flat top, segment 2 comprises a long, straight central part and has a narrower, pointier profile, and segment 3 comprises the south eastern end, where the range exhibits a distinctly curved shape in plain view. Only segments 1 and 2 are within BHP's licences.

The range is composed of quartz sand, called the Ooldea Sand. This sand has a maximum known thickness of 112 m at Maralinga. Its average grain size ranges from fine to coarse and sorting is moderately good to good. The coarser grains are well rounded. The detrital grain composition is quartz >95%, with rare feldspar, microcrystalline quartz and rare to trace amounts of heavy minerals. Indurated clay horizons and silica/iron cemented zones also occur..

Underlying the Ooldea Sand is the Hampton Sand. It is very similar to the Ooldea Sand, but can contain up to 20% sponge spicules. Overlying the Ooldea Sand are Holocene, red-brown coloured wind blown dune sands. The relationships of these rock units are shown in Figure 3.

### 3.3 Evolution of the Ooldea Range

The Ooldea Range is thought to have formed after maximum marine transgression at the end of the Eocene. It formed by reworking and progradation of the Hampton sand. Evidence for progradation is provided by the uniform grain size of the Ooldea across the width of the range, indicating lateral migration of shoreline and dune. Upward coarsening of the Hampton Sand is also cited as supporting evidence for a regressive beach system.

### 3.4 Potential for Formation of Heavy Mineral Deposits

The Ooldea Range is a remarkably large and well preserved palaeo-beach ridge. It is thought that the large amounts of reworking of sediments required to form the range may also have provided a mechanism for concentrating zones of heavy minerals.

Palaeochannels, evidenced by the saddles and breaches in the ranges, drained large areas of rocks that could have acted as a source for heavy minerals. Such source rocks included the fill of the Officer and Arckaringa Basins and may extend as far inland as the granitoid and high grade metamorphics of the Musgrave Block.

4. WORK CARRIED OUT DURING THE QUARTER ENDED 30TH JULY 1990

During the quarter ended 30th July 1990 a reconnaissance trip was made to the area in late June. This trip checked access and marked the point of origin of the planned drill traverses from the Aquitaine Road (Figure 4).

Following the marking on the ground of the proposed traverses, a sacred sites survey was carried out on behalf of BHP and the Maralinga - Tjarutja People by Australian Heritage Services of Canberra. The report cleared all the proposed drill traverses except for lines 6 and 7. These two traverses have therefore been excluded from the work program.

Due to difficult ground conditions, that is, thick scrub and sand dunes, several traverses which had originally been planned in the western end of EL 1654 have been postponed.

5. PROPOSED WORK FOR THE FOLLOWING QUARTER

Tenders have been invited for both the clearing of the proposed drill traverses and the drilling program. It is intended to commence track clearing in August and to commence drilling in September. A program of approximately 6,000 metres of shallow reverse circulation drilling is planned, although this figure may increase if mineralised zones should be located.

6. EXPENDITURE

Expenditure for the \$ quarter ended 30th July 1990 was as follows:-

|         |                 |
|---------|-----------------|
| EL 1653 | 22,895          |
| EL 1654 | 22,284          |
| EL 1655 | 20,031          |
| TOTAL   | <u>\$65,010</u> |

Each total is itemised below.

| <u>ITEM</u>       | <u>EL 1653</u>  | <u>EL 1654</u>  | <u>EL 1655</u>  |
|-------------------|-----------------|-----------------|-----------------|
| Wages & Salaries  | 8,563           | 8,380           | 7,558           |
| Field Support     | 3,294           | 2,947           | 2,821           |
| Vehicles          | 984             | 977             | 1,207           |
| Equipment         | 128             | -               | -               |
| Geochemistry      | 28              | 28              | 28              |
| Surveys           | 161             | 112             | 112             |
| Tenement Fees     | 3,850           | 4,997           | 2,827           |
| Office Expenses   | 22              | 11              | 86              |
| Capital           | 2,732           | 2,152           | 3,119           |
| Computer Services | 144             | -               | 144             |
| Other             | 71              | -               | 3               |
| Consultants       | 655             | 655             | 305             |
| Admin & Overheads | 2,063           | 2,025           | 1,821           |
| TOTAL             | <u>\$22,695</u> | <u>\$22,284</u> | <u>\$20,031</u> |

7. REFERENCES

Benbow, M.C., 1988. Tertiary Coastal Dunes of the Eucla Basin, Australia. SADME Report No. 88/69.

Geological Map of South Australia, 1:1,000,000, 1983. SADME.

Handbook of South Australian Geology, 1969. Edited by L. W. Parkin.



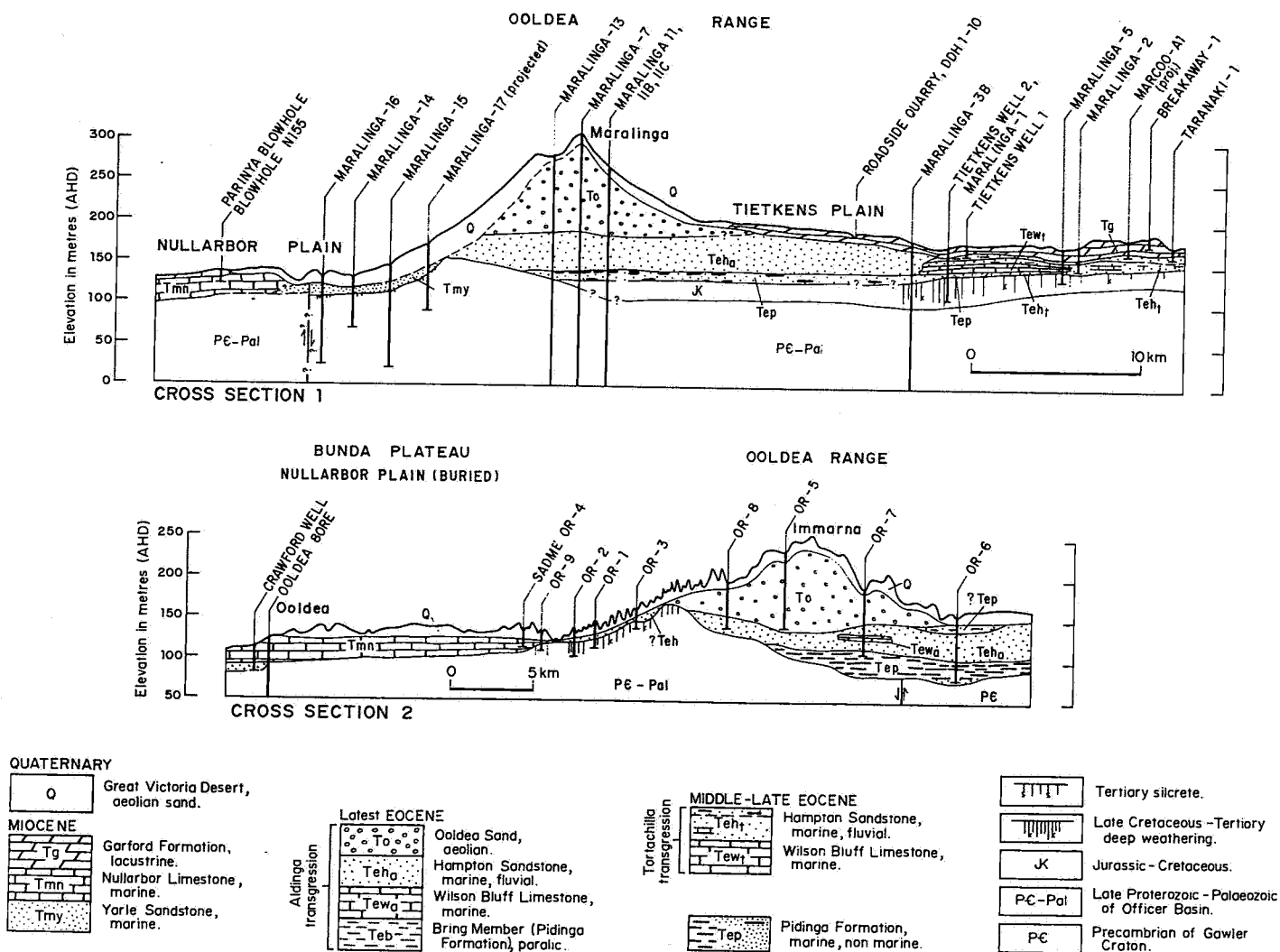
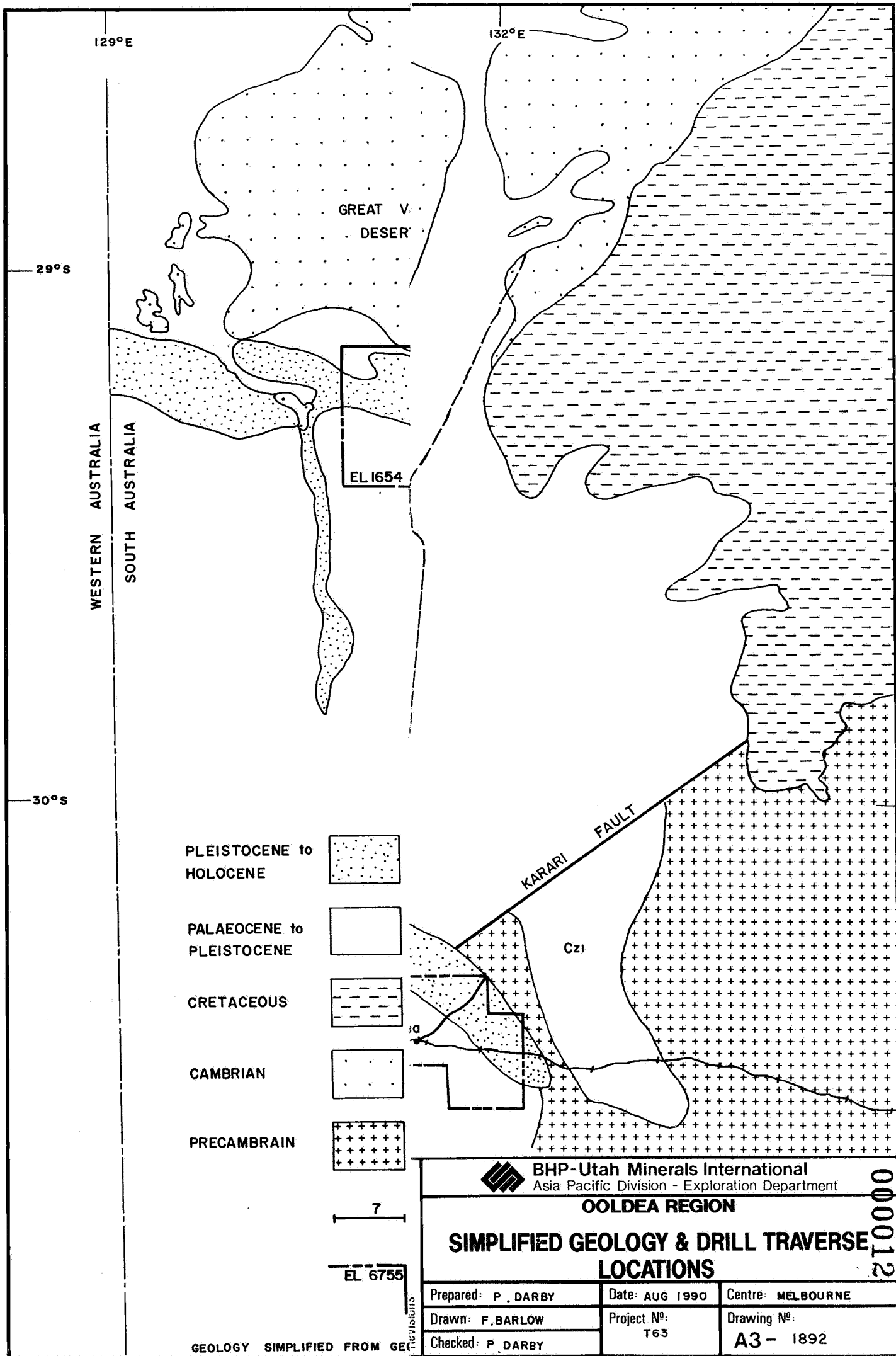


Figure 3. Cross sections through the Ooldea Range, at Maralinga and Immarna. The location of each section is shown in Figure 2. The diagram is from Benbow (1988).



000013

CR 7155  
EXPLORATION LICENCES 1653  
1654 AND 1655 SOUTH AUSTRALIA

REPORT FOR THE QUARTER  
ENDED 30 OCTOBER 1990

P R DARBY  
MELBOURNE  
NOVEMBER 1990

Env. 8302

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1 INTRODUCTION

2 WORK CARRIED OUT DURING THE QUARTER ENDED 30 OCTOBER 1990

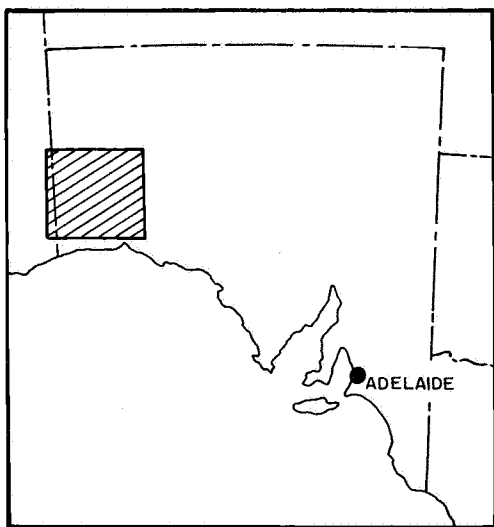
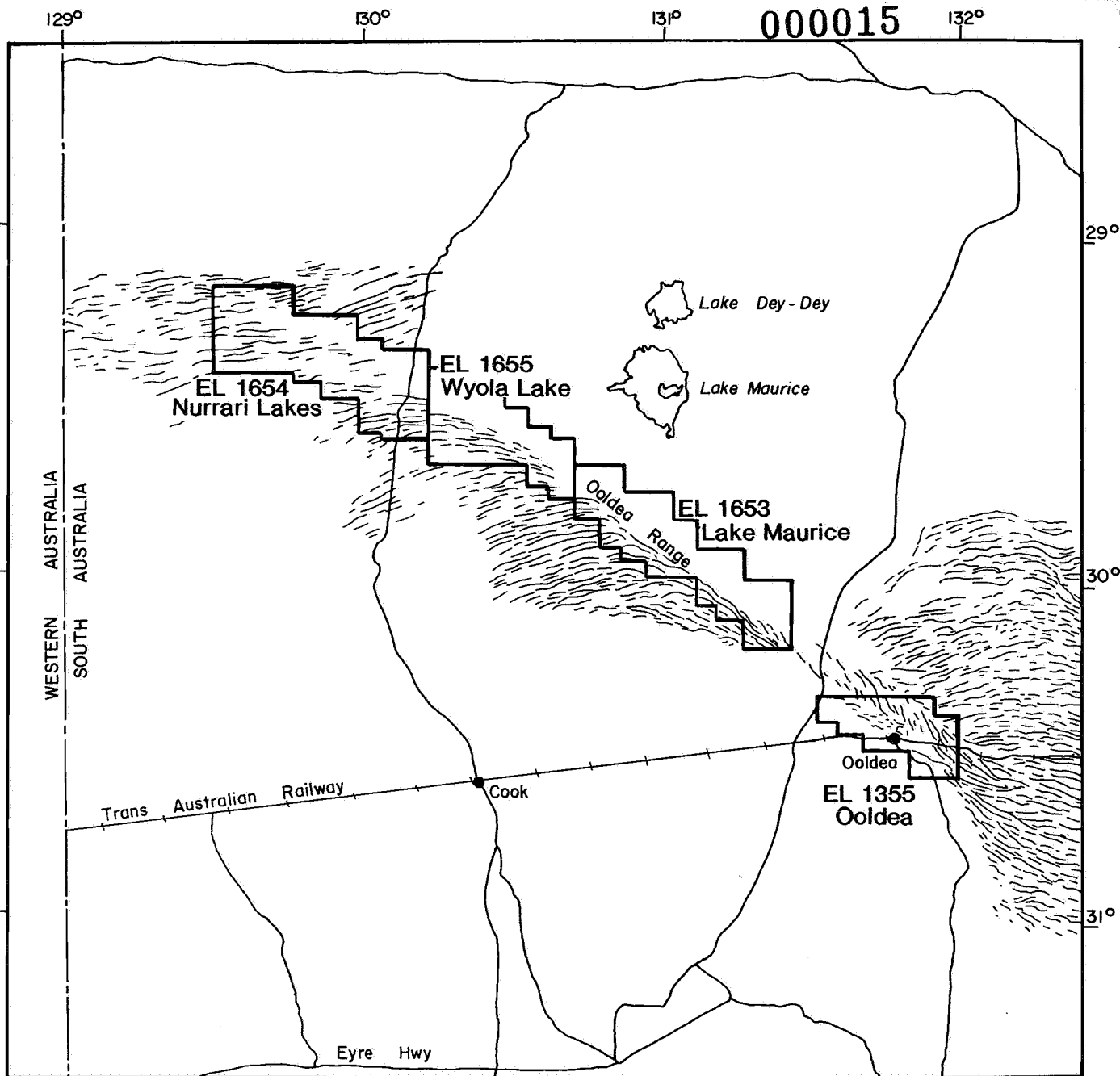
3 PROPOSED WORK FOR THE FOLLOWING QUARTER

4 EXPENDITURE

## FIGURES

Figure 1. Location of ELs 1653, 1654 and 1655

Figure 2. Simplified geology and drill traverse locations



NORTH

SCALE 1:2,000,000

0 50 100 150 km

Centre  
MELBOURNE

Date  
SEPT '90

THE BROKEN HILL PROPRIETARY CO. LTD.

**EL 1655, EL 1654, EL 1653 and EL 1355. OOLDEA S.A.  
LOCATION MAP**

Project N<sup>o</sup>  
T63

Drawing N<sup>o</sup>  
A4-3076

## 1 INTRODUCTION

Exploration Licences 1653 Lake Maurice, 1654 Nurrai Lakes and 1655 Wyola Lakes were applied for in order to explore for heavy mineral sands. They are located in the far west of South Australia, immediately to the north of the Nullarbor Plain (Figure 1). The licences cover the Ooldea Range, a 650 km long by 15 to 20 km wide sand ridge which is interpreted as a palaeo-beach ridge system. The Ooldea range and adjacent sands area thought to be a potential host for heavy mineral deposits.

## 2 WORK CARRIED OUT DURING THE QUARTER ENDED 30 OCTOBER 1990

During the quarter ended 30 October 1990 dozing of the traverses shown in Figure 2 was completed and drilling commenced. Traverses 1 to 10 had been drilled by the end of the quarter, comprising 143 holes for a total of approximately 4,500 metres. The hole spacing and depth along each traverse averaged about 1 kilometre and 30 metres respectively.

The drilling to date appears to have revealed a very uniform stratigraphy over the Ooldea Range. In summary, the following succession was encountered:

| Typical<br>Depth<br>(m) | Typical<br>Thickness<br>(m) | Lithology                                                                                                                                                      |
|-------------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0-4                     | 2-4                         | Red-brown silty sands (Great Victoria Desert Sands).                                                                                                           |
| 4-6                     | 2                           | As above with higher silt and clay component.                                                                                                                  |
| 6-25                    | 20                          | Ferruginous sand and weakly cemented ferruginous sandstone with high silt component. Poorly sorted.                                                            |
| 25-40                   | 15-30+                      | Gradational change from above unit to coarse, clean quartz sand. Moderately well sorted to gritty. Variable carbonate content. Light grey and partly cemented. |
| 35-50                   | 0-20                        | Variably coloured, well sorted fine-grained sand. Weakly to strongly mineralised.                                                                              |

The above units are strongly calcretised in some areas, particularly the northern half of traverse 9, and contain irregular ironstone horizons. Note that traverses 11 to 13

have yet to be drilled, and a thorough analysis and presentation of the drilling awaits this information.

### 3 PROPOSED WORK FOR THE FOLLOWING QUARTER

The drilling is expected to be completed by mid November, with samples selected and taken to AMDEL for heavy mineral determinations soon after. It is proposed to carry out a thorough evaluation of the drilling program in conjunction with a review of the geology of the Eucla Platform. This work will be reported in the next quarterly report.

### 4 EXPENDITURE

Expenditure for the quarter ended 30 October 1990 was as follows:

|         |           |
|---------|-----------|
| EL 1653 | 42,169    |
| EL 1654 | 33,515    |
| EL 1655 | 31,730    |
|         | -----     |
|         | \$107,414 |

Each total is itemised below.

| Item              | EL 1653 | EL 1654 | EL 1655 |
|-------------------|---------|---------|---------|
| Wages & salaries  | 16255   | 9923    | 9084    |
| Field support     | 4236    | 2661    | 2806    |
| Vehicles          | 2260    | 1432    | 1749    |
| Equipment         | 1172    | 1172    | 1254    |
| Geochemistry      | 776     | 777     | 776     |
| Surveys           | 12576   | 12590   | 12575   |
| Office expenses   | 327     | 324     | 324     |
| Capital           | 253     | 253     | 254     |
| In-house services | 457     | 1265    | -       |
| Other             | 24      | 32      | 24      |
| Admin & overheads | 3833    | 3046    | 2884    |
|                   | -----   | -----   | -----   |
| Totals            | 42169   | 33515   | 31730   |

129°E

132°E

29°S

WESTERN AUSTRALIA  
SOUTH AUSTRALIA

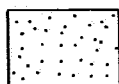
GREAT VICT  
DESERT

OOL

EL 1654

30°S

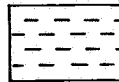
EOCENE



PALAEOCENE to  
PLEISTOCENE



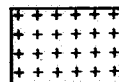
CRETACEOUS



CAMBRIAN



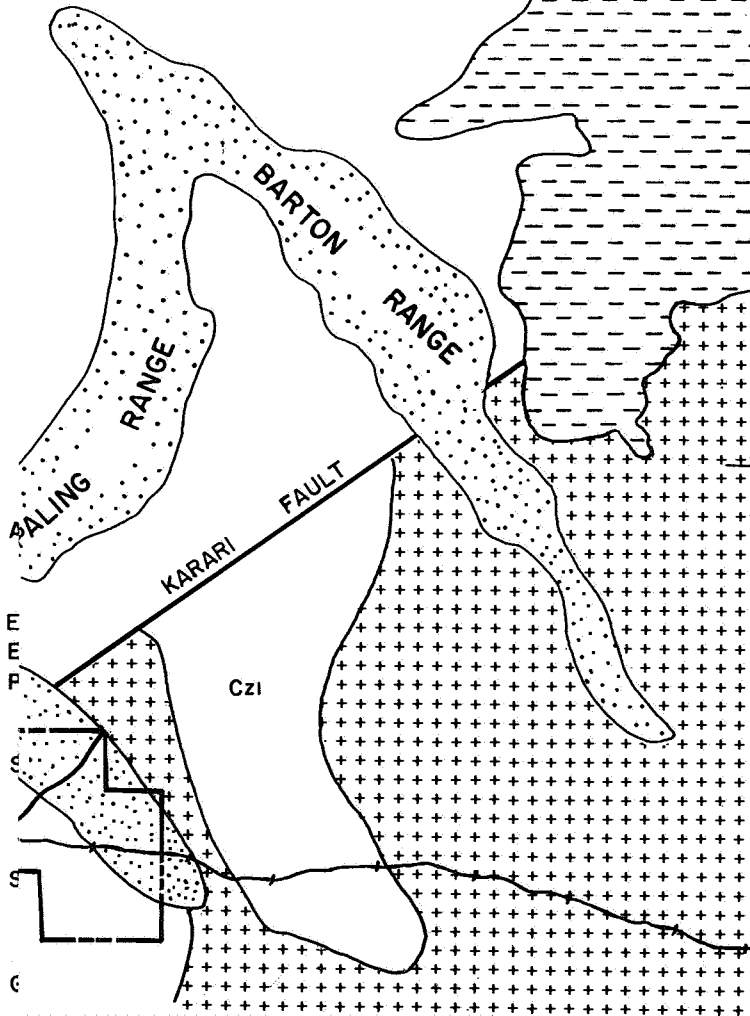
PRECAMBRAIN



NB: Windblown Recent  
sands cover the  
above units.

7

EL 6755



**BHP-Utah Minerals International**  
Asia Pacific Division - Exploration Department

**OOLDEA REGION**

## SIMPLIFIED GEOLOGY & DRILL TRAVERSE LOCATIONS

|                    |                 |                       |
|--------------------|-----------------|-----------------------|
| Prepared: P. DARBY | Date: AUG 1990  | Centre: MELBOURNE     |
| Drawn: F. BARLOW   | Project No: T63 | Drawing No: A3 - 1892 |
| Checked: P. DARBY  |                 |                       |

GEOLOGY MODIFIED FROM GEOLOGICAL

000018



000019

CR 7203  
EXPLORATION LICENCES 1653  
1654 AND 1655 MARALINGA  
SOUTH AUSTRALIA

REPORT FOR THE QUARTER  
ENDED 29 JANUARY 1991

VOLUME 1

1 of 2 vols.

P R DARBY  
MELBOURNE  
JANUARY 1991

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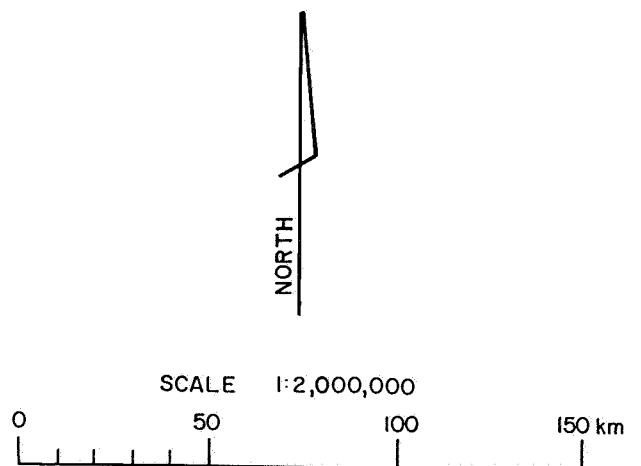
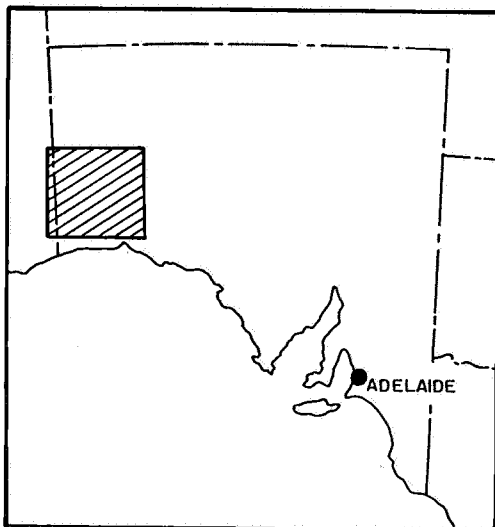
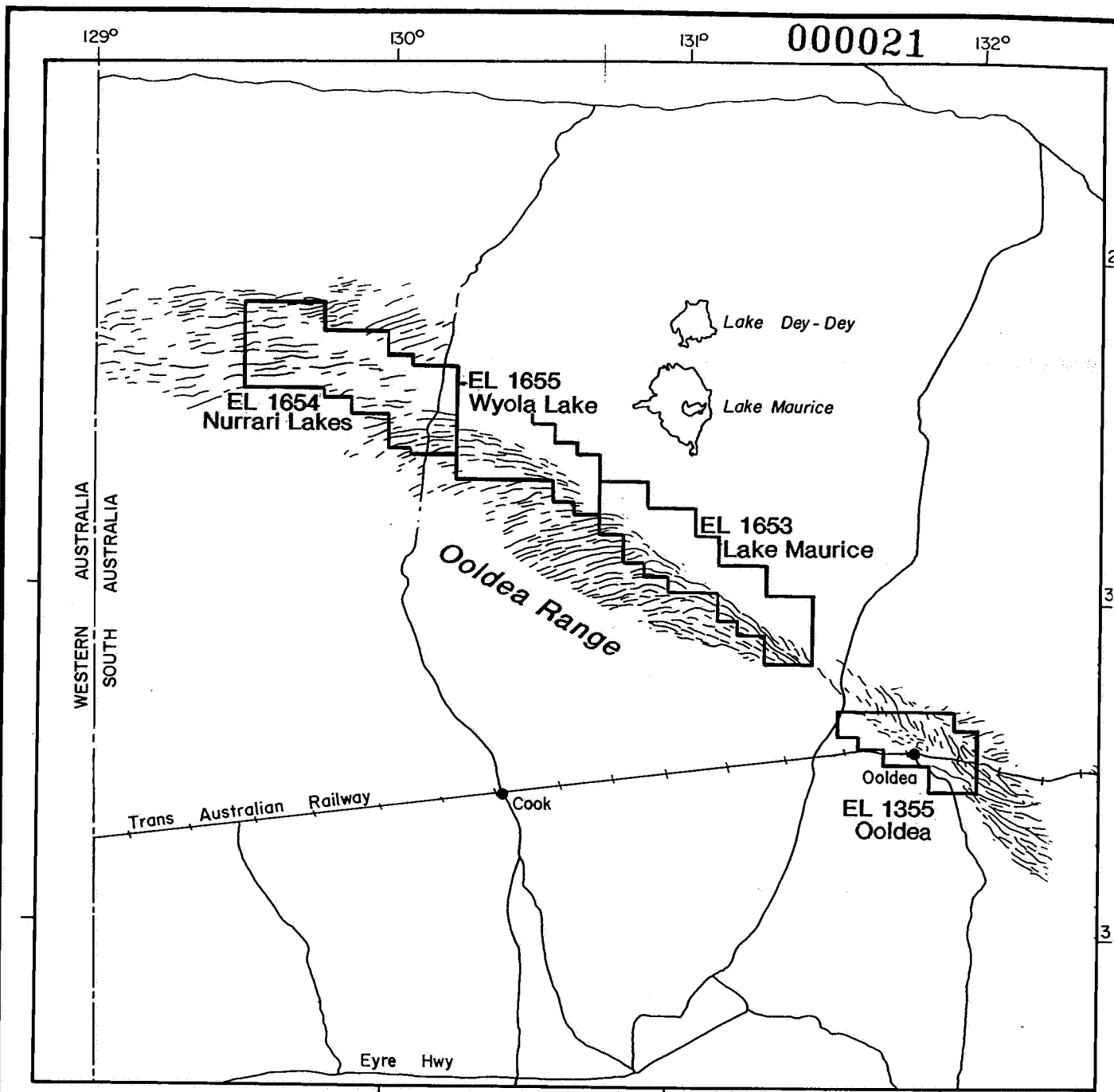


FIG. 1

## 1 INTRODUCTION

Exploration Licences 1653 Lake Maurice, 1654 Nurrai Lakes and 1655 Wyola Lakes were applied for in order to explore for heavy mineral sands. They are located in the far west of South Australia, immediately to the north of the Nullarbor Plain (Figure 1). The following report describes a 6400 metre drilling program carried out in October and November 1990.

## 2 TITLE

The exploration licences were granted on 30 April 1990 for a twelve month term. Since the licences are located entirely within the Maralinga-Tjarutja Land approvals (in addition to the various other approvals) had to be obtained from the Maralinga-Tjarutja people for entry to the land and for any exploration work. The Maralinga-Tjarutja approved all of the proposed drill traverses except for numbers 6 and 7 (Figure 2).

## 3 DRILLING PROGRAM OCTOBER-NOVEMBER 1990

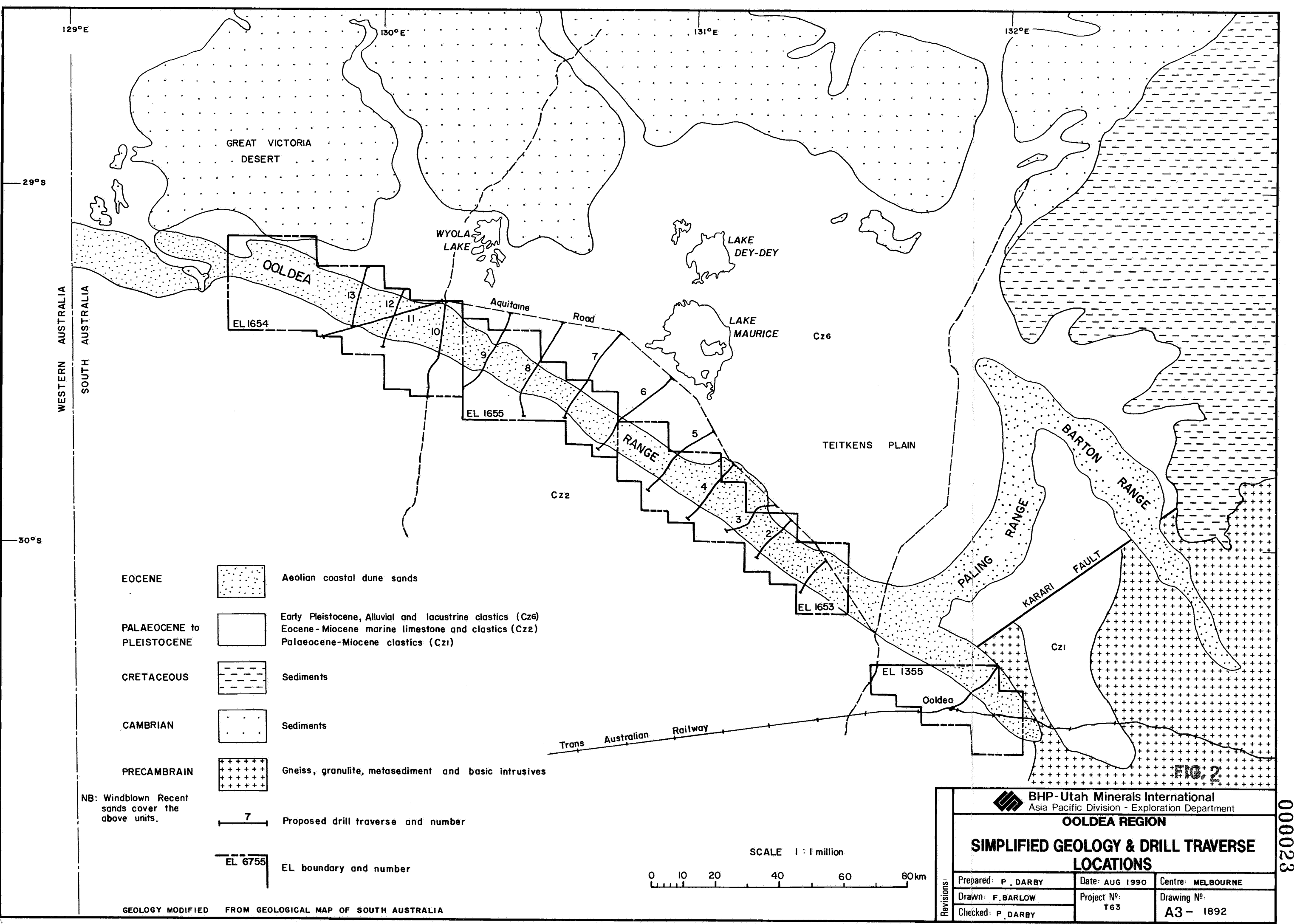
### 3.1 Logistics

Personnel began mobilising to site on October 7. A camp was established near the intersection of traverse 4 and the Aquitaine Road, from which traverses 1 to 5 were drilled. A second camp was made at the intersection of traverses 10 and 11, from which traverses 8 to 13 were drilled. Details of the logistics of the program may be found in Appendix 1.

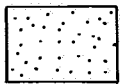
### 3.2 Drilling Details

Drilling commenced on 12 October and finished on 11 November. The total metrage was 6447 at an average of 208 metres per day. The location of each traverse is shown in Figure 2, and each drill hole is shown in Figures 3, 4 and 5. The drilling breakdown for each EL is as follows:

| EL No       | No of Holes | Hole Numbers  | Metres |
|-------------|-------------|---------------|--------|
| 1355        | 6           | M15-20        | 63     |
| 1653        | 75          | M1-14, M21-81 | 2339   |
| 1654        | 97          | M112-208      | 2692   |
| 1655        | 30          | M82-111       | 904    |
| Ex-tenement | 21          | M901-921      | 449    |
|             | 229         |               | 6447   |

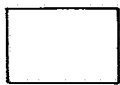


EOCENE



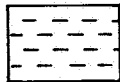
Aeolian coastal dune sands

PALAEOCENE to  
PLEISTOCENE



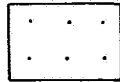
Early Pleistocene, Alluvial and lacustrine clastics (Cz6)  
Eocene-Miocene marine limestone and clastics (Cz2)  
Palaeocene-Miocene clastics (Cz1)

CRETACEOUS



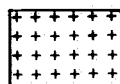
Sediments

CAMBRIAN



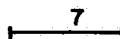
Sediments

PRECAMBRIAN

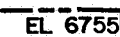


Gneiss, granulite, metasediment and basic intrusives

NB: Windblown Recent  
sands cover the  
above units.



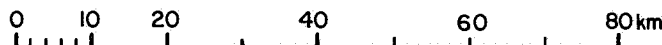
Proposed drill traverse and number



EL boundary and number

GEOLOGY MODIFIED FROM GEOLOGICAL MAP OF SOUTH AUSTRALIA

SCALE 1 : 1 million



BHP-Utah Minerals International  
Asia Pacific Division - Exploration Department

OOLDEA REGION

### SIMPLIFIED GEOLOGY & DRILL TRAVERSE LOCATIONS

|                    |                 |                     |
|--------------------|-----------------|---------------------|
| Prepared: P. DARBY | Date: AUG 1990  | Centre: MELBOURNE   |
| Drawn: F. BARLOW   | Project No: T63 | Drawing No: A3-1892 |
| Checked: P. DARBY  |                 |                     |

000023

### 3.3 Logging and Sampling

Each hole was geologically logged and sampled in two metre intervals. The heavy mineral content of each two metre interval was estimated by panning a small handful in a white dish. Clay layers were generally not sampled. Geological logs may be found in Appendix 2. Composite samples were usually collected in 10 metre intervals with virtually every composite being sent to Amdel for heavy mineral determination. Those composites with higher grades are currently having their constituent two metre intervals assayed.

In the early stages of the drilling 50 % of the material drilled was collected. Since this amounted to 4 or 5 kilograms for each sample, and only 90 grams are required for analysis, it was decided to split each two metre interval twice and collect only 25 % of the material drilled.

### 3.4 Geophysical Prospecting

Holes M1 to M8 and M11 to M14 were gamma ray logged. The logs are presented in Appendix 3, and generally showed a higher clay content in the Quaternary sediments and a very low, uniform response in the Ooldea Sand. On the second day the winch for the logging unit failed, preventing further logging.

Ground magnetic traverses were carried out over traverses 1, 2 and 3, with several small anomalies located (Appendix 3). Several anomalies were drilled however in no instance was mineralisation intersected, although horizons of ferruginous sand and lateritic material were sometimes intersected. It was concluded that the anomalies were probably caused by the iron-rich horizons.

## 4 RESULTS

The drill traverses straddled the Ooldea Range over a strike length of about 170 kilometres (Figure 2). Interpretive geological cross sections with heavy mineral assays are in Appendix 4.

### 4.1 Geology and Stratigraphy

The cross sections of the drill traverses show the interpreted geology across the Ooldea Range. The stratigraphy is very uniform and an attempt has been made to classify the drilled rocks according to the published stratigraphy of the Ooldea Range (eg Benbow, 1990). In the

cross sections in Appendix 4 the following terminology has been used for the various stratigraphic units:

|     |            |                                |
|-----|------------|--------------------------------|
| Qa  | Quaternary | Great Victoria Desert Sand     |
| Qb  | Quaternary | Clayey sand and sandy clay     |
| Q   | Quaternary | Ferruginous sand and sandstone |
| To  | Eocene     | Ooldea Sand                    |
| Teh | Eocene     | Hampton Sandstone              |
| Tep | Eocene     | Pidinga Formation              |
| T   | Tertiary   | Unknown sand                   |
| Pal | Palaeozoic | Bedrock (mudstone, siltstone)  |

These units are described below.

### Tertiary

The major unit is the Ooldea Sand (To), which attains maximum thickness where the range attains its maximum height. Estimated maximum thickness of the Ooldea Sand is in excess of 70 metres, and it appears that the maximum thickness decreases to the west. The Ooldea Sand comprised moderately well sorted to well sorted medium to coarse sand. The grains are well rounded and the colour light grey, changing to orangey-brown near the top.

Underlying the Ooldea Sand is the Hampton Sandstone (Teh). The boundary between these units has been taken as the occurrence of grit below the Ooldea Sand. The grit is identical to the Ooldea Sand except for the coarser grainsize. Underlying the grit are fine to medium grained sands and sandstone, including a well sorted, fine grained, red-brown sand containing sponge spicules. This lithology has been referred to as spongelite in the drill logs (Appendix 2) for traverses 11 to 13. Most mineralisation encountered in the drilling appears to occur in the Hampton Sandstone, underneath the grit horizon (see below for further discussion on mineralisation).

Underlying the Hampton Sandstone is the Pidinga Formation (Tep), which is interpreted as having been intersected at the southern ends of traverses 1, 5 and 10. The Pidinga Formation is a widespread unit of Eocene age, containing both marine and non-marine sediments. It is generally characterised by carbonaceous clay or clayey sand with lignite horizons, in drill logs inland from the Ooldea Range.

A further sand unit interpreted to be of Tertiary age but which does not appear to fit into any of the above Tertiary units was intersected in hole M81 at the southern end of traverse 5 (T in section).

### Bedrock

Weathered bedrock is interpreted to have been intersected in a few holes as shown in the cross sections in Appendix 4.

The interpretation is based on the appearance of a weak shale-like fabric in the drill cuttings. The top few metres of the bedrock are usually weathered to clay. If the bedrock interpretations are correct then it appears that the elevation of the base of the Tertiary succession may vary considerably over short distances.

#### Quaternary

Overlying the Ooldea Sand are sands and clayey sands of variable thickness. They have been subdivided in the cross sections into the following units:

- Qa Great Victoria Desert Sand. Red-brown wind blown sand, angular, poorly sorted. Forms recent dunes.
- Qb Similar to above but with a higher content of silt and clay. Frequently calcareous (possibly can be correlated with Bridgewater Formation on western Eyre Peninsula).
- Q Red-brown silty sand and ferruginous sandstone. May be equivalent of Delisser Formation.

Holes M39 and M40 were drilled in a drainage leading to Irish Well and intersected clay and sandy clay interpreted to be of Quaternary age and restricted to the drainage.

#### 4.2 Mineralisation

Six hundred and seventy-nine samples were sent to Amdel for heavy mineral determination. The >2.96 SG product is annotated beside each drill hole trace on the cross sections (Appendix 4) and the analytical results are presented in their entirety in Appendix 5.

Many of the samples submitted were composites of 10 metres or more, and selected composites are currently having their constituent two metre intervals assayed. Details of the grain size and mineralogy of the >2.96 SG product are not yet to hand.

The results indicate that the Quaternary units and Ooldea Sand are virtually barren. The only exceptions to this are slightly elevated grades encountered in Quaternary sands toward the southern ends of traverses 10 to 13. For example M112, 0-12 metres, 0.82 % HM and M199, 0-10 metres, 0.64 % HM. The 6.50 % HM in M125 at 0-10 metres has been identified as predominantly goethite from visual inspection.

The Hampton Sandstone appears to contain widespread weak to moderate mineralisation, below the grit layer. The most strongly mineralised areas appear to be the northern end of traverse 2 (holes M36 and M37) and a large zone around the northern end of traverses 11 and 12 (holes M143 - M148 and



M169). The grades are generally less than 2 percent, although isolated higher grades occur (eg M169, 28-30 metres, 8.37 % HM).

The best intersections are:

|      | Metres | % HM |      | Metres  | % HM |
|------|--------|------|------|---------|------|
| M36  | 30-32  | 0.94 | M37  | 28-30   | 1.16 |
|      | 32-34  | 2.99 |      | 30-32   | 0.67 |
|      | 34-36  | 1.45 |      | 32-34   | 1.93 |
|      |        |      |      | 34-36   | 3.54 |
|      |        |      |      | 36-38   | 2.93 |
|      |        |      |      | 38-39.5 | 1.35 |
| M143 | 32-34  | 1.00 | M169 | 26-28   | 1.66 |
|      | 34-36  | 1.96 |      | 28-30   | 8.37 |
|      | 36-38  | 3.64 |      |         |      |

In each case the mineralisation occurs below a significant thickness (20 to 30 metres or more) of overburden, downgrading the economic potential of the mineralisation located so far.

The isolated instances of very high grades (eg M163, 40-42 metres, 19.99 %HM) appear to be mainly goethite or other iron oxide trash minerals since they are associated with ferruginous sands, thus downgrading their significance.

## 5 DISCUSSION OF RESULTS

The results to date suggest that the Ooldea Range itself is not prospective for economic mineral sands deposits because of the extensive, thick Quaternary cover and the absence of any mineralised intervals in the Ooldea Sand. Areas where the lower part of the Hampton Sandstone is nearer the surface are likely to be more prospective, for example the zones immediately north and south of the Ooldea Range, and possibly the lowest of the saddles in the range.

All these areas pose practical problems for exploration. The area to the south of the range is covered by parallel sand dunes rendering access very difficult, the area to the north appears to have widespread development of calcrete which greatly slows drilling, and saddles within the range will most probably still have a significant thickness of Quaternary and Ooldea Sand, as well as potentially being significant sites for the Maralinga-Tjarutja (as is the case for traverses 6 and 7).

The presence of sponge spicules in the mineralised sand, at least in mineralised holes after M143, and the fine grain

size indicate a low energy marine environment of deposition. The sponge spicules are delicate and would be unlikely to survive any significant reworking. The suggested environment of deposition is therefore perhaps not ideal for the formation of heavy minerals.

More detailed analysis of the drilling will have to wait until more complete mineralogical results become available, and will be reported in the next quarter.

## 6 EXPENDITURE

Expenditure for the quarter ended 29 January 1991 was as follows:

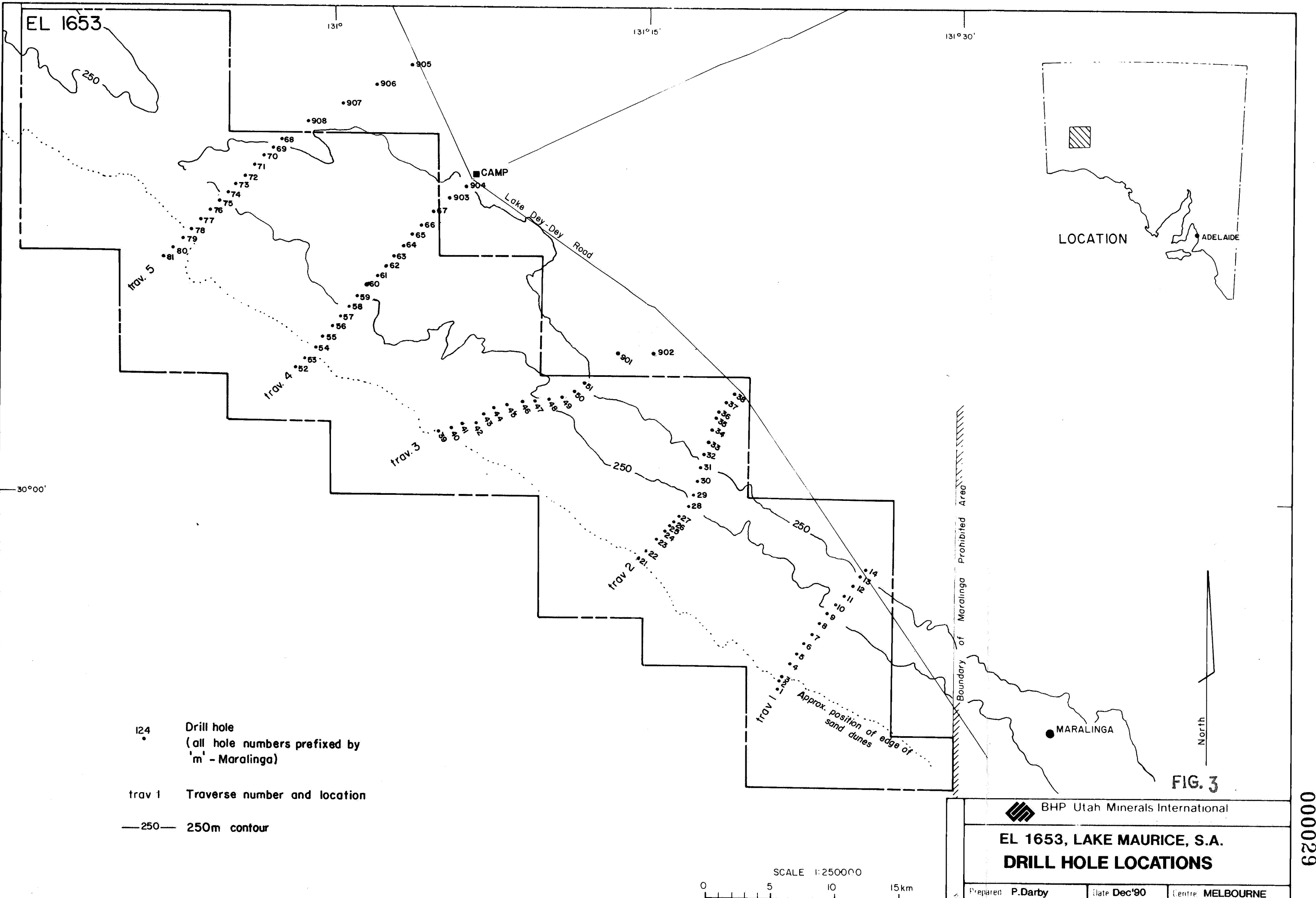
|         |           |
|---------|-----------|
| EL 1653 | 96597     |
| EL 1654 | 82454     |
| EL 1655 | 29590     |
|         | -----     |
|         | \$ 208641 |

Each total is itemised below.

| Item              | EL 1653 | EL 1654 | EL 1655 |
|-------------------|---------|---------|---------|
| Wages & salaries  | 12620   | 15659   | 12161   |
| Field support     | 1405    | 2465    | 517     |
| Drilling          | 58386   | 44092   | 10630   |
| Vehicles          | 1621    | 4182    | 2305    |
| Equipment         | 683     | 259     | 4       |
| Geochemistry      | 9877    | 6903    | 1090    |
| Surveys           | 45      | -       | -       |
| Office expenses   | 222     | 11      | 34      |
| In-house services | 2855    | 1379    | 99      |
| Other             | 90      | 9       | 60      |
| Admin & overheads | 8793    | 7495    | 2690    |
|                   | -----   | -----   | -----   |
| Totals            | 96597   | 82454   | 29590   |

## 7 REFERENCES

- Benbow, M. C., 1990. Tertiary Coastal Dunes of the Eucla Basin, Australia. *Geomorphology*, 3, 9-29.
- McGowran, B., 1989. The Later Eocene Transgressions in Southern Australia. *Alcheringa*, 13, 45-68.



|                                 |             |                  |
|---------------------------------|-------------|------------------|
| BHP Utah Minerals International |             |                  |
| EL 1653, LAKE MAURICE, S.A.     |             |                  |
| DRILL HOLE LOCATIONS            |             |                  |
| Prepared P.Darby                | Date Dec'90 | Centre MELBOURNE |
| Drawn F.Barlow                  | Project N°  | Drawing N°       |
| Checked P.Darby                 | T62         | A3 - 1914A       |

000029

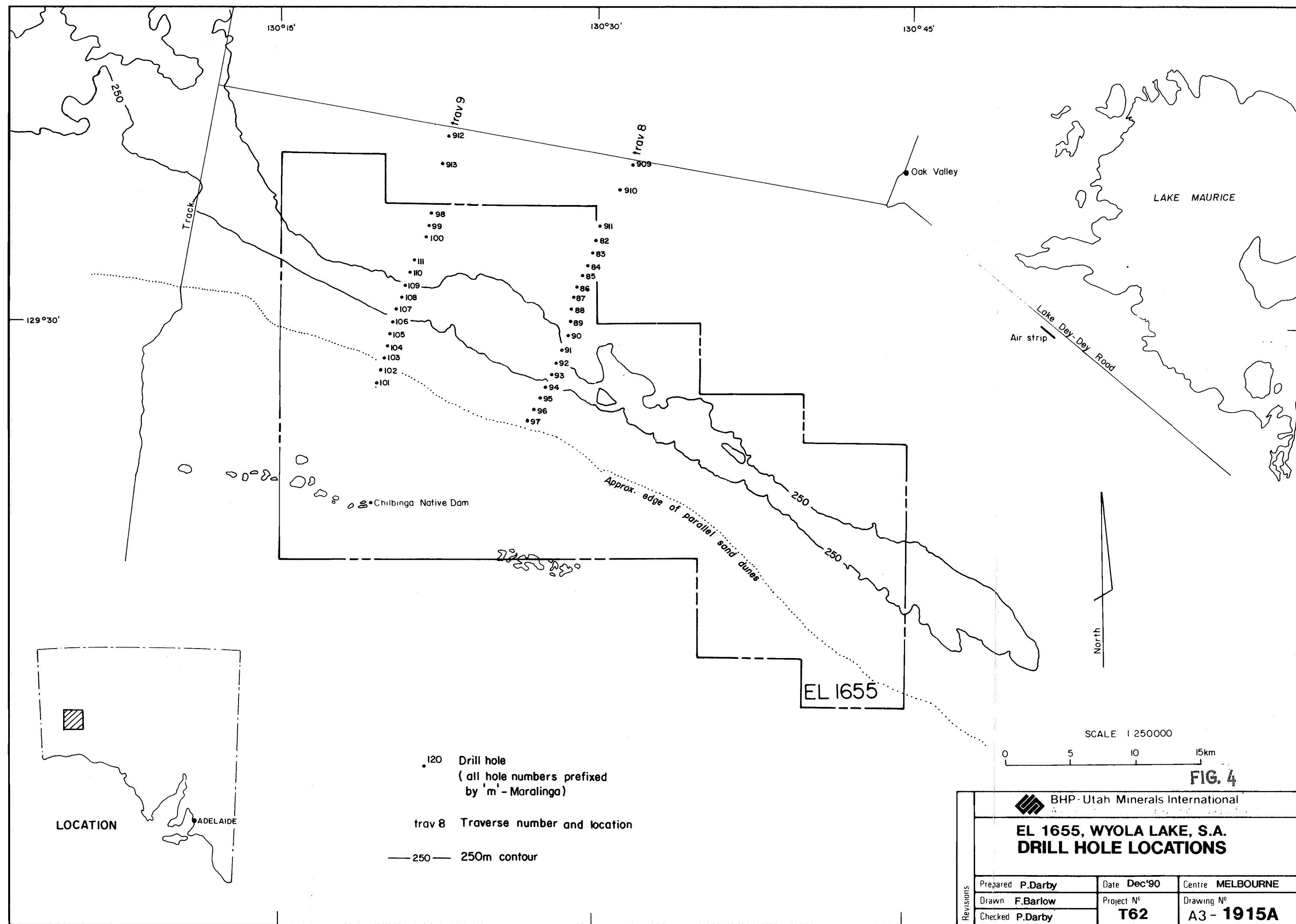
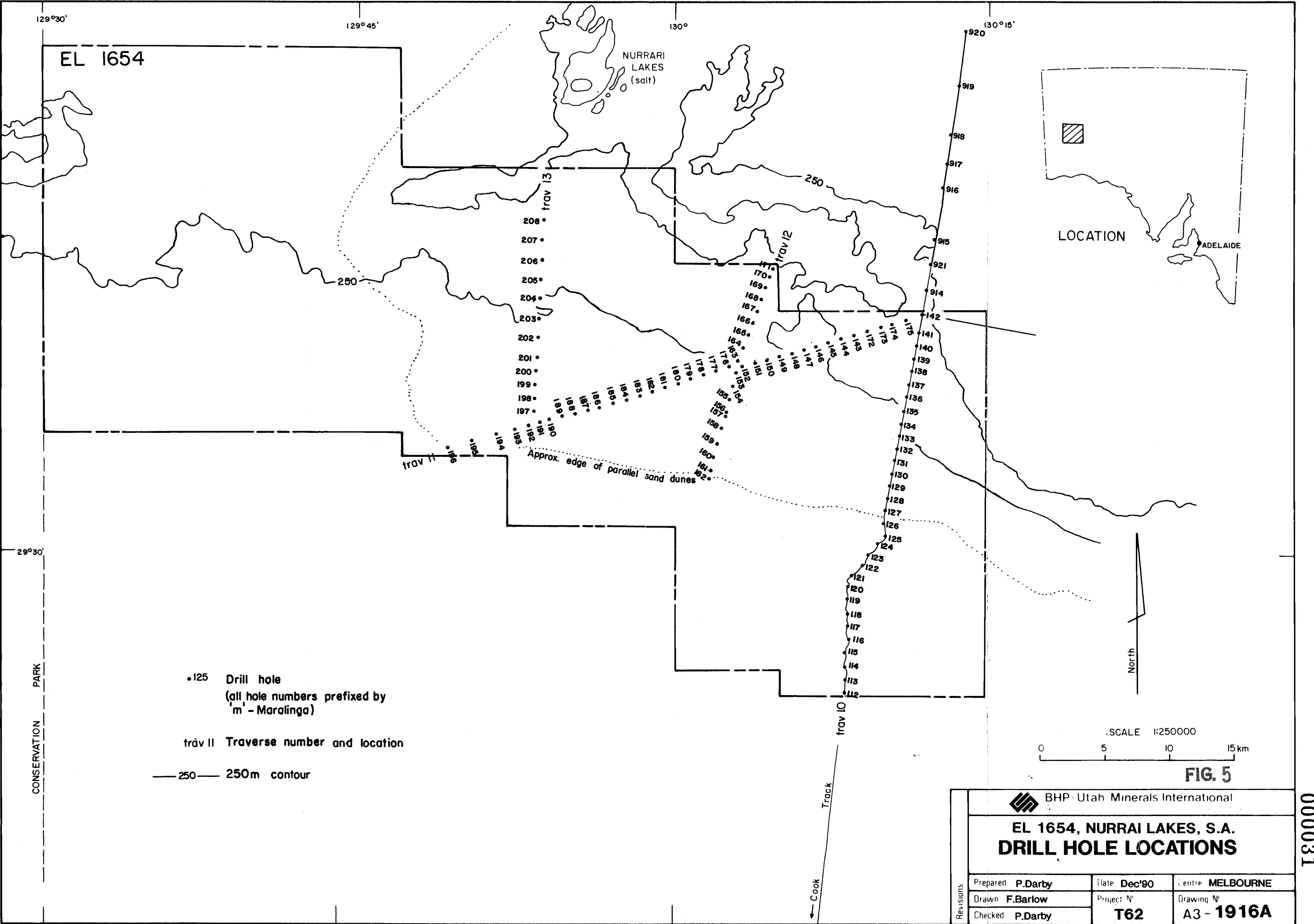


**FIG. 4**

|                                                           |                       |                              |
|-----------------------------------------------------------|-----------------------|------------------------------|
| BHP-Utah Minerals International                           |                       |                              |
| <b>EL 1655, WYOLA LAKE, S.A.<br/>DRILL HOLE LOCATIONS</b> |                       |                              |
| Prepared <b>P.Darby</b>                                   | Date <b>Dec'90</b>    | Centre <b>MELBOURNE</b>      |
| Drawn <b>F.Barlow</b>                                     | Project N° <b>T62</b> | Drawing N° <b>A3 - 1915A</b> |
| Checked <b>P.Darby</b>                                    |                       |                              |

000030



|                                                     |             |                  |
|-----------------------------------------------------|-------------|------------------|
| BHP - Utah Minerals International                   |             |                  |
| EL 1654, NURRAI LAKES, S.A.<br>DRILL HOLE LOCATIONS |             |                  |
| Prepared P.Darby                                    | Date Dec'90 | Centre MELBOURNE |
| Drawn F.Barlow                                      | Project N°  | Drawing N°       |
| Checked P.Darby                                     | T62         | A3 - 1916A       |

000031

APPENDIX 1

Logistics of drilling program

## OOLDEA RANGE DRILLING PROGRAM

### PREAMBLE

In October/November 1990 a 6,400 metre drilling program was carried out on the Ooldea Range, in the far west of South Australia. The exploration licences covered an area stretching from the Maralinga Restricted Area to the Namungarintja Conservation Park. The following notes describe the access, land and equipment used, with suggestions for future work in the area. Note that all of the area is part of the Maralinga-Tjarutja Land, and permission must be obtained from their office in Ceduna for entry.

### ACCESS

The eastern end of the exploration licences is about 6 hours drive from Ceduna, by way of the Eyre Highway to just past Nundroo, thence north to Ooldea siding, then west along the trans line (drive on the north side) to Watson, and then 27 kilometres north along the Maralinga Road to the Aquitaine Road.

The Aquitaine Road (also called the Lake Dey Dey Road on some maps) runs parallel to the Ooldea Range on its inland side. It provides good access to most of the Ooldea Range (see attached figure).

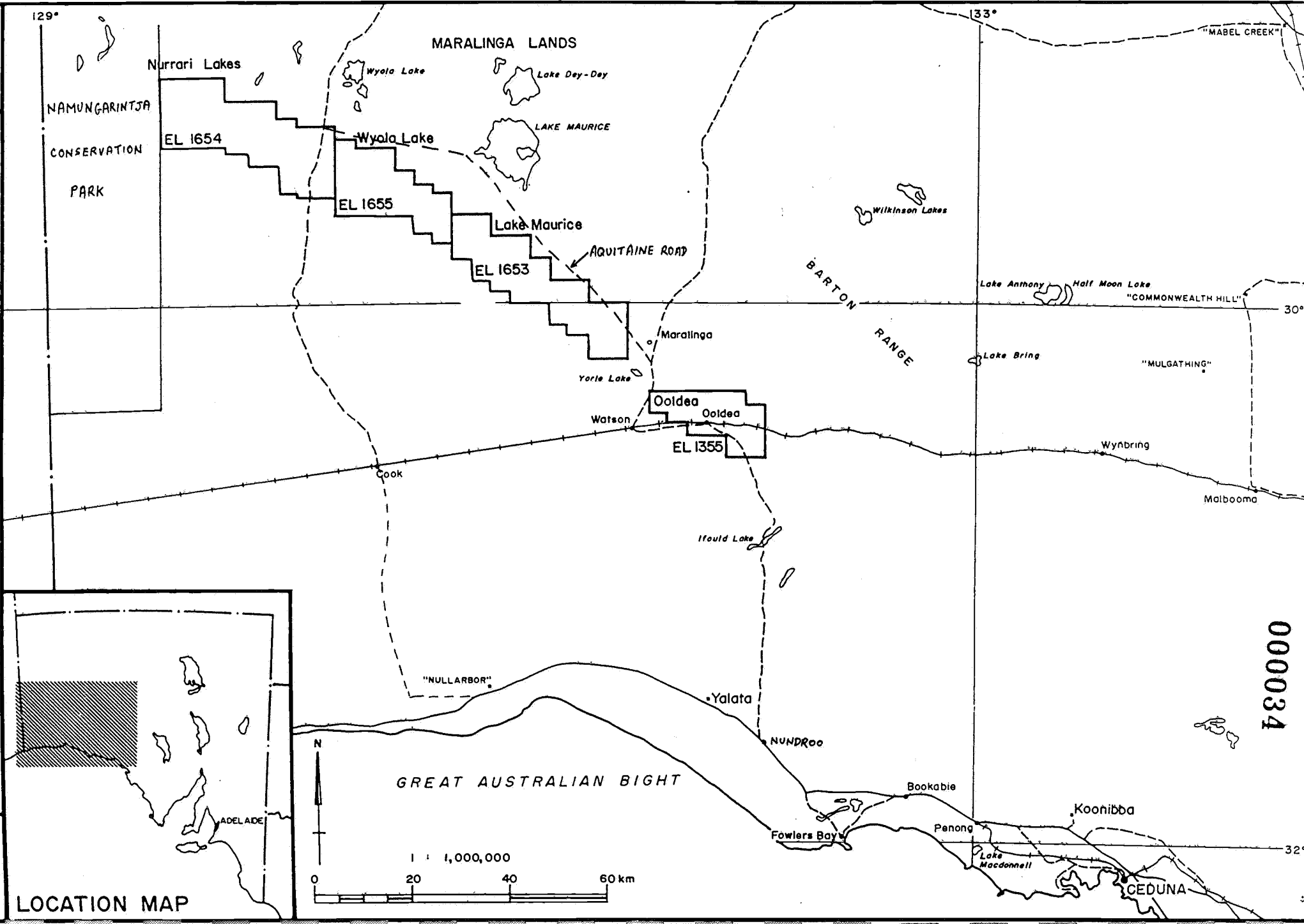
It is also possible to gain entry via Cook, however this road is 4WD only over the sand dunes that flank the seaward side of the range. The dune country is about 15 km wide along the Cook Road, and the dunes are such that it would not be possible to tow trailers over them. Although a bit sandy and bumpy in parts, access via Watson is OK for 2WD vehicles (but watch out for kangaroos).

### WEATHER

During the period early October to early November, the seasons quite noticeably changed from cool to hot. It was also constantly windy for the first two weeks, although the hotter weather of the last 3 weeks was accompanied by a decrease in wind. Nights were pleasantly cool to quite cold (two or three blankets at first). A few light showers of rain occurred. Reconnaissance trips from July to September had encountered cold, wet and windy conditions.

Centre  
MELBOURNE  
Date  
AUG '90

EL 1655, EL 1654, EL 1653 and EL 1355. OOLDEA S.A.  
LOCATION MAP  
FIGURE 1  
A4-3076



000034

LOCATION MAP



## LAND

The land is predominantly flat, sandy country with spinifex and small Mallee trees. Some areas are more open saltbush country and pockets of native pine occur. The Ooldea Range itself rises to a maximum height in excess of 250 metres above sea level, with the landward side of the Nullarbor Plain at about RL 150 metres. The total relief of some 100 metres occurs over a horizontal distance of 5 to 10 kilometres, and is barely perceptible in the field.

The sand dune country on the seaward side of the range is characterised by dunes with a height averaging about 10 metres, and interdunal corridors about 200 to 400 metres wide. Travelling along the interdunal corridor, parallel to the dune, is relatively easy, however crossing the dunes is a major problem.

## LOGISTICS AND SUGGESTIONS FOR FUTURE WORK

### Camp Equipment - General

The equipment taken is shown in Table 1. In the event a substantial number of the items in Table 1 were unnecessary, or present in too great an amount (see Table 2). Note that some of these items were left unused merely because the drillers had decided to bring a very well equipped caravan (containing stove with oven, shower) which they were happy for all to use.

Having too much gear was no major problem, and probably better than being under-equipped, but it did mean carrying gear for nothing and extra work when shifting camp.

*TABLE 1*

|        |                                                                                                 |
|--------|-------------------------------------------------------------------------------------------------|
| 5      | Canvas tents (including box of tent pegs and bag of tie-down ropes).<br>Assorted ground sheets. |
| 2x3.5  | KVA generator (standby)                                                                         |
| 1x1.0  | KVA generator<br>Qty extension leads<br>Qty of distribution boxes                               |
| 1      | Freezer                                                                                         |
| 1      | Washing machine                                                                                 |
| 1      | Gas range                                                                                       |
| 1      | Large gas bottles<br>Qty. lead lights<br>Light globes - 12 x 75 w. clear, 12 x 75 w. yellow     |
| 6      | Camp beds, incl. mattresses                                                                     |
| 1      | Rolls binda twine                                                                               |
| 1      | Roll 1/2" dia. synthetic rope                                                                   |
| 1      | Roll 1/4" dia. synthetic rope                                                                   |
| 1      | Roll hessian                                                                                    |
| 30     | Star pickets                                                                                    |
| 1      | Sledge hammer                                                                                   |
| 2      | Axes                                                                                            |
| 1      | Chainsaw                                                                                        |
| 2      | Shovels                                                                                         |
| 8      | Chairs                                                                                          |
| 4      | Tables                                                                                          |
| 1      | Toilet                                                                                          |
| 24     | Toilet rolls<br>Qty. fire extinguishers                                                         |
| 1      | Donkey & stand                                                                                  |
| 2x1/2" | Water hoses                                                                                     |
| 1      | Toolbox                                                                                         |
| 1      | Air compressor                                                                                  |

|      |                                                                   |
|------|-------------------------------------------------------------------|
| 3    | Eskys                                                             |
| 6    | Water containers                                                  |
| 3    | Water jerry cans                                                  |
| 2x44 | Gall. rubbish bins<br>Assorted cutlery, cooking gear for 6 people |
| 10   | Tea towels                                                        |
| 6    | Pkts. Chux                                                        |
| 4    | Bottles dishwashing liquid                                        |
| 6    | Pkts scouring pads                                                |
| 10   | Pkts soap powder                                                  |
| 6    | Pkts velvet soap bars                                             |
| 1    | Pkt clothes pegs                                                  |
| 6    | Washbowls                                                         |
| 6    | Buckets                                                           |
| 2    | Portable showers                                                  |
| 1    | Pallet (shower floor)                                             |
| 1    | Water trailer (500 gall.)                                         |
| 2    | Fuel pumps                                                        |
| 6    | Dolphin torches + spare batteries                                 |
| 1    | Roll fencing wire                                                 |
| 3    | Tubes silastic, incl. 1 dispenser                                 |
| 2    | Tins puncture repair solutions                                    |
| 4    | Pkts. 50 mm cold patches. Bundle of 50 woden pegs (3'6" long)     |
| 4    | Fuel Jerry cans                                                   |
| 1    | box of Hard hats.                                                 |

TABLE 2

NOT USED AT ALL

|                                                                                             |
|---------------------------------------------------------------------------------------------|
| 1 roll fencing wire                                                                         |
| 1 roll hessian                                                                              |
| *Donkey shower                                                                              |
| 44 Gallon drum incinerator                                                                  |
| 44 Gallon drum rubbish bins                                                                 |
| Box of hard hats                                                                            |
| 3 Eskies                                                                                    |
| Toilet <- a shovel is all you need                                                          |
| *Stove                                                                                      |
| *Washing machine                                                                            |
| Air compressor <-a drill rig is a portable compressor                                       |
| Tubes silastic                                                                              |
| *Denotes things which would have been useful if the drillers had not brought their caravan. |

TOO MANY BROUGHT

|                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Tents (see below)                                                                                                                             |
| Wooden pegs                                                                                                                                   |
| Star pickets                                                                                                                                  |
| Axes                                                                                                                                          |
| Generators (drillers had one of a good size, ours were not used but good to have as a backup, but 1 rather than 3 would have been sufficient. |
| 20 litre water containers                                                                                                                     |
| 20 litre fuel containers                                                                                                                      |
| General kitchen/laundry items (steel soap pads, dishwashing liquid, washing powders, plastic buckets)                                         |
| Personal drink containers                                                                                                                     |
| Engel refrigerators (I think there were 5)                                                                                                    |

The tents were not suitable for the desert conditions because :

- i. the pegs have very little holding power in sand,
- ii. there is no sewn-in floor,
- iii. the sides are not sealable,
- iv. the square shape presents a large surface area to any wind.

This resulted in them blowing down frequently, and they served mainly as a repositories for dust and sand.

If tents are being used then better quality ones such as the North Face VE24, Macpac Olympus or Fairydown Sting would at least keep wind and dust out and remain upright in strong winds. These are all small tents, good for sleeping in, but could not be used for an office.

For future trips, some sort of wind and dust proof shelter would provide an environment safe for the use of computers and printers. Perhaps this could be a caravan, or some sort of demountable, or a good quality tent. A good tent is probably the only feasible alternative since a caravan heavy enough to survive the roads would be too heavy for a Toyota to tow and a demountable would also be a nuisance to transport.

### Food

Approximately six weeks supply of meat, bread, butter, cheese and vegetables were purchased in Ceduna and kept frozen in two large chest-style freezers. This proved to be a good move as it meant that we did not have to worry about getting extra food. The "tea and sugar" train sells food at Watson on Thursdays but the variety is limited and the quality very poor. The type of food consumed was not different from regular groceries that you would have at home.

### Water

There were three large rain water tank complexes that were all full and another two sets of tanks were constructed while we were there. The tanks are the property of the Maralinga-Tjarutja, however, they were happy for us to use this water for drinking and cooking. For drilling and washing a 45,000 litre tanker was ordered from Australian National Rail, and left at Watson siding. Approximately 12,000 litres were used. The drillers had one 2,700 litre tank and one 900 litre (in addition to the 1,000 litres on the support truck) and BHP supplied one tank of approximately 2,000 litres. A water run was done about once a week. Most of the drilling was done dry, so our water supply exceeded our requirements. If future work is planned, then enquiries should be made to the Commonwealth Defence Department about taking water from Maralinga (we were told they have 1 million litres of water). This would save the cost of hiring a tanker from ANR.

### Vehicles

BHP had 3 Toyota 4WD traybacks on site, one diesel and two petrol. A geophysical logging vehicle was present in the early stages. All the drillers' vehicles were diesel. A hire car was used for 3 days for a partial change over of site personnel. Since the vehicles ran on unleaded fuel, bulk (i.e. 44 gallon drums) unleaded had to be used. This is a potential problem as, barring one place I know of in Melbourne, it is not possible to get unleaded fuel in drums that have never had anything except unleaded in them. The risk of getting small pieces of rubbish from the drums into the vehicle's fuel line is high (and happened), despite attempts to filter the fuel. Use of a drum pump with a large, easily removable fuel filter as an integral part of its workings would probably help here.

Punctures were a continual problem and carrying a puncture repair kit was essential. At least three tyres were ruined. Punctures were exacerbated by the desire to make the minimum environmental impact in track clearing. It should be recognised that "minimum impact" tracks will result in more punctures and slower speed (average around 10 km per hour) travel.

### Fuel

Nine drums (approx. 1,800 litre) of unleaded were used. Three drums were carried out to site at the start of the program and a further six were delivered later. The bulk of the fuel was used in the later stages, in transporting samples from site to Ceduna. The diesel Toyota was filled from the drillers' supply of diesel, and amounted to a total of approximately 300 litres, despite it being used most of the time. The significantly greater fuel efficiency of diesel vehicles was impressive.

### Radios

New Codan HF radios were purchased prior to the job and proved very useful. They allowed communications to be made (via OTC) in either direction between the office and field at any time during daylight hours. Sometimes the reception was poor, but generally it was quite good. To have carried out the job without the radios would have increased difficulties, and could potentially lead to dangerous situations in the event of an accident. It is recommended that all field vehicles have their radios upgraded to the current model Codans (with Selcall) and self tuning aerials.

### Personnel

The drilling company personnel comprised driller, offsider and cook (whose wages were paid 50% by BHP). BHP personnel comprised site geologist and two field assistants for the whole program, but also included a geophysical technician for the first week and a third field assistant for the last ten days. Thus, there were 6 people most of the time, but 7 at the start and end, and 8 for the change-over of the site geologist.

The geophysical technician was only present for the first week as it became apparent that geophysical prospecting methods (down hole gamma logs and ground magnetics) were of little value. Two field assistants are required to handle the normal sampling procedure, and the third was required towards the end of the program to transport

samples from the site back to Ceduna.

A partial crew change was carried out after about four weeks. The incoming personnel flew to Ceduna, hired a car and drove to site. After a day of overlap, the outgoing personnel drove back to Ceduna, returned the hire car and flew back to Melbourne. This was a neat method of getting personnel in and out without requiring a vehicle based in Ceduna, and without interrupting the personnel on site.

### Sampling

Prior to the Ooldea drilling, the Eastern Australia Mineral Sands group had been using a two metre sample interval, and collecting 50% of the material drilled. After beginning with this procedure, a decision was made to collect only 25% of the material drilled in order to reduce the amount of sample to be transported. At 25% each sample weighs about 1.5 to 2 kg. The total amount of sample was therefore approximately  $6,400/2 \times 2 = 6.4$  tonnes. Since only 90 grams are used for a heavy mineral analysis it was felt that 1.5 kg was still ample.

A total of five sample runs were done to get the samples to Ceduna, from where they were road freighted to Adelaide. One run was as a backload after the fuel delivery, with the other four being done by the third field assistant in the last 10 days of the program. This was a convenient arrangement as it meant that any extra supplies could be purchased in Ceduna and brought back to site.

Mr. Alan Schwartz of Ceduna did the fuel run, acted as a drop off/freight pick-up point for the samples and let us store excess gear in his yard. This service was very useful.

PETER DARBY



APPENDIX 2

Geological logs of holes

M1 - 208 and M901 - 921

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YARLE  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 12-OCT-90

HOLE NUMBER : M001

LOGGED BY : PRD  
TOTAL DEPTH : 24.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 726844 NORTHING: 6664424 R.L.: 145.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M001

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6001          | QA             | Sand<br>aeolian               | medium<br>red<br>brown | v.fine sand to<br>coarse sand<br>mod.well sorted |                                            |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       | DK 6002          | QA             | Sand<br>aeolian               | medium<br>red<br>brown | v.fine sand to<br>coarse sand<br>mod.well sorted |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6003          | Q              | Sand                          | medium<br>red<br>brown | medium sand to<br>coarse sand<br>poorly sorted   |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6004          | Q              | Sand<br>Mud                   | medium<br>red<br>brown | medium sand to<br>coarse sand<br>poorly sorted   |                                            |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6005          | Q              | Sand<br>silty                 | medium<br>red<br>brown | v.fine sand to<br>fine sand<br>mod.well sorted   |                                            |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 12.0      | DK 6006          | Q              | Sand<br>silty                 | medium<br>red<br>brown | v.fine sand to<br>fine sand<br>mod.well sorted   |                                            |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 6007          | Q              | Sand<br>silty                 | dark<br>red<br>brown   | v.fine sand to<br>medium sand<br>mod.well sorted |                                            |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 6008          | Q              | Sand<br>silty                 | dark<br>red<br>brown   | v.fine sand to<br>medium sand<br>mod.well sorted |                                            |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 6009          | TEP            | Sand<br>Sandstone             | pale<br>brown          | fine sand<br>well sorted                         |                                            |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6010          | TEP            | Sand<br>Laterite              | pale<br>brown          | fine sand to<br>coarse sand<br>well sorted       |                                            |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6011          | TEP            | Sand<br>Laterite              | pale<br>brown          | fine sand to<br>coarse sand<br>well sorted       |                                            |                                          | 0.0                           |                                       |

000044

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING            | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------|--------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                        | 24.0 | DK 6012          | TEP            | Sand<br><br>Laterite          | pale<br>brown       | fine sand to<br>coarse sand<br>well sorted |                                            |                                          | 0.0                           |                                       |
| 0.0                         | 24.0 | DK 6013          |                | Composite Sample              |                     |                                            |                                            |                                          |                               | 0.14                                  |

EOH at 24.0 m

000045

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 727195 NORTHING: 6664920 R.L.: 145.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M002

LOGGED BY : PRD  
 TOTAL DEPTH : 21.0

SHEET 1 OF 2 HOLE NUMBER : M002

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6014          | QA             | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | angular                                    |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6015          | QA             | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | angular                                    |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 6016          | QA             | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | angular                                    |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 6017          | Q              | Sand                          | dark<br>red<br>brown   | fine sand to<br>v.crse sand<br>poorly sorted   | angular                                    |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6018          | Q              | Sand                          | dark<br>red<br>brown   | fine sand to<br>v.crse sand<br>poorly sorted   | angular                                    |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 12.0      | DK 6019          | Q              | Sand                          | dark<br>red<br>brown   | fine sand to<br>v.crse sand<br>poorly sorted   | angular                                    |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 6020          | TEP            | Clay<br>sandy                 | dark<br>brown          | clay<br><br>well sorted                        |                                            |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6021          | TEP            | Clay<br>sandy                 | dark<br>brown          | clay<br><br>well sorted                        |                                            |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6022          | TEP            | Sand<br>clayey                | medium<br>brown        | v.fine sand to<br>medium sand<br>f.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6023          | TEP            | Sand<br>clayey                | light<br>grey          | clay to<br>fine sand<br>mod.well sorted        |                                            |                                          | 0.0                           |                                       |
| 20.0                 | 21.0      | DK 6024          | TEP            | Sand<br>clayey                | light<br>white         | clay to<br>fine sand<br>mod.well sorted        |                                            |                                          | 0.0                           |                                       |

000046

| DEPTH |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-------|------|------------------|----------------|-------------------------------|---------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| FROM  | TO   |                  |                |                               |                     |                                 |                                            |                                          |                               |                                      |
| (m)   | (m)  |                  |                |                               |                     |                                 |                                            |                                          |                               |                                      |
| 0.0   | 21.0 | DK 6025          |                | Composite Sample              |                     |                                 |                                            |                                          |                               | 0.14                                 |

EOH at 21.0 m

000047

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 727466 NORTHING: 6665232 R.L.: 154.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 12-OCT-90

HOLE NUMBER : M003

LOGGED BY : PRD  
 TOTAL DEPTH : 29.6

SHEET 1 OF 2 HOLE NUMBER : M003

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor      | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6026          | QA             | Sand<br>aeolian silty              | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>mod.well sorted |                                            |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       | DK 6027          | QA             | Sand<br>aeolian silty              | medium<br>red<br>brown | v.fine sand to<br>v.crse sand<br>poorly sorted   |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6028          | Q              | Sand<br>silty ferrug.              | dark<br>red<br>brown   | fine sand to<br>v.crse sand<br>poorly sorted     |                                            |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 6029          | Q              | Sand<br>silty ferrug.              | dark<br>red<br>brown   | fine sand to<br>v.crse sand<br>poorly sorted     |                                            |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 6030          | Q              | Sand<br>silty ferrug.<br>Clay      | dark<br>red<br>brown   | fine sand to<br>v.crse sand<br>poorly sorted     |                                            |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 12.0      | DK 6031          | Q              | Sand<br>silty ferrug.<br>Clay      | dark<br>red<br>brown   | fine sand to<br>v.crse sand<br>poorly sorted     |                                            |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 6032          | T              | Clay<br>silty ferrug.<br>Sand      | dark<br>red<br>brown   | fine sand to<br>v.crse sand<br>poorly sorted     |                                            |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 6033          | T              | Sand<br>clayey<br>Calcrete         | dark<br>red<br>brown   | fine sand to<br>fine sand<br>mod.well sorted     |                                            |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6034          | T              | Sand<br>ferrug. clayey             | dark<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   |                                            |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6035          | T              | Sand<br>ferrug. clayey             | dark<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   |                                            |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6036          | TEP            | Sand<br>ferrug. clayey<br>Silcrete | dark<br>red<br>brown   | v.fine sand to<br>fine sand<br>mod.well sorted   |                                            |                                          | 0.0                           |                                       |

000048

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor           | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-----------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                 | 24.0      | DK 6037          | TEP            | Sand<br>quartz.                         | medium<br>grey<br>brown   | medium sand<br>f.well sorted                     | sub-rounded                                |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 6038          | TEP            | Sand<br>quartz.                         | medium<br>grey<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 6039          | TEP            | Sand<br>ferrug.<br>Sandstone<br>laterit | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     |                                            |                                          | 0.0                           |                                       |
| 28.0                 | 29.6      | DK 6040          | TEP            | Sandstone<br>ferrug. laterit            | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | angular                                    | ceme<br>Ferruginous                      | 0.0                           |                                       |
| 0.0                  | 29.6      | DK 6041          |                | Composite Sample                        |                           |                                                  |                                            |                                          |                               | 0.14                                  |

EOH at 29.6 m

000049

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YARLE  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 12-OCT-90

HOLE NUMBER : M004

LOGGED BY : PRD  
TOTAL DEPTH : 24.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 728043 NORTHING: 6666009 R.L.: 165.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M004

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6042          | QA             | Sand<br>silty                 | medium<br>red<br>brown | v.fine sand to<br>coarse sand<br>poorly sorted |                                            |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       | DK 6043          | QB             | Sand<br>silty                 | medium<br>red<br>brown | v.fine sand to<br>coarse sand<br>poorly sorted |                                            |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 6044          | QB             | Sand<br>silty                 | medium<br>red<br>brown | v.fine sand to<br>coarse sand<br>poorly sorted |                                            |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 6045          | Q              | Sand<br>ferrug.<br>Clay       | medium<br>red<br>brown | fine sand to<br>medium sand<br>f.poorly sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6046          | Q              | Sand<br>ferrug.<br>Clay       | medium<br>red<br>brown | fine sand to<br>medium sand<br>f.poorly sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6047          | Q              | Sand<br>ferrug.               | dark<br>red<br>brown   | medium sand to<br>v.crse sand<br>poorly sorted | angular                                    |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 6048          | Q              | Sand<br>ferrug.<br>Sandstone  | dark<br>red<br>brown   | medium sand to<br>v.crse sand<br>poorly sorted | angular                                    |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 6049          | Q              | Sand                          | dark<br>red<br>brown   | medium sand to<br>v.crse sand<br>poorly sorted | angular                                    |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 6050          | Q              | Sand<br>Clay                  | dark<br>red<br>brown   | medium sand to<br>v.crse sand<br>poorly sorted | angular                                    |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6051          | T              | Sand<br>Clay                  | dark<br>red<br>brown   | medium sand to<br>v.crse sand<br>poorly sorted | angular                                    |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6052          | T              | Sand<br>Clay                  | dark<br>red<br>brown   | medium sand to<br>v.crse sand<br>poorly sorted | angular                                    |                                          | 0.0                           |                                       |

000050



| DEPTH       |           | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-------------|-----------|------------------|----------------|-------------------------------|---------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| FROM<br>(m) | TO<br>(m) |                  |                |                               |                     |                                 |                                            |                                          |                               |                                       |
| 22.0        | 24.0      | DK 6053          | T              | Sand                          | dark                | medium sand to                  | angular                                    |                                          | 0.0                           |                                       |
|             |           |                  |                | Clay                          | red<br>brown        | v.crse sand<br>poorly sorted    |                                            |                                          |                               |                                       |
| 0.0         | 24.0      | DK 6054          |                | Composite Sample              |                     |                                 |                                            |                                          |                               | 0.21                                  |

EOH at 24.0 m

000051

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 728649 NORTHING: 6666805 R.L.: 177.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M005

LOGGED BY : PRD

TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M005

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6055          | QA             | Sand<br>aeolian silty         | medium<br>red<br>brown | fine sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       | DK 6056          | QA             | Sand<br>silty<br>Calcrete     | medium<br>red<br>brown | fine sand to<br>coarse sand<br>mod.well sorted | interm.round.                              |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6057          | QB             | Sand<br>silty<br>Clay         | medium<br>red<br>brown | fine sand to<br>coarse sand<br>mod.well sorted | interm.round.                              |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6058          | QB             | Sand<br>silty<br>Clay         | medium<br>red<br>brown | fine sand to<br>coarse sand<br>mod.well sorted | interm.round.                              |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6059          | Q              | Sand<br>clayey                | dark<br>red<br>brown   | fine sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6060          | Q              | Sand<br>clayey                | dark<br>red<br>brown   | fine sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6061          | Q              | Sand<br>clayey                | dark<br>red<br>brown   | fine sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6062          | Q              | Sand<br>Sandstone<br>ferrug.  | dark<br>red<br>brown   | fine sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 6063          | Q              | Sand<br>Sandstone<br>ferrug.  | dark<br>red<br>brown   | fine sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 18.0                 | 20.0      | DK 6064          | T              | Sand<br>ferrug. clayey        | dark<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 20.0                 | 22.0      | DK 6065          | T              | Sand<br>ferrug. clayey        | dark<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |

000052

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                                  | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                 | 24.0      | DK 6066          | T              | Sand                                                           | dark<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 24.0                 | 26.0      | DK 6067          | T              | Sandstone<br>ferrug.<br>Sand<br>clayey<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 26.0                 | 28.0      | DK 6068          | T              | Clay<br>sandy<br>Sand                                          | dark<br>red<br>brown    | clay to<br>medium sand<br>mod.well sorted      | sub-angular                                |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 6069          | T              | Sand<br>clayey                                                 | banded<br>grey<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 0.0                  | 30.0      | DK 6070          |                | Composite Sample                                               |                         |                                                |                                            |                                          |                               | 0.14                                  |

EOH at 30.0 m

000053

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YARLE  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 12-OCT-90

HOLE NUMBER : M006

LOGGED BY : PRD  
TOTAL DEPTH : 42.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 729281 NORTHING: 6667548 R.L.: 195.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M006

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor           | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-----------------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6071          | QA             | Sand<br>silty aeolian                   | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       | DK 6072          | QA             | Sand<br>silty aeolian                   | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6073          | QB             | Sand<br>clayey                          | dark<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6074          | QB             | Sand<br>clayey                          | dark<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6075          | QB             | Sand<br>clayey                          | dark<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 12.0      | DK 6076          | Q              | Sand<br>ferrug.                         | dark<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 6077          | Q              | Sand<br>ferrug.                         | dark<br>red<br>brown   | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 6078          | Q              | Sand<br>ferrug.<br>Sandstone<br>ferrug. | dark<br>red<br>brown   | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 6079          | Q              | Sand<br>ferrug.<br>Sandstone<br>ferrug. | dark<br>red<br>brown   | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 18.0                 | 20.0      | DK 6080          | Q              | Sand<br>ferrug.<br>Sandstone<br>ferrug. | dark<br>red<br>brown   | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 20.0                 | 22.0      | DK 6081          | Q              | Sand<br>ferrug.                         | dark<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |

000054

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor           | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-----------------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                 | 24.0      | DK 6082          | TO             | Sand<br>quartz.                         | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 6083          | TO             | Sand<br>quartz.                         | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 6084          | TO             | Sand<br>quartz.                         | pale<br>yellow           | fine sand to<br>coarse sand<br>f.poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 6085          | TO             | Sand<br>quartz.                         | pale<br>yellow           | fine sand to<br>coarse sand<br>f.poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 6086          | TO             | Sand<br>quartz.                         | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 6087          | TO             | Sand<br>quartz.                         | light<br>grey            | v.fine sand to<br>fine sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 6088          | TO             | Sand<br>quartz.                         | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 6089          | TO             | Sand<br>quartz.                         | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 38.0                 | 40.0      | DK 6090          | TO             | Sand<br>quartz.                         | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 40.0                 | 42.0      | DK 6091          | TEH            | Grit<br>quartz.<br>Sandstone<br>ferrug. | dark<br>red<br>orange    | v.crse sand to<br>granule<br>mod.well sorted     | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                  | 42.0      | DK 6092          |                | Composite Sample                        |                          |                                                  |                                            |                                          |                               | 0.12                                  |

EOH at 42.0 m

000055

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 729860 NORTHING: 6668295 R.L.: 212.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 12-OCT-90

HOLE NUMBER : M007  
 LOGGED BY : PRD  
 TOTAL DEPTH : 27.0

SHEET 1 OF 2 HOLE NUMBER : M007

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6093          | QA             | Sand<br>aeolian                        | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       | DK 6094          | QA             | Sand<br>clayey                         | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6095          | QB             | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6096          | Q              | Sand<br>ferrug.                        | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | angular                                    |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6097          | Q              | Sand<br>ferrug.                        | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | angular                                    |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6098          | TO             | Sand<br>quartz.                        | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6099          | TO             | Sand<br>quartz.                        | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6100          | TO             | Sand<br>quartz.                        | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                | Comments: ooldea sand at 10 metres       | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6101          | TO             | Sand<br>quartz.                        | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6102          | TO             | Sand<br>quartz.                        | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6103          | TO             | Sand<br>quartz.                        | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |

000056

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                 | 24.0      | DK 6104          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 24.0                 | 26.0      | DK 6105          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 26.0                 | 27.0      | DK 6106          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 27.0      | DK 6107          |                | Composite Sample              |                     |                                                  |                                            |                                          |                               | 0.06                                  |

EOH at 27.0 m

000057

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 12-OCT-90

HOLE NUMBER : M008  
 LOGGED BY : PRD  
 TOTAL DEPTH : 24.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 730504 NORTHING: 6669069 R.L.: 232.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M008

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6108          | QA             | Sand<br>silty                         | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6109          | QA             | Sand<br>silty<br>Calcrete             | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6110          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6111          | Q              | Sand<br><br>Sandstone<br>ferrug.      | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6112          | Q              | Sand                                  | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6113          | Q              | Sand                                  | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6114          | TO             | Sand                                  | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6115          | TO             | Sand<br>quartz.                       | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | rounded                                    |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6116          | TO             | Sand<br>quartz.                       | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | rounded                                    |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6117          | TO             | Sand<br>quartz.                       | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | rounded                                    |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6118          | TO             | Sand<br>quartz.                       | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | rounded                                    |                                          | 0.0                           |                                       |

000058



| DEPTH       |           | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-------------|-----------|------------------|----------------|-------------------------------|---------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| FROM<br>(m) | TO<br>(m) |                  |                |                               |                     |                                                |                                            |                                          |                               |                                      |
| 22.0        | 24.0      | DK 6119          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>v.crse sand<br>poorly sorted | sub-rounded                                |                                          | 0.0                           |                                      |
| 0.0         | 24.0      | DK 6120          |                | Composite Sample              |                     |                                                |                                            |                                          |                               | 0.09                                 |

EOH at 24.0 m

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YARLE  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 12-OCT-90

HOLE NUMBER : M009

LOGGED BY : PRD  
TOTAL DEPTH : 33.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 731124 NORTHING: 6669813 R.L.: 243.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M009

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6121          | QA             | Sand<br>silty aeolian                  | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6122          | Q              | Sand<br>clayey                         | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6123          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6124          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6125          | Q              | Sand<br>ferrug.                        | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6126          | Q              | Sand<br>ferrug.                        | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6127          | Q              | Sand<br>ferrug.                        | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6128          | Q              | Sand<br>ferrug.                        | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6129          | Q              | Sand<br>ferrug.                        | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6130          | TO             | Sand<br>ferrug.                        | light<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6131          | TO             | Sand<br>quartz.                        | light<br>orange<br>grey  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |

090000

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                 | 24.0      | DK 6132          | TO             | Sand<br>quartz.               | light<br>orange<br>grey | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 6133          | TO             | Sand<br>quartz.               | light<br>orange<br>grey | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 6134          | TO             | Sand<br>quartz.               | light<br>grey           | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 6135          | TO             | Sand<br>quartz.               | light<br>grey           | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 6136          | TO             | Sand<br>quartz.               | light<br>grey           | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 32.0                 | 33.0      | DK 6137          | TO             | Sand<br>quartz.               | light<br>grey           | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                  | 33.0      | DK 6138          |                | Composite Sample              |                         |                                                  |                                            |                                          |                               | 0.09                                  |

EOH at 33.0 m

000061

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 731743 NORTHING: 6670632 R.L.: 264.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M010

LOGGED BY : PRD

TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M010

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6139          | QA             | Sand<br>silty                    | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6140          | QB             | Sand<br>silty<br>Calcrete        | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6141          | QB             | Sand<br>silty<br>Calcrete        | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6142          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6143          | Q              | Sand<br>clayey                   | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 12.0      | DK 6144          | Q              | Sand<br>clayey                   | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 6145          | Q              | Sand<br>clayey                   | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 6146          | Q              | Sand<br>clayey                   | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 6147          | Q              | Sand<br>ferrug.                  | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6148          | Q              | Sand<br>ferrug.                  | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6149          | TO             | Sand<br>ferrug.                  | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |

000062

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 22.0                 | 24.0      | DK 6150          | TO             | Sand                          | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                      |
| 24.0                 | 26.0      | DK 6151          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                      |
| 26.0                 | 28.0      | DK 6152          | TO             | Sand<br>quartz.               | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                      |
| 28.0                 | 30.0      | DK 6153          | TO             | Sand<br>quartz.<br>Sandstone  | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                      |
| 0.0                  | 30.0      | DK 6154          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.04                                 |

EOH at 30.0 m

000063

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YARLE  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 13-OCT-90

HOLE NUMBER : M011

LOGGED BY : PRD  
TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52

RELIABILITY: TOPO

EASTING: 732302

NORTHING: 6671363

R.L.: 273.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M011

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6155          | QA             | Sand<br>silty aeolian                  | medium<br>red<br>brown  | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6156          | QB             | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6157          | QB             | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6158          | Q              | Sand<br>ferrug.                        | medium<br>red<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6159          | Q              | Sand<br>ferrug.                        | medium<br>red<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6160          | Q              | Sand<br>ferrug.                        | medium<br>red<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6161          | Q              | Sand<br>ferrug.                        | medium<br>red<br>brown  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6162          | Q              | Sand<br>ferrug.                        | medium<br>red<br>brown  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6163          | TO             | Sand<br>ferrug.                        | medium<br>red<br>brown  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6164          | TO             | Sand<br>quartz.                        | light<br>grey<br>orange | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6165          | TO             | Sand<br>quartz.                        | light<br>grey<br>orange | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.0                           |                                       |

000064

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                 | 24.0      | DK 6166          | TO             | Sand<br>quartz.               | light<br>grey<br>orange | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 6167          | TO             | Sand<br>quartz.               | light<br>grey<br>orange | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 6168          | TO             | Sand<br>quartz.               | light<br>grey<br>orange | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 6169          | TO             | Sand<br>quartz.               | light<br>grey<br>orange | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                  | 30.0      | DK 6170          |                | Composite Sample              |                         |                                                  |                                            |                                          |                               | 0.06                                  |

EOH at 30.0 m

000065

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 13-OCT-90

HOLE NUMBER : M012  
 LOGGED BY : PRD  
 TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 732992 NORTHING: 6672057 R.L.: 260.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M012

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6171          | QA             | Sand<br>silty aeolian         | medium<br>red<br>brown | v.fine sand to<br>fine sand<br>well sorted       | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6172          | QB             | Sand<br>clayey ferrug.        | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 6173          | QB             | Sand<br>clayey ferrug.        | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 6174          | Q              | Sand<br>ferrug.               | medium<br>red<br>brown | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 6175          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 12.0      | DK 6176          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 6177          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 6178          | TO             | Sand                          | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6179          | TO             | Sand                          | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6180          | TO             | Sand                          | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6181          | TO             | Sand                          | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | rounded                                    |                                          | 0.0                           |                                       |

990000



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 22.0                 | 24.0      | DK 6182          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown   | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                      |
| 24.0                 | 26.0      | DK 6183          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown   | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                      |
| 26.0                 | 28.0      | DK 6184          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                      |
| 28.0                 | 30.0      | DK 6185          | TO             | Sand<br>ferrug.               | medium<br>orange<br>grey | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                      |
| 0.0                  | 30.0      | DK 6186          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.06                                 |

EOH at 30.0 m

000067

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 733596 NORTHING: 6672903 R.L.: 249.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M013

LOGGED BY : PRD

TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M013

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6187          | QA             | Sand<br>silty aeolian                  | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6188          | QB             | Sand<br>clayey                         | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6189          | QB             | Sand<br>clayey<br>Calcrete<br>clayey   | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6190          | Q              | Sand<br>clayey ferrug.                 | dark<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6191          | Q              | Sand<br>clayey                         | dark<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6192          | Q              | Sand<br>clayey                         | dark<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6193          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | dark<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6194          | Q              | Sand                                   | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6195          | Q              | Sand                                   | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6196          | TO             | Sand                                   | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6197          | TO             | Sand                                   | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |

890000

| DEPTH       |           | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| FROM<br>(m) | TO<br>(m) |                  |                |                               |                          |                                                  |                                            |                                          |                               |                                       |
| 22.0        | 24.0      | DK 6198          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 24.0        | 26.0      | DK 6199          | TO             | Sand                          | light<br>orange<br>grey  | medium sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 26.0        | 28.0      | DK 6200          | TO             | Sand                          | light<br>grey            | medium sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 28.0        | 30.0      | DK 6201          | TO             | Sand                          | light<br>grey            | medium sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0         | 30.0      | DK 6202          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.05                                  |

EOH at 30.0 m

6900000

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 13-OCT-90

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 734024 NORTHING: 6673333 R.L.: 245.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M014

LOGGED BY : PRD

TOTAL DEPTH : 24.0

SHEET 1 OF 2 HOLE NUMBER : M014

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6203          | QA             | Sand<br>silty aeolian<br>Calcrete      |                           | fine sand to<br>medium sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6204          | QB             | Sand<br>clayey<br>Clay                 | dark<br>red<br>brown      | clay to<br>coarse sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6205          | Q              | Sand<br>Sandstone<br>ferrug.           | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6206          | Q              | Sand<br>ferrug. clayey                 | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6207          | Q              | Sand<br>ferrug. clayey                 | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6208          | Q              | Sand<br>clayey                         | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6209          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6210          | Q              | Sand                                   | medium<br>orange<br>brown | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6211          | TO             | Sand                                   | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6212          | TO             | Sand                                   | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6213          | TO             | Sand                                   | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |

000070

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 22.0                        | 24.0 | DK 6214          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                      |
| 0.0                         | 24.0 | DK 6215          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.06                                 |

EOH at 24.0 m

000071

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 14-OCT-90

HOLE NUMBER : M021  
 LOGGED BY : PRD  
 TOTAL DEPTH : 45.0  
 R.L.: 195.0 AZIM.: 0.0 INCL.: -90.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 716406 NORTHING: 6674310

SHEET 1 OF 2 HOLE NUMBER : M021

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|--------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6249          | QA             | Sand<br>silty aeolian<br>Calcrete     | light<br>red<br>brown    | silt to<br>medium sand<br>poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>clayey<br>Sand                | medium<br>red<br>brown   | clay to<br>medium sand<br>poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6250          | Q              | Sand<br>clayey                        | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6251          | Q              | Sand<br>silty                         | medium<br>red<br>brown   | fine sand<br>well sorted                       | sub-rounded                                |                                          | 0.2<br>light trace            | 0.11                                  |
| 8.0                  | 10.0      | DK 6252          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand<br>well sorted                       | sub-rounded                                |                                          | 0.2<br>light trace            | 0.10                                  |
| 10.0                 | 12.0      | DK 6253          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand<br>well sorted                       | sub-rounded                                |                                          | 0.2<br>light trace            | 0.03                                  |
| 12.0                 | 14.0      | DK 6254          | Q              | Sand                                  | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           | 0.08                                  |
| 14.0                 | 16.0      | DK 6255          | TO             | Sand                                  | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6256          | TO             | Sand<br>quartz.                       | pale<br>orange<br>yellow | medium sand<br>well sorted                     | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6257          | TO             | Sand<br>quartz.                       | pale<br>orange<br>grey   | medium sand<br>well sorted                     | sub-rounded                                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6258          | TO             | Sand<br>quartz.                       | pale<br>orange<br>grey   | medium sand<br>well sorted                     | sub-rounded                                |                                          | 0.0                           |                                       |

000072

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                 | 24.0      | DK 6259          | TO             | Sand<br>quartz.               | light<br>grey            | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 6260          | TO             | Sand<br>quartz.               | light<br>grey            | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 6261          | TO             | Sand<br>quartz.<br>Sandstone  | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                | cons<br>Siliceous                        | 0.0                           | 0.04                                  |
| 28.0                 | 30.0      | DK 6262          | TO             | Sand<br>quartz.<br>Sandstone  | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                | cons<br>Siliceous                        | 0.2<br>light trace            | 0.04                                  |
| 30.0                 | 32.0      | DK 6263          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.2<br>light trace            | 0.04                                  |
| 32.0                 | 34.0      | DK 6264          | TO             | Sand<br>Sandstone             | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                | ceme<br>Siliceous                        | 0.0                           | 0.02                                  |
| 34.0                 | 36.0      | DK 6265          | TEH            | Sand                          | pale<br>red<br>grey      | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 6266          | TEH            | Sand<br>Sandstone             | light<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 38.0                 | 40.0      | DK 6267          | TEH            | Sand                          | pale<br>red<br>grey      | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 40.0                 | 42.0      | DK 6268          | TEH            | Sand                          | banded<br>orange<br>grey | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 42.0                 | 44.0      | DK 6269          | TEH            | Sand                          | pale<br>orange<br>grey   | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 44.0                 | 45.0      | DK 6270          | TEH            | Sand                          | light<br>grey            | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |

EOH at 45.0 m

000073

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 717040 NORTHING: 6674994 R.L.: 205.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 14-OCT-90

HOLE NUMBER : M022  
 LOGGED BY : PRD  
 TOTAL DEPTH : 24.0

SHEET 1 OF 2 HOLE NUMBER : M022

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6271          | QA             | Sand<br>silty                 | light<br>red<br>brown  | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6272          | QA             | Sand<br>clayey                | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy                 | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy                 | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6273          | Q              | Sand<br>clayey ferrug.        | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 12.0      | DK 6274          | Q              | Sand<br>clayey ferrug.        | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 6275          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6276          | Q              | Sand<br>clayey ferrug.        | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 6277          | Q              | Sand<br>clayey ferrug.        | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 18.0                 | 20.0      | DK 6278          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6279          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |

000074



| DEPTH |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-------|------|------------------|----------------|-------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| FROM  | TO   |                  |                |                               |                         |                                                |                                            |                                          |                               |                                      |
| (m)   | (m)  |                  |                |                               |                         |                                                |                                            |                                          |                               |                                      |
| 22.0  | 24.0 | DK 6280          | TO             | Sand<br>ferrug.               | light<br>orange<br>grey | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                      |
| 0.0   | 24.0 | DK 6281          |                | Composite Sample              |                         |                                                |                                            |                                          |                               | 0.07                                 |

EOH at 24.0 m

000075

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 717834 NORTHING: 6675824 R.L.: 221.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 14-OCT-90

HOLE NUMBER : M023  
 LOGGED BY : PRD  
 TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M023

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor  | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|--------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6282          | QA             | Sand<br>silty                  | light<br>red<br>brown     | silt to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy                  | light<br>red<br>brown     | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6283          | Q              | Sand<br>ferrug. clayey<br>Clay | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6284          | Q              | Sand<br>ferrug.                | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6285          | Q              | Sand<br>ferrug.                | medium<br>red<br>brown    | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6286          | Q              | Sand<br>ferrug.                | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6287          | Q              | Sand<br>ferrug.<br>Sandstone   | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 6288          | Q              | Sand<br>ferrug.<br>Sandstone   | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 6289          | Q              | Sand<br>ferrug.                | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6290          | Q              | Sand<br>ferrug.                | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6291          | Q              | Sand                           | medium<br>red<br>brown    | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |

000076

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |      |                  |                |                               |                         |                                                  |                                            |                                          |                               |                                       |
| 22.0                        | 24.0 | DK 6292          | TO             | Sand<br>quartz.               | light<br>orange<br>grey | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 6293          | TO             | Sand<br>quartz.               | light<br>orange<br>grey | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 6294          | TO             | Sand<br>quartz.               | light<br>grey           | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 6295          | TO             | Sand<br>quartz.               | light<br>grey           | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                         | 30.0 | DK 6296          |                | Composite Sample              |                         |                                                  |                                            |                                          |                               | 0.07                                  |

EOH at 30.0 m

000077

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 718507 NORTHING: 6676515 R.L.: 218.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M024

LOGGED BY : PRD

TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M024

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6297          | QA             | Sand<br>silty                          | medium<br>red<br>brown | silt<br>to<br>medium sand<br>poorly sorted       | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6298          | QA             | Sand<br>silty                          | medium<br>red<br>brown | silt<br>to<br>medium sand<br>poorly sorted       | sub-rounded                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy                          | medium<br>red<br>brown | clay<br>to<br>medium sand<br>poorly sorted       | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy                          | dark<br>red<br>brown   | clay<br>to<br>medium sand<br>poorly sorted       | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6299          | Q              | Sand<br>clayey                         | medium<br>red<br>brown | fine sand<br>to<br>coarse sand<br>poorly sorted  | sub-angular                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6300          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown | fine sand<br>to<br>coarse sand<br>poorly sorted  | sub-angular                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6301          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown | fine sand<br>to<br>coarse sand<br>poorly sorted  | sub-angular                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6302          | Q              | Sand                                   | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6303          | Q              | Sand                                   | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 18.0                 | 20.0      | DK 6304          | Q              | Sand                                   | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 20.0                 | 22.0      | DK 6305          | TO             | Sand                                   | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |

000078

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |      |                  |                |                               |                           |                                                  |                                            |                                          |                               |                                       |
| 22.0                        | 24.0 | DK 6306          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 6307          | TO             | Sand                          | medium<br>orange<br>brown | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 6308          | TO             | Sand                          | medium<br>orange<br>brown | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 6309          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 0.0                         | 30.0 | DK 6310          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.08                                  |

EOH at 30.0 m

000079

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YARLE  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 14-OCT-90

HOLE NUMBER : M025

LOGGED BY : PRD  
TOTAL DEPTH : 33.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 718881 NORTHING: 6676918 R.L.: 215.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M025

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6311          | QA             | Sand<br>silty aeolian         | light<br>red<br>brown  | silt to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       | DK 6312          | QA             | Sand<br>clayey                | light<br>red<br>brown  | silt to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy                 | dark<br>red<br>brown   | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy                 | dark<br>red<br>brown   | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6313          | Q              | Sand<br>clayey<br>Clay        | dark<br>red<br>brown   | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6314          | Q              | Sand<br>gritty                | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 6315          | Q              | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6316          | Q              | Sand<br>silty                 | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6317          | Q              | Sand<br>silty                 | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 18.0                 | 20.0      | DK 6318          | Q              | Sand                          | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6319          | Q              | Sand                          | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |

000000

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                 | 24.0      | DK 6320          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 6321          | TO             | Sand                          | light<br>orange<br>grey   | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 6322          | TO             | Sand<br>quartz.               | light<br>orange<br>grey   | medium sand to<br>granule<br>poorly sorted       | sub-rounded                                |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 6323          | TO             | Sand<br>quartz.               | light<br>yellow<br>grey   | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 6324          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 32.0                 | 33.0      | DK 6325          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                  | 33.0      | DK 6326          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.11                                  |

EOH at 33.0 m

000081

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 719120 NORTHING: 6677172 R.L.: 219.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 14-OCT-90

HOLE NUMBER : M026  
 LOGGED BY : PRD  
 TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M026

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6327          | QA             | Sand<br>silty aeolian                  | medium<br>red<br>brown | silt<br>coarse sand<br>poorly sorted             | to<br>sub-angular                          |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6328          | QA             | Sand<br>silty aeolian                  | medium<br>red<br>brown | silt<br>coarse sand<br>poorly sorted             | to<br>sub-angular                          |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy                          | dark<br>red<br>brown   | clay<br>medium sand<br>poorly sorted             | to                                         |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy                          | dark<br>red<br>brown   | clay<br>medium sand<br>poorly sorted             | to                                         |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | QB             | Clay<br>sandy                          | dark<br>red<br>brown   | clay<br>medium sand<br>poorly sorted             | to                                         |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6329          | Q              | Sand<br>clayey                         | medium<br>red<br>brown | fine sand<br>coarse sand<br>poorly sorted        | to<br>sub-angular                          |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6330          | Q              | Sand<br>clayey                         | medium<br>red<br>brown | fine sand<br>coarse sand<br>poorly sorted        | to<br>sub-angular                          |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6331          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown | fine sand<br>coarse sand<br>poorly sorted        | to<br>sub-angular                          |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6332          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown | fine sand<br>coarse sand<br>poorly sorted        | to<br>sub-angular                          |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6333          | Q              | Sand<br>Sandstone<br>ferrug.           | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6334          | TO             | Sand<br>Sandstone                      | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |

000082



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                 | 24.0      | DK 6335          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 24.0                 | 26.0      | DK 6336          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown    | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 26.0                 | 28.0      | DK 6337          | TO             | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 28.0                 | 30.0      | DK 6338          | TO             | Sand<br>quartz.               | light<br>orange<br>grey   | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 0.0                  | 30.0      | DK 6339          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.13                                  |

EOH at 30.0 m

000083

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 719549 NORTHING: 6677581 R.L.: 227.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M027

CONTRACTOR : Wallis Drilling

RIG TYPE : Mantis 75

DATE DRILLED: 14-OCT-90

LOGGED BY : PRD

TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M027

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6340          | QA             | Sand<br>silty aeolian                  | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6341          | QA             | Sand<br>silty aeolian                  | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy                          | dark<br>red<br>brown     | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy                          | dark<br>red<br>brown     | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6342          | Q              | Sand<br>clayey                         | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     |                                            |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6343          | Q              | Sand<br>clayey                         | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     |                                            |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 6344          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     |                                            |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 6345          | Q              | Sand<br>Sandstone<br>ferrug.           | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6346          | TO             | Sand                                   | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6347          | TO             | Sand                                   | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 20.0                 | 22.0      | DK 6348          | TO             | Sand                                   | light<br>orange<br>brown | medium sand to<br>coarse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |

000084

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                        | 24.0 | DK 6349          | TO             | Sand                          | light<br>orange<br>brown | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 6350          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 6351          | TO             | Sand                          | light<br>orange<br>brown | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 6352          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                         | 30.0 | DK 6353          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.08                                  |

EOH at 30.0 m

000085

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YARLE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 720268 NORTHING: 6678370 R.L.: 244.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M028

LOGGED BY : PRD

TOTAL DEPTH : 24.0

SHEET 1 OF 2 HOLE NUMBER : M028

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6354          | QA             | Sand<br>silty                 | light<br>red<br>brown     | silt<br>to<br>medium sand<br>poorly sorted       | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy                 | medium<br>red<br>brown    | clay<br>to<br>medium sand<br>poorly sorted       |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6355          | Q              | Sand<br>clayey                | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6356          | Q              | Sand<br>clayey                | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 6357          | Q              | Sand<br>clayey                | medium<br>red<br>brown    | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                | Comments: very fine hm                   | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6358          | Q              | Sand<br>clayey                | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6359          | Q              | Sand<br>clayey                | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6360          | Q              | Sand<br>clayey                | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6361          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6362          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6363          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |

000086

| DEPTH |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-------|------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| FROM  | TO   |                  |                |                               |                           |                                                  |                                            |                                          |                               |                                      |
| (m)   | (m)  |                  |                |                               |                           |                                                  |                                            |                                          |                               |                                      |
| 22.0  | 24.0 | DK 6364          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                      |
| 0.0   | 24.0 | DK 6365          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.07                                 |

EOH at 24.0 m

000087

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 720633 NORTHING: 6679296 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 14-OCT-90

HOLE NUMBER : M029  
 LOGGED BY : PRD  
 TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M029

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6366          | QA             | Sand<br>silty<br>Calcrete     | pale<br>red<br>brown   | silt to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6367          | QB             | Sand<br>clayey<br>Clay        | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6368          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6369          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6370          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6371          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6372          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6373          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6374          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6375          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6376          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |

8800088

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                        | 24.0 | DK 6377          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 6378          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 6379          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 6380          | TO             | Sand                          | light<br>orange<br>grey | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                         | 30.0 | DK 6381          |                | Composite Sample              |                         |                                                  |                                            |                                          |                               | 0.04                                  |

EOH at 30.0 m

680000

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 14-OCT-90

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 720942 NORTHING: 6680251 R.L.: 273.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M030

LOGGED BY : PRD

TOTAL DEPTH : 60.0

SHEET 1 OF 3 HOLE NUMBER : M030

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6382          | QA             | Sand<br>silty<br>Calcrete              | light<br>red<br>brown     | silt to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy                          | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6383          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6384          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6385          | Q              | Sand<br>ferrug.                        | medium<br>red<br>brown    | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6386          | Q              | Sand<br>ferrug.<br>Sandstone           | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6387          | Q              | Sand                                   | medium<br>red<br>brown    | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6388          | TO             | Sand                                   | medium<br>red<br>brown    | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6389          | TO             | Sand                                   | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6390          | TO             | Sand                                   | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                  | 20.0      | DK 6411          |                | Composite Sample                       |                           |                                                  |                                            |                                          |                               | 0.11                                  |

000090



| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                        | 22.0 | DK 6391          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 6392          | TO             | Sand                          | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 6393          | TO             | Sand                          | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 6394          | TO             | Sand                          | light<br>orange<br>grey   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 6395          | TO             | Sand                          | light<br>grey             | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 30.0                        | 32.0 | DK 6396          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 32.0                        | 34.0 | DK 6397          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 34.0                        | 36.0 | DK 6398          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 36.0                        | 38.0 | DK 6399          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 38.0                        | 40.0 | DK 6400          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 20.0                        | 40.0 | DK 6412          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.02                                  |
| 40.0                        | 42.0 | DK 6401          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 42.0                        | 44.0 | DK 6402          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |

000091

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 44.0                        | 46.0 | DK 6403          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 46.0                        | 48.0 | DK 6404          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 48.0                        | 50.0 | DK 6405          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 50.0                        | 52.0 | DK 6406          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 52.0                        | 54.0 | DK 6407          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 54.0                        | 56.0 | DK 6408          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 56.0                        | 58.0 | DK 6409          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 58.0                        | 60.0 | DK 6410          | TO             | Sand<br>quartz.               | light<br>grey       | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 40.0                        | 60.0 | DK 6413          |                | Composite Sample              |                     |                                                  |                                            |                                          |                               | 0.01                                  |

EOH at 60.0 m

000092

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 721290 NORTHING: 6681225 R.L.: 257.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 15-OCT-90

HOLE NUMBER : M031

LOGGED BY : PRD  
 TOTAL DEPTH : 27.0

SHEET 1 OF 2 HOLE NUMBER : M031

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty<br>Clay         | medium<br>red<br>brown    | silt to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       | DK 6414          | QB             | Clay<br>sandy                 | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6415          | Q              | Sand<br>ferrug.               | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 6416          | Q              | Sand<br>ferrug.<br>Sandstone  | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6417          | Q              | Sand<br>ferrug.               | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6418          | TO             | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6419          | TO             | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6420          | TO             | Sand<br>ferrug.               | light<br>orange<br>grey   | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6421          | TO             | Sand<br>quartz.               | medium<br>grey            | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6422          | TO             | Sand                          | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6423          | TO             | Sand                          | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |

000093

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 22.0                        | 24.0 | DK 6424          | TO             | Sand                          | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                      |
| 24.0                        | 26.0 | DK 6425          | TO             | Sand                          | light<br>grey       | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                      |
| 26.0                        | 27.0 | DK 6426          | TO             | Sand                          | light<br>grey       | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                      |
| 0.0                         | 27.0 | DK 6427          |                | Composite Sample              |                     |                                                  |                                            |                                          |                               | 0.06                                 |

EOH at 27.0 m

000094

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 721610 NORTHING: 6682200 R.L.: 243.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 15-OCT-90

HOLE NUMBER : M032  
 LOGGED BY : PRD  
 TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M032

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                   | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|---------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6428          | QA             | Sand<br>silty                 | light<br>red<br>brown    | silt<br>to<br>medium sand<br>poorly sorted        | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy                 | medium<br>red<br>brown   | clay<br>to<br>medium sand<br>poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6429          | Q              | Sand<br>ferrug.               | medium<br>red<br>brown   | fine sand<br>to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 6430          | Q              | Sand<br>clayey ferrug.        | medium<br>red<br>brown   | fine sand<br>to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 6431          | Q              | Sand<br>clayey ferrug.        | medium<br>red<br>brown   | fine sand<br>to<br>coarse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6442          |                | Composite Sample              |                          |                                                   |                                            |                                          |                               | 0.20                                  |
| 10.0                 | 12.0      | DK 6432          | Q              | Sand<br>clayey ferrug.        | medium<br>red<br>brown   | fine sand<br>to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6433          | TO             | Sand                          | light<br>orange<br>brown | fine sand<br>to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6434          | TO             | Sand                          | light<br>orange<br>brown | fine sand<br>to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 6435          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted  | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 18.0                 | 20.0      | DK 6436          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted  | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |

000095

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                        | 20.0 | DK 6443          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.08                                  |
| 20.0                        | 22.0 | DK 6437          | TO             | Sand                          | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 22.0                        | 24.0 | DK 6438          | TO             | Sand                          | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 24.0                        | 26.0 | DK 6439          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 6440          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 6441          | TO             | Sand                          | light<br>orange<br>grey   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 20.0                        | 30.0 | DK 6444          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.04                                  |

EOH at 30.0 m

000096

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 721950 NORTHING: 6683170 R.L.: 230.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 15-OCT-90

HOLE NUMBER : M033

LOGGED BY : PRD

TOTAL DEPTH : 24.0

SHEET 1 OF 2 HOLE NUMBER : M033

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6445          | QA             | Sand<br>silty<br>Clay                 | light<br>red<br>brown    | silt to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand                 | medium<br>red<br>brown   | clay to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6446          | Q              | Sand<br>clayey ferrug.                | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 6447          | Q              | Sand<br>Sandstone<br>ferrug.          | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                | ceme<br>Ferruginous                      | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6448          | Q              | Sand                                  | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6456          |                | Composite Sample                      |                          |                                                  |                                            |                                          |                               | 0.13                                  |
| 10.0                 | 12.0      | DK 6449          | Q              | Sand<br>Sandstone<br>ferrug.          | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 6450          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 6451          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 6452          | Q              | Sand                                  | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6453          | TO             | Sand                                  | light<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |

000097

| DEPTH       |           | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-------------|-----------|------------------|----------------|-------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| FROM<br>(m) | TO<br>(m) |                  |                |                               |                         |                                                  |                                            |                                          |                               |                                       |
| 20.0        | 22.0      | DK 6454          | TO             | Sand<br>quartz.               | light<br>orange<br>grey | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 22.0        | 24.0      | DK 6455          | TO             | Sand<br>quartz.               | light<br>grey           | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 10.0        | 24.0      | DK 6457          |                | Composite Sample              |                         |                                                  |                                            |                                          |                               | 0.05                                  |

EOH at 24.0 m

000098



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 15-OCT-90

HOLE NUMBER : M034

LOGGED BY : PRD  
TOTAL DEPTH : 24.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 722300 NORTHING: 6684145 R.L.: 224.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M034

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                  | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6458          | QA             | Sand<br>silty                                  | light<br>red<br>brown     | silt<br>to<br>medium sand<br>poorly sorted       | sub-rounded                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy                                  | medium<br>red<br>brown    | clay<br>to<br>medium sand<br>poorly sorted       |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6459          | Q              | Sand<br>ferrug. clayey                         | medium<br>red<br>brown    | fine sand<br>to<br>coarse sand<br>poorly sorted  | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6460          | Q              | Sand<br>ferrug. clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand<br>to<br>coarse sand<br>poorly sorted  | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6461          | Q              | Sand<br>ferrug. clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6469          |                | Composite Sample                               |                           |                                                  |                                            |                                          |                               | 0.21                                  |
| 10.0                 | 12.0      | DK 6462          | Q              | Sand<br>ferrug. clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6463          | Q              | Sand<br>Sandstone<br>ferrug.                   | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 6464          | Q              | Sand                                           | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 6465          | TO             | Sand                                           | medium<br>red<br>brown    | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6466          | TO             | Sand<br>ferrug.                                | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |

660000

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-----------------------------|------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 20.0                        | 22.0 | DK 6467          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                      |
| 22.0                        | 24.0 | DK 6468          | TO             | Sand<br>quartz.               | light<br>yellow<br>grey  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                      |
| 10.0                        | 24.0 | DK 6470          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.08                                 |

EOH at 24.0 m

000100

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 722610 NORTHING: 6685080 R.L.: 214.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 15-OCT-90

HOLE NUMBER : M035

LOGGED BY : PRD

TOTAL DEPTH : 27.0

SHEET 1 OF 2 HOLE NUMBER : M035

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor            | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                     | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------------------------|------------------------|-----------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6471          | QA             | Sand<br>silty                            | light<br>red<br>brown  | silt<br>to<br>v.crse sand<br>poorly sorted          | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand                    | medium<br>red<br>brown | clay<br>to<br>coarse sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand                    | medium<br>red<br>brown | clay<br>to<br>coarse sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6472          | Q              | Sand                                     | medium<br>red<br>brown | fine sand<br>to<br>coarse sand<br>poorly sorted     | sub-angular                                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6473          | Q              | Sandstone<br>ferrug.<br>Sand             | medium<br>red<br>brown | medium sand<br>to<br>coarse sand<br>mod.well sorted | sub-rounded                                | weak<br>cons<br>Ferruginous              | 0.2<br>light trace            |                                       |
| 0.0                  | 10.0      | DK 6483          |                | Sandstone<br>ferrug.<br>Composite Sample |                        |                                                     |                                            |                                          |                               | 0.21                                  |
| 10.0                 | 12.0      | DK 6474          | Q              | Sand                                     | medium<br>red<br>brown | medium sand<br>to<br>coarse sand<br>mod.well sorted | sub-rounded                                | weak<br>cons<br>Ferruginous              | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 6475          | Q              | Sandstone<br>ferrug.<br>Sand             | medium<br>red<br>brown | medium sand<br>to<br>coarse sand<br>mod.well sorted | sub-rounded                                | weak<br>cons<br>Ferruginous              | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 6476          | Q              | Sandstone<br>ferrug.<br>Sand             | medium<br>red<br>brown | medium sand<br>to<br>coarse sand<br>mod.well sorted | sub-rounded                                | weak<br>cons<br>Ferruginous              | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 6477          | TO             | Sandstone<br>ferrug.<br>Sand             | medium<br>red          | medium sand<br>to<br>coarse sand                    | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |

000101

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 18.0                 | 20.0      | DK 6478          | TO             | Sand                          | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                      |
| 10.0                 | 20.0      | DK 6484          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.12                                 |
| 20.0                 | 22.0      | DK 6479          | TO             | Sand                          | medium<br>red<br>brown   | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                      |
| 22.0                 | 24.0      | DK 6480          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                      |
| 24.0                 | 26.0      | DK 6481          | TO             | Sand<br>quartz.               | light<br>yellow<br>grey  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                      |
| 26.0                 | 27.0      | DK 6482          | TO             | Sand<br>quartz.               | light<br>yellow<br>grey  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                      |
| 20.0                 | 27.0      | DK 6485          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.08                                 |

EOH at 27.0 m

000102

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 15-OCT-90

HOLE NUMBER : M036  
 LOGGED BY : PRD  
 TOTAL DEPTH : 36.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 723100 NORTHING: 6685870 R.L.: 205.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M036

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor            | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Calcrete                                 | light<br>red<br>brown   | silt<br>medium sand<br>to<br>poorly sorted       | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty<br>Calcrete                | light<br>red<br>brown   | silt<br>medium sand<br>to<br>poorly sorted       | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>silty<br>Clay<br>sandy           | medium<br>red<br>brown  | clay<br>medium sand<br>to<br>poorly sorted       | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy                            | medium<br>red<br>brown  | clay<br>medium sand<br>to<br>poorly sorted       | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6486          | Q              | Sand                                     | medium<br>red<br>brown  | fine sand<br>coarse sand<br>to<br>poorly sorted  | sub-angular                                | cons<br>Ferruginous                      | 0.5<br>trace                  |                                       |
| 0.0                  | 10.0      | DK 6500          |                | Sandstone<br>ferrug.<br>Composite Sample |                         |                                                  |                                            |                                          |                               | 0.25                                  |
| 10.0                 | 12.0      | DK 6487          | TO             | Sand                                     | medium<br>red<br>grey   | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 6488          | TO             | Sand                                     | light<br>grey           | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6489          | TO             | Sand                                     | light<br>grey           | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6490          | TO             | Sand                                     | light<br>grey           | v.crse sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6491          | TO             | Sand                                     | light<br>yellow<br>grey | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |

000103

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                                            | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|--------------------------|----------------------------------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 6492          | TO             | Sand                                   | light<br>yellow<br>grey  | v.crse sand<br>well sorted                                                 | rounded                                    |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 6493          | TO             | Sand<br>gritty                         | light<br>yellow<br>grey  | v.crse sand to<br>granule<br>mod.well sorted                               | sub-rounded                                |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 6494          | TEH            | Grit<br><br>Sandstone<br>quartz.       | light<br>yellow<br>grey  | v.crse sand to<br>granule<br>mod.well sorted                               | rounded                                    |                                          | 0.0                           |                                       |
| 10.0                 | 26.0      | DK 6501          |                | Composite Sample                       |                          |                                                                            |                                            |                                          |                               | 0.03                                  |
| 26.0                 | 28.0      | DK 6495          | TEH            | Sand<br>gritty<br>Sandstone<br>quartz. | light<br>yellow<br>grey  | coarse sand to<br>v.crse sand<br>mod.well sorted                           | rounded                                    | trace                                    | 0.5                           | 0.24                                  |
| 28.0                 | 30.0      | DK 6496          | TEH            | Sand                                   | pale<br>red<br>brown     | v.fine sand to<br>fine sand<br>mod.well sorted                             | sub-rounded                                | trace                                    | 0.5                           | 0.26                                  |
| 30.0                 | 32.0      | DK 6497          | TEH            | Sand                                   | pale<br>red<br>brown     | v.fine sand to<br>fine sand<br>mod.well sorted                             | sub-rounded                                | Good trace                               | 1.0                           | 0.94                                  |
| 32.0                 | 34.0      | DK 6498          | TEH            | Sand                                   | pale<br>red<br><br>brown | v.fine sand to<br>fine sand<br><br>mod.well sorted                         | sub-rounded                                | V.good<br>trace                          | 2.0                           | 2.99                                  |
| 34.0                 | 36.0      | DK 6499          | TEH            | Sand                                   | pale<br>red<br>brown     | Comments: heavies in pan<br>v.fine sand to<br>fine sand<br>mod.well sorted | sub-rounded                                | Good trace                               | 1.0                           | 1.45                                  |

EOH at 36.0 m

000104

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 723460 NORTHING: 6686240 R.L.: 210.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 15-OCT-90

HOLE NUMBER : M037  
 LOGGED BY : PRD  
 TOTAL DEPTH : 39.5

SHEET 1 OF 2 HOLE NUMBER : M037

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue  | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Calcrete                      | pale<br>red<br>brown | fine sand to<br>medium sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
|                      |           |                  |                | Sand<br>silty                 |                      | Comments: calcrete nodules                       |                                            |                                          |                               |                                       |
| 2.0                  | 4.0       |                  | QA             | Calcrete                      | pale<br>red<br>brown | v.fine sand to<br>coarse sand<br>poorly sorted   | ceme<br>Calcareous                         |                                          | 0.0                           |                                       |
|                      |           |                  |                |                               |                      | Comments: massive calcrete                       |                                            |                                          |                               |                                       |
| 4.0                  | 6.0       |                  | QA             | Calcrete                      | pale<br>red<br>brown | v.fine sand to<br>coarse sand<br>poorly sorted   | ceme<br>Calcareous                         |                                          | 0.0                           |                                       |
|                      |           |                  |                | Sand                          |                      | Comments: massive calcrete                       |                                            |                                          |                               |                                       |
| 6.0                  | 8.0       |                  | QA             | Calcrete                      | pale<br>red<br>brown | v.fine sand to<br>coarse sand<br>poorly sorted   | ceme<br>Calcareous                         |                                          | 0.0                           |                                       |
|                      |           |                  |                | Sand                          |                      | Comments: massive calcrete                       |                                            |                                          |                               |                                       |
| 8.0                  | 10.0      |                  | QB             | Claystone                     | medium<br>grey       | silt to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | QB             | Claystone                     | medium<br>grey       | silt to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6502          | TO             | Grit<br>quartz.               | light<br>grey        | v.crse sand to<br>granule<br>mod.well sorted     | sub-angular                                |                                          | 0.0                           | 0.02                                  |
| 14.0                 | 16.0      | DK 6503          | TO             | Sand                          | light<br>grey        | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           | 0.01                                  |
| 16.0                 | 18.0      | DK 6504          | TO             | Sand                          | light<br>grey        | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           | 0.04                                  |
| 18.0                 | 20.0      | DK 6505          | TO             | Sand                          | light<br>grey        | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           | 0.08                                  |
| 20.0                 | 22.0      | DK 6506          | TO             | Sand                          | light<br>grey        | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            | 0.03                                  |

000105

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |      |                  |                |                               |                          |                                                  |                                            |                                          |                               |                                       |
| 22.0                        | 24.0 | DK 6507          | TO             | Sand<br>gritty                | light<br>orange<br>grey  | medium sand to<br>granule<br>poorly sorted       | sub-angular                                |                                          | 0.5<br>trace                  | 0.18                                  |
| 24.0                        | 26.0 | DK 6508          | TEH            | Grit                          | medium<br>orange<br>grey | granule<br>mod.well sorted                       | sub-angular                                |                                          | 0.2<br>light trace            | 0.05                                  |
| 26.0                        | 28.0 | DK 6509          | TEH            | Sand                          | medium<br>orange<br>grey | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.5<br>trace                  | 0.13                                  |
| 28.0                        | 30.0 | DK 6510          | TEH            | Sand                          | medium<br>orange<br>grey | fine sand<br>well sorted                         | sub-rounded                                |                                          | 3.0                           | 1.16                                  |
| 30.0                        | 32.0 | DK 6511          | TEH            | Sand                          | medium<br>orange<br>grey | fine sand<br>well sorted                         | sub-rounded                                |                                          | 2.0<br>V.good<br>trace        | 0.67                                  |
| 32.0                        | 34.0 | DK 6512          | TEH            | Sand                          | medium<br>orange<br>grey | fine sand<br>well sorted                         | sub-rounded                                |                                          | 1.0<br>Good trace             | 1.93                                  |
| 34.0                        | 36.0 | DK 6513          | TEH            | Sand                          | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 2.0<br>V.good<br>trace        | 3.54                                  |
| 36.0                        | 38.0 | DK 6514          | TEH            | Sand                          | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 1.0<br>Good trace             | 2.93                                  |
| 38.0                        | 39.5 | DK 6515          | TEH            | Sand                          | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.5<br>trace                  | 1.32                                  |
| 12.0                        | 39.5 | DK 6516          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               |                                       |

EOH at 39.5 m

000106



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 15-OCT-90

HOLE NUMBER : M038

LOGGED BY : PRD  
TOTAL DEPTH : 12.2

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 724100 NORTHING: 6686850 R.L.: 209.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M038

| DEPTH<br>FROM<br>(m)                     | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|------------------------------------------|-----------|------------------|----------------|----------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                                      | 2.0       | DK 6517          | QA             | Sand<br>silty                    | light<br>red<br>brown  | silt to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                                      | 4.0       | DK 6518          | QA             | Sand<br>silty                    | light<br>red<br>brown  | silt to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                                      | 6.0       | DK 6519          | QA             | Sand<br>clayey                   | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                                      | 8.0       | DK 6520          | QA             | Sand<br>Sandstone<br>ferrug.     | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                                      | 10.0      | DK 6521          | QB             | Sandstone<br>ferrug.<br>Sand     | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                | cons<br>Ferruginous                      | 0.0                           |                                       |
| 10.0                                     | 12.0      |                  | QB             | Calcrete<br>Sandstone<br>ferrug. | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                | cons<br>Ferruginous                      | 0.0                           |                                       |
| 12.0                                     | 12.2      |                  | QB             | Calcrete                         | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                | ceme<br>Calcareous                       | 0.0                           |                                       |
| EOH at 12.2 m                            |           |                  |                |                                  |                        |                                                  |                                            |                                          |                               |                                       |
| Comments: very hard, unable to penetrate |           |                  |                |                                  |                        |                                                  |                                            |                                          |                               |                                       |

000107

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 16-OCT-90

HOLE NUMBER : M039

LOGGED BY : PRD  
TOTAL DEPTH : 33.0

GRID: AMG ZONE: 52

RELIABILITY: TOPO

EASTING: 701100

NORTHING: 6684250

R.L.: 165.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M039

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6522          | QA             | Sand<br>silty                 | medium<br>red<br>brown | silt to<br>medium sand<br>poorly sorted          | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6523          | Q              | Sand<br>silty                 | medium<br>red<br>brown | silt to<br>medium sand<br>poorly sorted          | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 6524          | Q              | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 6525          | Q              | Sand<br>clayey                | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      |                  | Q1             | Clay<br>Sand                  | medium<br>red<br>brown | clay<br>well sorted                              |                                            |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6526          | Q1             | Clay<br>sandy                 | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6527          | Q1             | Sand                          | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 6528          | Q1             | Sand                          | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 6529          | Q1             | Sand<br>clayey                | medium<br>red<br>brown | fine sand to<br>v.crse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 18.0      | DK 6532          |                | Composite Sample              |                        |                                                  |                                            |                                          |                               | 0.06                                  |
| 18.0                 | 20.0      | DK 6530          | Q1             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |

000108

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING         | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE          | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|------------------------|-----------------------------------------|-----------------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                        | 22.0 | DK 6531          | Q1             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted | sub-angular                                         |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 |                  | Q1             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted | sub-angular                                         |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 |                  | Q1             | Clay<br>sandy<br>Sand         | dark<br>red<br>brown   | clay to<br>medium sand<br>poorly sorted | Comments: clay from recent drainage?<br>sub-angular |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 |                  | Q1             | Clay<br>sandy<br>Sand         | dark<br>red<br>brown   | clay to<br>medium sand<br>poorly sorted | Comments: clay from recent drainage?<br>sub-angular |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 |                  | Q1             | Clay<br>sandy<br>Sand         | dark<br>red<br>brown   | clay to<br>medium sand<br>poorly sorted | Comments: clay from recent drainage?<br>sub-angular |                                          | 0.0                           |                                       |
| 30.0                        | 32.0 |                  | Q1             | Clay<br>sandy<br>Sand         | dark<br>red<br>brown   | clay to<br>medium sand<br>poorly sorted | Comments: clay from recent drainage?<br>sub-angular |                                          | 0.0                           |                                       |
| 32.0                        | 33.0 |                  | Q1             | Clay<br>sandy<br>Sand         | dark<br>red<br>brown   | clay to<br>medium sand<br>poorly sorted | Comments: clay from recent drainage?<br>sub-angular |                                          | 0.0                           |                                       |
| EOH at 33.0 m               |      |                  |                |                               |                        | Comments: clay from recent drainage?    |                                                     |                                          |                               |                                       |

000109

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 702050 NORTHING: 6684350 R.L.: 170.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M040

LOGGED BY : PRD

TOTAL DEPTH : 21.0

SHEET 1 OF 2 HOLE NUMBER : M040

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6533          | QA             | Sand<br>silty                 | medium<br>red<br>brown | silt<br>medium sand<br>poorly sorted           | to<br>sub-angular                          |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6534          | Q              | Sand<br>silty                 | medium<br>red<br>brown | silt<br>medium sand<br>poorly sorted           | to<br>sub-angular                          |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 6535          | Q              | Sand<br>silty                 | medium<br>red<br>brown | silt<br>medium sand<br>poorly sorted           | to<br>sub-angular                          |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 6536          | Q              | Sand                          | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q1             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown | clay<br>medium sand<br>poorly sorted           | to                                         |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6537          | Q1             | Composite Sample              |                        |                                                |                                            |                                          |                               | 0.21                                  |
| 10.0                 | 12.0      |                  | Q1             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown | clay<br>medium sand<br>poorly sorted           | to                                         |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      |                  | Q1             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown | clay<br>medium sand<br>poorly sorted           | to                                         |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      |                  | Q1             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown | clay<br>medium sand<br>poorly sorted           | to                                         |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      |                  | Q1             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown | clay<br>medium sand<br>poorly sorted           | to                                         |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      |                  | Q1             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown | clay<br>medium sand<br>poorly sorted           | to                                         |                                          | 0.0                           |                                       |

000110

| DEPTH       |           | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING         | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-------------|-----------|------------------|----------------|-------------------------------|------------------------|-----------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| FROM<br>(m) | TO<br>(m) |                  |                |                               |                        |                                         |                                            |                                          |                               |                                       |
| 20.0        | 21.0      |                  | Q1             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted |                                            |                                          | 0.0                           |                                       |
| 10.0        | 21.0      | DK 6538          |                | Composite Sample              |                        |                                         |                                            |                                          |                               | 0.20                                  |

EOH at 21.0 m

000111

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 702950 NORTHING: 6684800 R.L.: 185.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 16-OCT-90

HOLE NUMBER : M041

LOGGED BY : PRD  
 TOTAL DEPTH : 27.0

SHEET 1 OF 2 HOLE NUMBER : M041

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6539          | QA             | Sand<br>silty<br>Calcrete        | medium<br>red<br>brown    | silt to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6540          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                | cons<br>Ferruginous                      | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6541          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                | cons<br>Ferruginous                      | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 6542          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                | cons<br>Ferruginous                      | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6543          | Q              | Sand<br>ferrug.                  | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6553          |                | Composite Sample                 |                           |                                                  |                                            |                                          |                               | 0.11                                  |
| 10.0                 | 12.0      | DK 6544          | Q              | Sand<br>ferrug.                  | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6545          | Q              | Sand<br>ferrug.                  | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6546          | Q              | Sand<br>ferrug.                  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6547          | Q              | Sand<br><br>Sandstone            | light<br>red<br>brown     | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6548          | Q              | Sand<br><br>Sandstone            | light<br>red<br>brown     | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |

000112

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                        | 22.0 | DK 6549          | TO             | Sand                          | light<br>orange<br>grey | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 22.0                        | 24.0 | DK 6550          | TO             | Sand                          | light<br>orange<br>grey | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 24.0                        | 26.0 | DK 6551          | TO             | Sand                          | light<br>orange<br>grey | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 26.0                        | 27.0 | DK 6552          | TO             | Sand                          | light<br>orange<br>grey | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 10.0                        | 27.0 | DK 6554          |                | Composite Sample              |                         |                                                  |                                            |                                          |                               | 0.11                                  |

EOH at 27.0 m

000113

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 16-OCT-90

HOLE NUMBER : M042

LOGGED BY : PRD  
TOTAL DEPTH : 39.0

GRID: AMG ZONE: 52

RELIABILITY: TOPO

EASTING: 703880

NORTHING: 6684910

R.L.: 197.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M042

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6555          | QA             | Sand<br>silty                 | medium<br>red<br>brown    | v.fine sand to<br>coarse sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6556          | QA             | Sand<br>silty                 | medium<br>red<br>brown    | v.fine sand to<br>coarse sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 6557          | Q              | Sand<br>ferrug.               | dark<br>red<br>brown      | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6558          | Q              | Sand<br>ferrug.               | dark<br>red<br>brown      | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6559          | Q              | Sand<br>ferrug.               | dark<br>red<br>brown      | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6560          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>orange<br>brown | medium sand<br>well sorted                       | sub-rounded                                | cons<br>Ferruginous                      | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6561          | TO             | Sand                          | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6562          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6563          | TO             | Sand                          | light<br>orange<br>grey   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6564          | TO             | Sand                          | light<br>orange<br>grey   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 0.0                  | 20.0      | DK 6575          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.11                                  |

000114



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                      | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|-------------------------|------------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 6565          | TO             | Sand<br>quartz.                  | light<br>yellow<br>grey | medium sand to<br>coarse sand<br>mod.well sorted     | sub-rounded                                |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 6566          | TO             | Sand<br>quartz.                  | light<br>grey           | medium sand to<br>medium sand<br>well sorted         | sub-rounded                                |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 6567          | TO             | Sand<br>quartz.                  | light<br>grey           | medium sand to<br>coarse sand<br>mod.well sorted     | sub-rounded                                |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 6568          | TO             | Sand<br>quartz.                  | light<br>grey           | medium sand to<br>coarse sand<br>mod.well sorted     | sub-rounded                                |                                          | 0.2<br>light trace            | 0.04                                  |
| 28.0                 | 30.0      | DK 6569          | TO             | Sand<br>quartz.                  | light<br>grey           | medium sand to<br>coarse sand<br>mod.well sorted     | sub-rounded                                |                                          | 0.5<br>trace                  | 0.07                                  |
| 20.0                 | 30.0      | DK 6576          |                | Composite Sample                 |                         |                                                      |                                            |                                          |                               | 0.04                                  |
| 30.0                 | 32.0      | DK 6570          | TO             | Sand<br><br>Sandstone<br>quartz. | light<br><br>grey       | coarse sand to<br><br>v.crse sand<br>mod.well sorted | sub-rounded                                | weak<br>cons                             | 0.2<br><br>light trace        | 0.06                                  |
| 32.0                 | 34.0      | DK 6571          | TO             | Sand<br><br>Sandstone<br>quartz. | light<br><br>grey       | coarse sand to<br><br>v.crse sand<br>mod.well sorted | sub-rounded                                | cons<br>Siliceous                        | 0.2<br>light trace            |                                       |
| 34.0                 | 36.0      | DK 6572          | TO             | Sand<br>quartz.                  | light<br>grey           | coarse sand to<br>v.crse sand<br>mod.well sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 6573          | TO             | Sand<br>quartz.                  | light<br>grey           | coarse sand to<br>v.crse sand<br>mod.well sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 38.0                 | 39.0      | DK 6574          | TO             | Sand<br>quartz.                  | light<br>grey           | coarse sand to<br>v.crse sand<br>mod.well sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 30.0                 | 39.0      | DK 6577          |                | Composite Sample                 |                         |                                                      |                                            |                                          |                               | 0.03                                  |

EOH at 39.0 m

000115

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 704720 NORTHING: 6685150 R.L.: 205.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 16-OCT-90

HOLE NUMBER : M043  
 LOGGED BY : PRD  
 TOTAL DEPTH : 24.0

SHEET 1 OF 2 HOLE NUMBER : M043

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6578          | QA             | Sand<br>silty                    | medium<br>red<br>brown    | silt<br>to<br>medium sand<br>poorly sorted       | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand            | medium<br>red<br>brown    | clay<br>to<br>medium sand<br>poorly sorted       |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6579          | Q              | Sand<br><br>Sandstone<br>ferrug. | dark<br>red<br>brown      | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6580          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>red<br>brown    | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                | cons<br>Ferruginous                      | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6581          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>medium sand<br>poorly sorted     | sub-angular                                | cons<br>Ferruginous                      | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6589          |                | Composite Sample                 |                           |                                                  |                                            |                                          |                               | 0.18                                  |
| 10.0                 | 12.0      | DK 6582          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>medium sand<br>poorly sorted     | sub-angular                                | cons<br>Ferruginous                      | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6583          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted |                                            | cons<br>Ferruginous                      | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6584          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted |                                            | cons<br>Ferruginous                      | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6585          | TO             | Sand                             | medium<br>orange<br>brown | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6586          | TO             | Sand                             | light<br>orange<br>grey   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |

000116

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
|                             |      |                  |                |                               |                     |                                                  |                                            |                                          |                               |                                      |
| 20.0                        | 22.0 | DK 6587          | TO             | Sand                          | light<br>grey       | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                      |
| 22.0                        | 24.0 | DK 6588          | TO             | Sand                          | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                      |
| 10.0                        | 24.0 | DK 6590          |                | Composite Sample              |                     |                                                  |                                            |                                          |                               | 0.10                                 |

EOH at 24.0 m

000117

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 16-OCT-90

HOLE NUMBER : M044

LOGGED BY : PRD  
TOTAL DEPTH : 24.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 705250 NORTHING: 6685940 R.L.: 209.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M044

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor               | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                      | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------------|----------------------------|------------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6591          | QA             | Sand<br>silty                               | light<br>red<br>brown      | v.fine sand to<br>medium sand<br>poorly sorted       | sub-angular                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       | DK 6592          | QA             | Sand<br>silty                               | light<br>red<br>brown      | v.fine sand to<br>medium sand<br>poorly sorted       | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand                       | medium<br>red<br>brown     | clay to<br>medium sand<br>v.poorly sorted            | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy                               | medium<br>red<br>brown     | clay to<br>medium sand<br>v.poorly sorted            | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | QB             | Clay<br>sandy                               | medium<br>red<br>brown     | clay to<br>medium sand<br>v.poorly sorted            | sub-angular                                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6600          |                | Composite Sample                            |                            |                                                      |                                            |                                          |                               | 0.19                                  |
| 10.0                 | 12.0      | DK 6593          | Q              | Sand<br>sandy<br>Clay                       | medium<br>red<br>brown     | fine sand to<br>medium sand<br>mod.well sorted       | sub-angular                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6594          | Q              | Sand<br>ferrug.                             | medium<br>red<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6595          | Q              | Sand<br><br>ferrug.<br>Sandstone<br>ferrug. | medium<br><br>red<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-angular                                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6596          | Q              | Sand<br><br>ferrug.<br>Sandstone<br>ferrug. | medium<br><br>red<br>brown | coarse sand to<br><br>v.crse sand<br>mod.well sorted | sub-angular                                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6597          | TO             | Sand                                        | medium                     | medium sand to                                       | sub-angular                                |                                          | 0.0                           |                                       |

000118

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-----------------------------|------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
|                             |      |                  |                |                               |                        |                                                |                                            |                                          |                               |                                      |
| 20.0                        | 22.0 | DK 6598          | TO             | Sand                          | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | sub-angular                                |                                          | 0.0                           |                                      |
| 22.0                        | 24.0 | DK 6599          | TO             | Sand                          | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | sub-angular                                |                                          | 0.0                           |                                      |
| 10.0                        | 24.0 | DK 6601          |                | Composite Sample              |                        |                                                |                                            |                                          |                               | 0.12                                 |

EOH at 24.0 m

000119

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 16-OCT-90

HOLE NUMBER : M045  
 LOGGED BY : PRD  
 TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 706220 NORTHING: 6686190 R.L.: 218.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M045

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6602          | QA             | Sand<br>silty                          | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>Sand                           | dark<br>red<br>brown      | clay to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6603          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | dark<br>red<br>brown      | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6604          | Q              | Sandstone<br>Sand                      | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6605          | Q              | Sand                                   | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6616          |                | Composite Sample                       |                           |                                                  |                                            |                                          |                               | 0.26                                  |
| 10.0                 | 12.0      | DK 6606          | Q              | Sand                                   | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6607          | Q              | Sand<br>Sandstone                      | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6608          | TO             | Sand                                   | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6609          | TO             | Sand                                   | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6610          | TO             | Sand                                   | medium<br>orange          | fine sand to<br>medium sand                      | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |

000120

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                        | 20.0 | DK 6617          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.34                                  |
| 20.0                        | 22.0 | DK 6611          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 6612          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 6613          | TO             | Sand                          | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 6614          | TO             | Sand                          | light<br>brown<br>grey    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 6615          | TO             | Sand<br>quartz.               | light<br>grey             | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 20.0                        | 30.0 | DK 6618          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.48                                  |

EOH at 30.0 m

000121

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 16-OCT-90

HOLE NUMBER : M046

LOGGED BY : PRD  
TOTAL DEPTH : 42.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 707450 NORTHING: 6686400 R.L.: 234.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M046

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6619          | QA             | Sand<br>silty                    | light<br>red<br>brown     | silt to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand            | dark<br>red<br>brown      | clay to<br>medium sand<br>v.poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand            | dark<br>red<br>brown      | clay to<br>medium sand<br>v.poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6620          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6621          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6622          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6623          | TO             | Sand                             | medium<br>orange<br>brown | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6624          | TO             | Sand                             | medium<br>orange<br>brown | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                  | 16.0      | DK 6638          |                | Composite Sample                 |                           |                                                  |                                            |                                          |                               | 0.16                                  |
| 16.0                 | 18.0      | DK 6625          | TO             | Sand                             | medium<br>orange<br>brown | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6626          | TO             | Sand                             | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |

000122



| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                        | 22.0 | DK 6627          | TO             | Sand                          | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 6628          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 6629          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 6630          | TO             | Sand                          | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 6631          | TO             | Sand                          | light<br>orange<br>grey   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 16.0                        | 30.0 | DK 6639          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.10                                  |
| 30.0                        | 32.0 | DK 6632          | TO             | Sand                          | light<br>orange<br>grey   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            | 0.11                                  |
| 32.0                        | 34.0 | DK 6633          | TO             | Sand<br>quartz.               | pale<br>yellow<br>grey    | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.2<br>light trace            | 0.20                                  |
| 34.0                        | 36.0 | DK 6634          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.5<br>trace                  | 0.20                                  |
| 36.0                        | 38.0 | DK 6635          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand<br>well sorted                       | sub-rounded                                |                                          | 1.0<br>Good trace             | 0.28                                  |
| 38.0                        | 40.0 | DK 6636          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.5<br>trace                  | 0.21                                  |
| 40.0                        | 42.0 | DK 6637          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            | 0.12                                  |

EOH at 42.0 m

000123

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 708460 NORTHING: 6686415 R.L.: 243.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 16-OCT-90

HOLE NUMBER : M047

LOGGED BY : PRD  
 TOTAL DEPTH : 36.0

SHEET 1 OF 2 HOLE NUMBER : M047

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6640          | QA             | Sand<br>silty                 | pale<br>brown             | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6641          | Q              | Sand<br>Sandstone             | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                | cons<br>Ferruginous                      | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6642          | Q              | Sand<br>Sandstone             | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6643          | Q              | Sand                          | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-rounded                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6644          | Q              | Sand                          | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-rounded                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6645          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6646          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6647          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6648          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                  | 20.0      | DK 6657          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.08                                  |

000124

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |      |                  |                |                               |                           |                                                  |                                            |                                          |                               |                                       |
| 20.0                        | 22.0 | DK 6649          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 6650          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded                                |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 6651          | TO             | Sand<br>quartz.               | light<br>orange<br>grey   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 6652          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 6653          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 30.0                        | 32.0 | DK 6654          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 32.0                        | 34.0 | DK 6655          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 34.0                        | 36.0 | DK 6656          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 20.0                        | 36.0 | DK 6658          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.03                                  |

EOH at 36.0 m

000125

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 16-OCT-90

HOLE NUMBER : M048  
 LOGGED BY : PRD  
 TOTAL DEPTH : 24.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 709450 NORTHING: 6686600 R.L.: 252.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M048

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6659          | QA             | Sand<br>silty                 | pale<br>brown             | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6660          | Q              | Sand                          | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6661          | Q              | Sandstone<br>ferrug.<br>Sand  | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6662          | Q              | Sand                          | medium<br>red<br>brown    | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6670          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.12                                  |
| 10.0                 | 12.0      | DK 6663          | Q              | Sand                          | medium<br>red<br>brown    | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>elongate                    |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6664          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6665          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6666          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6667          | TO             | Sand                          | light<br>orange           | medium sand                                      | sub-rounded                                |                                          | 0.0                           |                                       |

000126

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |      |                  |                |                               |                         |                                                  |                                            |                                          |                               |                                       |
| 20.0                        | 22.0 | DK 6668          | TO             | Sand                          | light<br>orange<br>grey | medium sand<br>well sorted                       | sub-rounded                                |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 6669          | TO             | Sand<br>quartz.               | light<br>grey           | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 10.0                        | 24.0 | DK 6671          |                | Composite Sample              |                         |                                                  |                                            |                                          |                               | 0.03                                  |

EOH at 24.0 m

000127

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 710940 NORTHING: 6686650 R.L.: 270.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M049

CONTRACTOR : Wallis Drilling

RIG TYPE : Mantis 75

LOGGED BY : PRD

DATE DRILLED: 17-OCT-90

TOTAL DEPTH : 36.0

SHEET 1 OF 2 HOLE NUMBER : M049

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6672          | QA             | Sand<br>clayey                | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy                 | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6673          | Q              | Sand<br>clayey<br>Clay        | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6674          | Q              | Sand<br>Sandstone             | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded                                | cons<br>Ferruginous                      | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6675          | Q              | Sand<br>ferrug.               | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6689          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.17                                  |
| 10.0                 | 12.0      | DK 6676          | Q              | Sand<br>ferrug.               | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6677          | Q              | Sand<br>ferrug.               | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6678          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6679          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 18.0                 | 20.0      | DK 6680          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |

000128

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                        | 20.0 | DK 6690          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.04                                  |
| 20.0                        | 22.0 | DK 6681          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 6682          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>elongate                    |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 6683          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 6684          | TO             | Sand                          | light<br>orange<br>brown  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 6685          | TO             | Sand                          | light<br>orange<br>grey   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 30.0                        | 32.0 | DK 6686          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 32.0                        | 34.0 | DK 6687          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand<br>well sorted                       | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 34.0                        | 36.0 | DK 6688          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 20.0                        | 36.0 | DK 6691          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.03                                  |

EOH at 36.0 m

000129

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 17-OCT-90

HOLE NUMBER : M050

LOGGED BY : PRD  
TOTAL DEPTH : 33.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 711950 NORTHING: 6687130 R.L.: 268.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M050

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6692          | QA             | Sand<br>silty clayey          | light<br>red<br>brown     | silt<br>medium sand<br>poorly sorted             | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown    | clay<br>medium sand<br>v.poorly sorted           | very angular                               |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6693          | Q              | Sand<br>clayey                | medium<br>red<br>brown    | v.fine sand to<br>medium sand<br>v.poorly sorted | very angular                               |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6694          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6695          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6708          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.15                                  |
| 10.0                 | 12.0      | DK 6696          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6697          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6698          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6699          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6700          | TO             | Sand                          | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |

000130



| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |      |                  |                |                               |                          |                                                  |                                            |                                          |                               |                                       |
| 10.0                        | 20.0 | DK 6709          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.08                                  |
| 20.0                        | 22.0 | DK 6701          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 6702          | TO             | Sand<br>quartz.               | light<br>orange<br>grey  | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 6703          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                | light trace                              | 0.2                           |                                       |
| 26.0                        | 28.0 | DK 6704          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 6705          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 30.0                        | 32.0 | DK 6706          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 32.0                        | 33.0 | DK 6707          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                        | 33.0 | DK 6710          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.06                                  |

EOH at 33.0 m

000131

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 17-OCT-90

HOLE NUMBER : M051  
 LOGGED BY : PRD  
 TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 712660 NORTHING: 6687800 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M051

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6711          | QA             | Sand<br>silty                    | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand            | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | angular                                    |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6712          | QB             | Clay<br>sandy<br>Sand            | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | angular                                    |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6713          | Q              | Sand<br>silty                    | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6714          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6725          |                | Composite Sample                 |                           |                                                  |                                            |                                          |                               | 0.14                                  |
| 10.0                 | 12.0      | DK 6715          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6716          | Q              | Sand<br>ferrug.                  | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6717          | Q              | Sand<br>ferrug.                  | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6718          | Q              | Sand<br>ferrug.                  | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6719          | TO             | Sand<br>ferrug.                  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000132

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |      |                  |                |                               |                           |                                                  |                                            |                                          |                               |                                       |
| 10.0                        | 20.0 | DK 6726          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.11                                  |
| 20.0                        | 22.0 | DK 6720          | TO             | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 6721          | TO             | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 6722          | TO             | Sand                          | pale<br>orange<br>brown   | medium sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 6723          | TO             | Sand<br>quartz.               | light<br>orange<br>grey   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 6724          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                        | 30.0 | DK 6727          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.08                                  |

EOH at 30.0 m

000133

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : HAMBIDGE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 690610 NORTHING: 6689050 R.L.: 195.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 17-OCT-90

HOLE NUMBER : M052

LOGGED BY : PRD  
 TOTAL DEPTH : 36.0

SHEET 1 OF 2 HOLE NUMBER : M052

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6753          | QA             | Sand<br>silty                 | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand         | light<br>red<br>brown     | clay to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6754          | Q              | Sand<br>Clay                  | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6755          | Q              | Sand<br>Clay                  | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6756          | Q              | Sand<br>Sandstone             | light<br>red<br>brown     | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>mod.spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6770          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.08                                  |
| 10.0                 | 12.0      | DK 6757          | Q              | Sand<br>Sandstone             | light<br>red<br>brown     | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>mod.spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6758          | Q              | Sand<br>Sandstone             | light<br>red<br>brown     | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>mod.spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6759          | Q              | Sand<br>Sandstone             | light<br>red<br>brown     | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>mod.spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6760          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6761          | TO             | Sand                          | pale                      | medium sand                                      | sub-rounded                                |                                          | 0.0                           |                                       |

000134

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-----------------------------|------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
|                             |      |                  |                |                               |                          |                                                  |                                            |                                          |                               |                                      |
| 10.0                        | 20.0 | DK 6771          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.03                                 |
| 20.0                        | 22.0 | DK 6762          | TO             | Sand<br>quartz.               | pale<br>yellow<br>orange | medium sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                      |
| 22.0                        | 24.0 | DK 6763          | TO             | Sand<br>quartz.               | pale<br>grey             | fine sand<br>well sorted                         | rounded<br>spherical                       |                                          | 0.2<br>light trace            |                                      |
| 24.0                        | 26.0 | DK 6764          | TO             | Sand<br>quartz.               | pale<br>grey             | fine sand<br>well sorted                         | rounded<br>spherical                       |                                          | 0.0                           |                                      |
| 26.0                        | 28.0 | DK 6765          | TO             | Sand<br>quartz.               | pale<br>grey             | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>spherical                   |                                          | 0.0                           |                                      |
| 28.0                        | 30.0 | DK 6766          | TO             | Sand<br>quartz.               | pale<br>grey             | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>spherical                   |                                          | 0.2<br>light trace            |                                      |
| 30.0                        | 32.0 | DK 6767          | TO             | Sand<br>quartz.               | pale<br>grey             | medium sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                      |
| 32.0                        | 34.0 | DK 6768          | TO             | Sand<br>quartz.               | pale<br>grey             | medium sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.5<br>trace                  | 0.02                                 |
| 34.0                        | 36.0 | DK 6769          | TO             | Sand<br>quartz.               | pale<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                      |
| 20.0                        | 36.0 | DK 6772          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.01                                 |

EOH at 36.0 m

000135

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : HAMBIDGE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 691200 NORTHING: 6689740 R.L.: 202.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 17-OCT-90

HOLE NUMBER : M053

LOGGED BY : PRD

TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M053

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6773          | QA             | Sand<br>silty                 | light<br>red<br>brown  | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       | DK 6774          | QA             | Sand<br>silty                 | light<br>red<br>brown  | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6775          | QB             | Sand<br>clayey<br>Clay        | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6776          | QB             | Sand<br>clayey<br>Clay        | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6777          | QB             | Sand<br>clayey<br>Clay        | medium<br>brown        | clay to<br>medium sand<br>poorly sorted        | angular                                    |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6787          |                | Composite Sample              |                        |                                                |                                            |                                          |                               | 0.15                                  |
| 10.0                 | 12.0      |                  | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted        | angular                                    |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6778          | Q              | Sand                          | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6779          | Q              | Sand                          | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6780          | Q              | Sand                          | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6781          | Q              | Sand                          | medium                 | fine sand to                                   | sub-rounded                                | weak                                     | 0.0                           |                                       |

000136

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|--------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |      |                  |                |                               |                          |                                                |                                            |                                          |                               |                                       |
| 10.0                        | 20.0 | DK 6788          |                | Composite Sample              |                          |                                                |                                            |                                          |                               | 0.11                                  |
| 20.0                        | 22.0 | DK 6782          | Q              | Sand<br>Sandstone             | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 6783          | Q              | Sand<br>Sandstone             | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 6784          | Q              | Sand<br>Sandstone             | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 6785          | Q              | Sand<br>Sandstone             | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 6786          | TO             | Sand<br>quartz.               | light<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                        | 30.0 | DK 6789          |                | Composite Sample              |                          |                                                |                                            |                                          |                               | 0.04                                  |

EOH at 30.0 m

000137

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : HAMBIDGE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 692000 NORTHING: 6690670 R.L.: 212.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 17-OCT-90

HOLE NUMBER : M054

LOGGED BY : PRD  
 TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M054

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6790          | QA             | Sand<br>silty                 | light<br>red<br>brown     | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6791          | QA             | Sand<br>silty                 | light<br>red<br>brown     | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 6792          | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | angular                                    |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6793          | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | angular                                    |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6794          | Q              | Sand<br>clayey<br>Clay        | dark<br>red<br>brown      | fine sand to<br>medium sand<br>poorly sorted     | angular<br>mod.spherical                   |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6805          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.20                                  |
| 10.0                 | 12.0      | DK 6795          | Q              | Sand                          | dark<br>red<br>brown      | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6796          | Q              | Sand                          | dark<br>red<br>brown      | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6797          | Q              | Sand<br>clayey                | dark<br>red<br>brown      | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6798          | Q              | Sand<br>clayey                | dark<br>red<br>brown      | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6799          | Q              | Sand                          | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000138



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                 | 20.0      | DK 6806          |                | Composite Sample              |                           |                                                |                                            |                                          |                               | 0.16                                  |
| 20.0                 | 22.0      | DK 6800          | Q              | Sand<br>Sandstone             | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 6801          | Q              | Sand<br>Sandstone             | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 6802          | Q              | Sand<br>Sandstone             | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.2<br>light trace            |                                       |
| 26.0                 | 28.0      | DK 6803          | Q              | Sand<br>ferrug.<br>Sandstone  | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.2<br>light trace            |                                       |
| 28.0                 | 30.0      | DK 6804          | Q              | Sand<br>ferrug.<br>Sandstone  | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.2<br>light trace            |                                       |
| 20.0                 | 30.0      | DK 6807          |                | Composite Sample              |                           |                                                |                                            |                                          |                               | 0.09                                  |

EOH at 30.0 m

000139

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : HAMBIDGE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 692650 NORTHING: 6691450 R.L.: 215.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M055

LOGGED BY : PRD

TOTAL DEPTH : 33.0

SHEET 1 OF 2 HOLE NUMBER : M055

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6808          | QA             | Sand<br>silty                 | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       | DK 6809          | QA             | Sand<br>silty                 | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | angular                                    |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | angular                                    |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | angular                                    |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6822          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.19                                  |
| 10.0                 | 12.0      | DK 6810          | Q              | Sand<br>Sandstone             | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6811          | Q              | Sand<br>Sandstone             | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6812          | Q              | Sand<br>Sandstone             | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6813          | Q              | Sand<br>Sandstone             | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6814          | Q              | Sand                          | medium                    | medium sand                                      | sub-rounded                                | weak<br>cons                             | 0.0                           |                                       |

000140

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                 | 20.0      | DK 6823          |                | Composite Sample              |                          |                                                |                                            |                                          |                               | 0.13                                  |
| 20.0                 | 22.0      | DK 6815          | Q              | Sand                          | pale<br>orange<br>brown  | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 6816          | Q              | Sand                          | pale<br>orange<br>grey   | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | light trace                              | 0.2                           |                                       |
| 24.0                 | 26.0      | DK 6817          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand<br>well sorted                     | sub-rounded<br>sub-spherical               | light trace                              | 0.2                           |                                       |
| 26.0                 | 28.0      | DK 6818          | TO             | Sand<br>quartz.               | light<br>yellow<br>grey  | medium sand<br>well sorted                     | sub-rounded<br>sub-spherical               | light trace                              | 0.2                           |                                       |
| 28.0                 | 30.0      | DK 6819          | TO             | Sand<br>Sandstone             | patchy<br>red<br>white   | fine sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 6820          | TO             | Sand                          | banded<br>grey<br>orange | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 32.0                 | 33.0      | DK 6821          | TO             | Sand<br>quartz.               | light<br>grey            | fine sand<br>well sorted                       | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 20.0                 | 33.0      | DK 6824          |                | Composite Sample              |                          |                                                |                                            |                                          |                               | 0.09                                  |

EOH at 33.0 m

000141

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 18-OCT-90

HOLE NUMBER : M056

LOGGED BY : PRD  
TOTAL DEPTH : 24.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 693310 NORTHING: 6692220 R.L.: 222.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M056

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor       | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6825          | QA             | Sand<br>silty                       | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>poorly sorted | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy                       | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand               | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6826          | Q              | Sand<br>Sandstone                   | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6827          | Q              | Sand<br>Sandstone                   | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6835          |                | Composite Sample                    |                           |                                                |                                            |                                          |                               | 0.10                                  |
| 10.0                 | 12.0      | DK 6828          | Q              | Sand<br>ferrug. clayey              | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6829          | Q              | Sand<br>ferrug. clayey              | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6830          | Q              | Sand<br>ferrug. clayey<br>Sandstone | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous              | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 6831          | Q              | Sand<br>ferrug. clayey<br>Sandstone | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous              | 0.2<br>light trace            |                                       |

000142

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES                  | COLOUR          | GRAIN SIZE                     | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-----------------------------|-----------------|--------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |      |                  |                | major/<br>minor             | L/<br>hue       | RANGE/<br>SORTING              |                                            |                                          |                               |                                       |
| 18.0                        | 20.0 | DK 6832          | Q              | Sand                        | medium          | medium sand to                 | sub-angular                                | weak<br>cons                             | 0.2                           |                                       |
|                             |      |                  |                | ferrug. clayey<br>Sandstone | orange<br>brown | coarse sand<br>mod.well sorted | sub-elongate                               | Ferruginous                              | light trace                   |                                       |
| 20.0                        | 22.0 | DK 6833          | Q              | Sand                        | medium          | fine sand to                   | sub-angular                                |                                          | 0.0                           |                                       |
|                             |      |                  |                | ferrug.                     | orange<br>brown | medium sand<br>mod.well sorted | sub-elongate                               |                                          |                               |                                       |
| 22.0                        | 24.0 | DK 6834          | Q              | Sand                        | medium          | fine sand to                   | sub-angular                                |                                          | 0.0                           |                                       |
|                             |      |                  |                | ferrug.                     | orange<br>brown | medium sand<br>mod.well sorted | sub-elongate                               |                                          |                               |                                       |
| 10.0                        | 24.0 | DK 6836          |                | Composite Sample            |                 |                                |                                            |                                          |                               | 0.06                                  |

EOH at 24.0 m

000143

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 694000 NORTHING: 6692990 R.L.: 240.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M057

LOGGED BY : PRD

TOTAL DEPTH : 24.0

SHEET 1 OF 2 HOLE NUMBER : M057

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6837          | QA             | Sand<br>silty                 | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 6838          | Q              | Sand<br>clayey                | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6839          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6840          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6841          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6849          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.11                                  |
| 10.0                 | 12.0      | DK 6842          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6843          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6844          | TO             | Sand                          | medium<br>orange<br>grey  | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6845          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6846          | TO             | Sand<br>quartz.               | light<br>grey             | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |

000144

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 6847          | TO             | Sand<br>quartz.               | light<br>grey       | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 6848          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 24.0      | DK 6850          |                | Composite Sample              |                     |                                                  | Comments: Rods stuck at 24 metres          |                                          |                               | 0.02                                  |

EOH at 24.0 m

000145

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 694700 NORTHING: 6693750 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M058

LOGGED BY : PRD  
 TOTAL DEPTH : 36.0

SHEET 1 OF 2 HOLE NUMBER : M058

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue           | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty<br>Calcrete     | medium<br>red<br>brown        | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown        | clay to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6851          | Q              | Sand<br><br>Sandstone         | medium<br><br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br><br>sub-spherical           | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6852          | Q              | Sand<br><br>Sandstone         | medium<br><br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br><br>sub-spherical           | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6853          | Q              | Sand<br><br>Sandstone         | medium<br><br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | interm.round.<br>sub-elongate              | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6867          |                | Composite Sample              |                               |                                                  |                                            |                                          |                               | 0.09                                  |
| 10.0                 | 12.0      | DK 6854          | Q              | Sand<br><br>Sandstone         | medium<br><br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br><br>sub-spherical           | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6855          | Q              | Sand                          | medium<br>orange<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6856          | Q              | Sand                          | medium<br>orange<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6857          | TO             | Sand<br>quartz.               | light<br>orange<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |

000146



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 6858          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 20.0      | DK 6868          |                | Composite Sample              |                     |                                                  |                                            |                                          |                               | 0.05                                  |
| 20.0                 | 22.0      | DK 6859          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 6860          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 6861          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 6862          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 6863          | TO             | Sand<br>quartz.               | light<br>grey       | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>spherical                   |                                          | 0.2<br>light trace            |                                       |
| 30.0                 | 32.0      | DK 6864          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 6865          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 6866          | TO             | Sand<br>quartz.               | light<br>grey       | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 20.0                 | 36.0      | DK 6869          |                | Composite Sample              |                     |                                                  |                                            |                                          |                               | 0.02                                  |

EOH at 36.0 m

000147

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 18-OCT-90

HOLE NUMBER : M059  
 LOGGED BY : PRD  
 TOTAL DEPTH : 42.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 695350 NORTHING: 6694500 R.L.: 251.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M059

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6870          | Q              | Sand<br>Sandstone             | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6871          | Q              | Sand<br>silty<br>Sandstone    | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6888          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.16                                  |
| 10.0                 | 12.0      | DK 6872          | Q              | Sand<br>silty<br>Sandstone    | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6873          | Q              | Sand<br>silty<br>Sandstone    | medium<br>orange<br>brown | medium sand<br>well sorted                       | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6874          | Q              | Sand<br>silty<br>Sandstone    | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6875          | Q              | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6876          | Q              | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |

000148

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                 | 20.0      | DK 6889          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.03                                  |
| 20.0                 | 22.0      | DK 6877          | Q              | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 6878          | Q              | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 6879          | Q              | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 6880          | Q              | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 6881          | Q              | Sand<br>ferrug.               | medium<br>orange<br>tan   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 6890          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.02                                  |
| 30.0                 | 32.0      | DK 6882          | TO             | Sand<br>quartz.               | light<br>brown<br>grey    | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 6883          | TO             | Sand<br>quartz.               | light<br>brown<br>grey    | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 6884          | TO             | Sand<br>gritty quartz.        | light<br>grey             | coarse sand to<br>granule<br>poorly sorted       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 6885          | TO             | Sand<br>quartz.               | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 38.0                 | 40.0      | DK 6886          | TO             | Sand<br>quartz.               | light<br>grey             | coarse sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 40.0                 | 42.0      | DK 6887          | TO             | Sand<br>quartz.               | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000149

| DEPTH<br>FROM TO<br>(m) (m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------------------|----------------|-------------------------------|---------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |                  |                |                               |                     |                                 |                                            |                                          |                               |                                       |
| 30.0 42.0                   | DK 6891          |                | Composite Sample              |                     |                                 |                                            |                                          |                               | 0.01                                  |

EOH at 42.0 m

000150

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 19-OCT-90

HOLE NUMBER : M060

LOGGED BY : PRD  
TOTAL DEPTH : 24.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 696050 NORTHING: 6695300 R.L.: 265.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M060

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty<br>Calcrete     | light<br>grey<br>brown   | fine sand to<br>medium sand<br>poorly sorted     | angular<br>mod.spherical                   |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty<br>Calcrete     | light<br>grey<br>brown   | fine sand to<br>medium sand<br>poorly sorted     | angular<br>mod.spherical                   |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6892          | Q              | Sand<br><br>Sandstone         | medium<br>red            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6893          | Q              | Sand<br><br>Sandstone         | medium<br>red            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6894          | Q              | Sand<br><br>Sandstone         | medium<br>red            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6895          | Q              | Sand<br><br>Sandstone         | medium<br>red            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6896          | Q              | Sand<br>ferrug.               | light<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6897          | Q              | Sand<br>ferrug.               | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6898          | Q              | Sand<br>ferrug.               | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6899          | Q              | Sand<br>ferrug.               | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 6900          | Q              | Sand<br>ferrug.               | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |

000151

| DEPTH       |           | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| FROM<br>(m) | TO<br>(m) |                  |                |                               |                          |                                                  |                                            |                                          |                               |                                       |
| 22.0        | 24.0      | DK 6901          | Q              | Sand<br>ferrug.               | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 0.0         | 24.0      | DK 6902          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.02                                  |

EOH at 24.0 m

000152

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 19-OCT-90

HOLE NUMBER : M061  
 LOGGED BY : PRD  
 TOTAL DEPTH : 36.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 696760 NORTHING: 6696100 R.L.: 276.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M061

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty<br>Calcrete             | dark<br>red<br>brown      | fine sand to<br>medium sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       | DK 6903          | QA             | Sand<br>silty                         | medium<br>red<br>brown    | fine sand to<br>v.crse sand<br>v.poorly sorted   | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6904          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>medium sand<br>poorly sorted     | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6905          | Q              | Sand<br>orange<br>silty               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6906          | Q              | Sand<br>silty                         | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 6920          |                | Composite Sample                      |                           |                                                  |                                            |                                          |                               | 0.06                                  |
| 10.0                 | 12.0      | DK 6907          | Q              | Sand<br>silty                         | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6908          | Q              | Sand<br><br>Sandstone<br>ferrug.      | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6909          | Q              | Sand<br><br>Sandstone<br>ferrug.      | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6910          | Q              | Sand                                  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6911          | Q              | Sand                                  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |

000153

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                        | 20.0 | DK 6921          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.04                                  |
| 20.0                        | 22.0 | DK 6912          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 6913          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 6914          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 6915          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 6916          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 30.0                        | 32.0 | DK 6917          | Q              | Sand                          | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 32.0                        | 34.0 | DK 6918          | TO             | Sand                          | light<br>orange<br>grey   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 34.0                        | 36.0 | DK 6919          | TO             | Sand                          | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                        | 36.0 | DK 6922          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.02                                  |

EOH at 36.0 m

000154



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 19-OCT-90

HOLE NUMBER : M062  
 LOGGED BY : PRD  
 TOTAL DEPTH : 36.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 697440 NORTHING: 6696850 R.L.: 285.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M062

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                  | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty<br>Calcrete                      | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | Q              | Sand<br>clayey<br>Clay                         | medium<br>red<br>brown    | clay to<br>coarse sand<br>v.poorly sorted        | angular                                    |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6923          | Q              | sandy<br>Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6924          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.          | medium<br>orange<br>brown | fine sand to<br>v.crse sand<br>v.poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6925          | Q              | Sand                                           | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 10.0      | DK 6939          |                | Composite Sample                               |                           |                                                  |                                            |                                          |                               | 0.10                                  |
| 10.0                 | 12.0      | DK 6926          | Q              | Sand                                           | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6927          | Q              | Sand                                           | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6928          | Q              | Sand                                           | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6929          | Q              | Sand                                           | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6930          | Q              | Sand                                           | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |

000155

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 6931          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 22.0      | DK 6940          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.07                                  |
| 22.0                 | 24.0      | DK 6932          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            | 0.01                                  |
| 24.0                 | 26.0      | DK 6933          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.5<br>trace                  | 0.06                                  |
| 26.0                 | 28.0      | DK 6934          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.5<br>trace                  | 0.30                                  |
| 28.0                 | 30.0      | DK 6935          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.5<br>trace                  | 0.17                                  |
| 30.0                 | 32.0      | DK 6936          | TO             | Sand<br>quartz.               | light<br>grey             | coarse sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            | 0.03                                  |
| 32.0                 | 34.0      | DK 6937          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            | 0.05                                  |
| 34.0                 | 36.0      | DK 6938          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            | 0.01                                  |

EOH at 36.0 m

000156

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 19-OCT-90

HOLE NUMBER : M063

LOGGED BY : PRD  
TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52

RELIABILITY: TOPO

EASTING: 698100

NORTHING: 6697620

R.L.: 293.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M063

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                  | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Calcrete                                       | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   |                                            |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Calcrete<br>Clay                               | medium<br>red<br>brown    | clay to<br>fine sand<br>poorly sorted            |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | Q              | Sand<br>clayey<br>Clay                         | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6941          | Q              | sandy<br>Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6942          | Q              | Sand<br>silty                                  | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6943          | Q              | Sand                                           | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6944          | Q              | Sand                                           | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6945          | Q              | Sand                                           | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6946          | Q              | Sand                                           | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6947          | Q              | Sand                                           | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 4.0                  | 20.0      | DK 6953          |                | Composite Sample                               |                           |                                                  |                                            |                                          |                               |                                       |

0.06

000157

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 6948          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 6949          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 6950          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 6951          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 6952          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 6954          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.01                                  |

EOH at 30.0 m

000158

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 19-OCT-90

HOLE NUMBER : M064

LOGGED BY : PRD  
TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 698760 NORTHING: 6698400 R.L.: 280.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M064

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Calcrete<br>Sand              | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 6955          | Q              | Sandstone<br>ferrug.<br>Sand  | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6956          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6957          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6958          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6959          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6960          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6961          | Q              | Sand                          | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 18.0                 | 20.0      | DK 6962          | Q              | Sand                          | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 20.0      | DK 6968          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.05                                  |

000159

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 6963          | Q              | Sand                          | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 22.0                 | 24.0      | DK 6964          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 6965          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 6966          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 6967          | TO             | Sand<br>quartz.               | light<br>orange<br>grey   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 6969          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.04                                  |

EOH at 30.0 m

000160

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 19-OCT-90

HOLE NUMBER : M065

LOGGED BY : PRD  
TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 699460 NORTHING: 6699250 R.L.: 285.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M065

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown     | v.fine sand to<br>v.crse sand<br>v.poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand         | light<br>red<br>brown     | clay to<br>medium sand<br>v.poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6970          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6971          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 12.0      | DK 6972          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 6973          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 6974          | Q              | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 6975          | Q              | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6976          | Q              | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 6.0                  | 20.0      | DK 6982          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.09                                  |

000161

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-----------------------------|------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 20.0                        | 22.0 | DK 6977          | Q              | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                      |
| 22.0                        | 24.0 | DK 6978          | Q              | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                      |
| 24.0                        | 26.0 | DK 6979          | Q              | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                      |
| 26.0                        | 28.0 | DK 6980          | Q              | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                      |
| 28.0                        | 30.0 | DK 6981          | TO             | Sand<br>quartz.               | light<br>grey            | coarse sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                      |
| 20.0                        | 30.0 | DK 6983          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.03                                 |

EOH at 30.0 m

000162



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 19-OCT-90

HOLE NUMBER : M066

LOGGED BY : PRD  
TOTAL DEPTH : 42.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 700100 NORTHING: 6700000 R.L.: 276.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M066

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>v.poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy                         | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6984          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>medium sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6985          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>medium sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6986          | Q              | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6987          | Q              | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6988          | Q              | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6989          | Q              | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6990          | Q              | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 20.0      | DK 7002          |                | Composite Sample                      |                           |                                                  |                                            |                                          |                               | 0.10                                  |

000163

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 6991          | Q              | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 6992          | Q              | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 6993          | Q              | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 6994          | Q              | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 6995          | TO             | Sand<br>quartz.               | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 7003          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.02                                  |
| 30.0                 | 32.0      | DK 6996          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 6997          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 6998          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 6999          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 38.0                 | 40.0      | DK 7000          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 40.0                 | 42.0      | DK 7001          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 30.0                 | 42.0      | DK 7004          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.01                                  |

000164

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 19-OCT-90

HOLE NUMBER : M067  
 LOGGED BY : PRD  
 TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 701050 NORTHING: 6701070 R.L.: 275.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M067

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                          | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>v.poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey        | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey        | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7005          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | v.fine sand to<br>coarse sand<br>v.poorly sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7006          | Q              | Sand<br><br>Sandstone                  | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7007          | Q              | Sand<br>silty                          | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7008          | Q              | Sand                                   | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7009          | Q              | Sand                                   | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7010          | Q              | Sand                                   | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7011          | Q              | Sand                                   | light<br>orange<br>brown  | coarse sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 20.0      | DK 7017          |                | Composite Sample                       |                           |                                                  |                                            |                                          |                               | 0.09                                  |

000165

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                        | 22.0 | DK 7012          | Q              | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 7013          | Q              | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 7014          | Q              | Sand                          | light<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 7015          | Q              | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 7016          | TO             | Sand                          | light<br>orange<br>grey  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                        | 30.0 | DK 7018          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.01                                  |

EOH at 30.0 m

000166

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : HAMBIDGE  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 20-OCT-90

HOLE NUMBER : M068

LOGGED BY : PRD

TOTAL DEPTH : 36.0

GRID: AMG

ZONE: 52

RELIABILITY: TOPO

EASTING: 689367

NORTHING: 6706939

R.L.: 236.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M068

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                 | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-----------------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                                 | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>v.poorly sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>clayey                                | light<br>red<br>brown     | clay to<br>coarse sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey               | medium<br>red<br>brown    | clay to<br>coarse sand<br>v.poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey               | medium<br>red<br>brown    | clay to<br>coarse sand<br>v.poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br>clayey<br>Sandstone<br>ferrug.        | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7083          | Q              | Sand<br>silty ferrug.                         | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7084          | Q              | Sand<br>silty ferrug.                         | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7085          | Q              | Sand<br>silty ferrug.                         | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7086          | Q              | Sand<br>silty ferrug.                         | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7087          | Q              | Sand<br>ferrug. silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 20.0      | DK 7096          |                | Composite Sample                              |                           |                                                  |                                            |                                          |                               |                                       |

0.09

000167

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor      | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7088          | Q              | Sand<br>ferrug. silty<br>Sandstone | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7089          | Q              | Sand<br>ferrug. silty<br>Sandstone | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7090          | Q              | Sand<br>ferrug. silty              | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7091          | Q              | Sand<br>ferrug. silty              | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7092          | TO             | Sand<br>quartz.                    | light<br>orange<br>brown  | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 7093          | TO             | Sand<br>quartz.                    | light<br>orange<br>brown  | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 7094          | TO             | Sand<br>quartz.                    | light<br>orange<br>grey   | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 7095          | TO             | Sand<br>quartz.                    | light<br>orange<br>grey   | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 36.0      | DK 7097          |                | Composite Sample                   |                           |                                                  |                                            |                                          |                               | 0.06                                  |

EOH at 36.0 m

000168

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : HAMBIDGE  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 20-OCT-90

HOLE NUMBER : M069

LOGGED BY : PRD  
TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 688650 NORTHING: 6706150 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M069

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                 | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING               | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-----------------------------------------------|---------------------------|-----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty<br>Silt                         | light<br>red<br>brown     | silt<br>coarse sand<br>v.poorly sorted        | to<br>angular                              |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>clayey                                | medium<br>red<br>brown    | clay<br>medium sand<br>v.poorly sorted        | to<br>angular                              |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey               | medium<br>red<br>brown    | clay<br>medium sand<br>v.poorly sorted        | to<br>angular                              |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7098          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.         | medium<br>orange<br>brown | fine sand<br>coarse sand<br>poorly sorted     | to<br>sub-angular<br>sub-spherical         |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7099          | Q              | Sand<br>silty ferrug.                         | medium<br>orange<br>brown | fine sand<br>coarse sand<br>poorly sorted     | to<br>sub-angular<br>sub-spherical         |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7100          | Q              | Sand<br>silty ferrug.                         | medium<br>orange<br>brown | fine sand<br>coarse sand<br>poorly sorted     | to<br>sub-angular<br>sub-spherical         |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7101          | Q              | Sand<br>silty ferrug.                         | medium<br>orange<br>brown | fine sand<br>coarse sand<br>poorly sorted     | to<br>sub-angular<br>sub-spherical         |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7102          | Q              | Sand<br>silty ferrug.<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand<br>coarse sand<br>mod.well sorted | to<br>sub-rounded<br>sub-spherical         |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7103          | Q              | Sand<br>silty ferrug.                         | medium<br>orange<br>brown | medium sand<br>coarse sand<br>mod.well sorted | to<br>sub-rounded<br>sub-spherical         |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7104          | Q              | Sand<br>silty ferrug.                         | medium<br>orange<br>brown | fine sand<br>medium sand<br>mod.well sorted   | to<br>sub-rounded<br>sub-spherical         |                                          | 0.0                           |                                       |
| 6.0                  | 20.0      | DK 7110          |                | Composite Sample                              |                           |                                               |                                            |                                          |                               |                                       |

0.04

000169

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor |         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  |  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH |  | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------|---------------------------|--------------------------------------------------|--|--------------------------------------------|------------------------------------------|--|-------------------------------|---------------------------------------|
|                             |      |                  |                |                               |         |                           |                                                  |  |                                            |                                          |  |                               |                                       |
| 20.0                        | 22.0 | DK 7105          | Q              | Sand<br>silty                 | ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     |  | sub-rounded<br>sub-spherical               |                                          |  | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 7106          | Q              | Sand<br>silty                 | ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     |  | sub-rounded<br>sub-spherical               |                                          |  | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 7107          | Q              | Sand<br>silty                 | ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     |  | sub-rounded<br>sub-spherical               |                                          |  | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 7108          | Q              | Sand<br>silty                 | ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     |  | sub-rounded<br>sub-spherical               |                                          |  | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 7109          | TO             | Sand<br>quartz.               |         | light<br>orange<br>grey   | medium sand to<br>coarse sand<br>mod.well sorted |  | sub-rounded<br>sub-spherical               |                                          |  | 0.0                           |                                       |
| 20.0                        | 30.0 | DK 7111          |                | Composite Sample              |         |                           |                                                  |  |                                            |                                          |  |                               | 0.03                                  |

EOH at 30.0 m

000170



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : HAMBIDGE  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 20-OCT-90

HOLE NUMBER : M070

LOGGED BY : PRD  
TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 687950 NORTHING: 6705450 R.L.: 263.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M070

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt<br>coarse sand<br>v.poorly sorted           | to<br>angular                              |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay<br>medium sand<br>v.poorly sorted           | to<br>angular                              |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay<br>medium sand<br>v.poorly sorted           | to<br>angular                              |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7112          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand<br>coarse sand<br>poorly sorted        | to<br>sub-angular<br>sub-elongate          |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7113          | Q              | Sand                                  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7114          | Q              | Sand                                  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7115          | TO             | Sand                                  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7116          | TO             | Sand<br>quartz.                       | medium<br>orange<br>grey  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7117          | TO             | Sand<br>quartz.                       | light<br>grey             | coarse sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7118          | TO             | Sand<br>quartz.                       | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 20.0      | DK 7124          |                | Composite Sample                      |                           |                                                  |                                            |                                          |                               | 0.04                                  |

000171

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7119          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7120          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7121          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7122          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7123          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 7125          |                | Composite Sample              |                     |                                                  |                                            |                                          |                               | 0.04                                  |

EOH at 30.0 m

000172

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : HAMBIDGE  
 JOB NO : T62

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 20-OCT-90

HOLE NUMBER : M071

LOGGED BY : PRD  
 TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52

RELIABILITY: TOPO

EASTING: 687250

NORTHING: 6704750

R.L.: 280.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M071

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                          | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|--------------------------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Calcrete                                               | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 7126          | Q              | Sand<br>silty<br>Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7127          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.                  | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7128          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.                  | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7129          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.                  | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7139          |                | Composite Sample                                       |                           |                                                  |                                            |                                          |                               | 0.04                                  |
| 10.0                 | 13.0      | DK 7130          | Q              | Sand<br>silty                                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 13.0                 | 16.0      | DK 7131          | Q              | Sand<br>silty                                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7132          | Q              | Sand                                                   | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7133          | Q              | Sand                                                   | light<br>orange<br>brown  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 20.0      | DK 7140          |                | Composite Sample                                       |                           |                                                  |                                            |                                          |                               | 0.03                                  |

000173

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                        | 22.0 | DK 7134          | Q              | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 7135          | Q              | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 7136          | TO             | Sand                          | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 7137          | TO             | Sand                          | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 7138          | TO             | Sand                          | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                        | 36.0 | DK 7141          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.01                                  |

EOH at 30.0 m

000174

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : HAMBIDGE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 686570 NORTHING: 6703990 R.L.: 267.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 20-OCT-90

HOLE NUMBER : M072  
 LOGGED BY : PRD  
 TOTAL DEPTH : 36.0

SHEET 1 OF 2 HOLE NUMBER : M072

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7142          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7143          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7144          | Q              | Sand<br>silty ferrug.                 | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7145          | Q              | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7146          | Q              | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7147          | Q              | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7148          | Q              | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 20.0      | DK 7157          |                | Composite Sample                      |                           |                                                  |                                            |                                          |                               | 0.03                                  |

000175

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7149          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7150          | TO             | Sand                          | light<br>orange<br>grey  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 24.0                 | 26.0      | DK 7151          | TO             | Sand                          | light<br>grey            | coarse sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7152          | TO             | Sand                          | light<br>grey            | coarse sand<br>well sorted                       | rounded<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7153          | TO             | Sand                          | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 7154          | TO             | Sand                          | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 7155          | TO             | Sand                          | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 7156          | TO             | Sand                          | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 36.0      | DK 7158          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.01                                  |

EOH at 36.0 m

000176

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : HAMBIDGE  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 20-OCT-90

HOLE NUMBER : M073

LOGGED BY : PRD  
TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52

RELIABILITY: TOPO

EASTING: 685850

NORTHING: 6703270

R.L.: 271.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M073

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                          | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|--------------------------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Calcrete                                               | light<br>red<br>brown     | silt<br>to<br>v.crse sand<br>e.poorly sorted     | angular<br>elongate                        |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Sandstone<br>gritty<br>Clay<br>sandy<br>Sand<br>clayey | medium<br>red<br>brown    | clay<br>to<br>medium sand<br>v.poorly sorted     | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 7159          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.                  | medium<br>orange<br>brown | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7160          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.                  | medium<br>orange<br>brown | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7161          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.                  | medium<br>orange<br>brown | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7162          | Q              | Sand<br>silty ferrug.                                  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7163          | Q              | Sand<br>silty ferrug.                                  | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>f.poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7164          | Q              | Sand<br>silty ferrug.                                  | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>f.poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7165          | Q              | Sand<br>silty ferrug.                                  | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>f.poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7166          | Q              | Sand<br>silty ferrug.                                  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 4.0                  | 20.0      | DK 7172          |                | Composite Sample                                       |                           |                                                  |                                            |                                          |                               |                                       |

0.04

000177

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                        | 22.0 | DK 7167          | Q              | Sand<br>silty ferrug.         | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 7168          | TO             | Sand                          | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 7169          | TO             | Sand                          | light<br>orange<br>brown  | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 7170          | TO             | Sand                          | light<br>orange<br>brown  | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 7171          | TO             | Sand                          | light<br>grey             | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                        | 30.0 | DK 7173          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.01                                  |

EOH at 30.0 m

000178



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : HAMBIDGE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 685050 NORTHING: 6702600 R.L.: 263.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 20-OCT-90

HOLE NUMBER : M074  
 LOGGED BY : PRD  
 TOTAL DEPTH : 42.0

SHEET 1 OF 2 HOLE NUMBER : M074

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                          | light<br>red<br>brown     | silt<br>to<br>v.crse sand<br>v.poorly sorted     | angular<br>elongate                        |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey        | medium<br>red<br>brown    | clay<br>to<br>medium sand<br>v.poorly sorted     | angular                                    |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | clay<br>to<br>medium sand<br>v.poorly sorted     | angular                                    |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7174          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.  | medium<br>orange<br>brown | fine sand<br>to<br>coarse sand<br>poorly sorted  | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7175          | Q              | Sand<br>silty ferrug.                  | medium<br>orange<br>brown | fine sand<br>to<br>coarse sand<br>poorly sorted  | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7192          |                | Composite Sample                       |                           |                                                  |                                            |                                          |                               | 0.07                                  |
| 10.0                 | 12.0      | DK 7176          | Q              | Sand<br>silty ferrug.                  | light<br>orange<br>brown  | fine sand<br>to<br>coarse sand<br>poorly sorted  | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7177          | TO             | Sand<br>quartz.                        | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7178          | TO             | Sand<br>quartz.                        | light<br>grey             | medium sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7179          | TO             | Sand<br>quartz.                        | light<br>grey             | medium sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7180          | TO             | Sand<br>quartz.                        | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000179

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                 | 20.0      | DK 7193          |                | Composite Sample              |                     |                                                  |                                            |                                          |                               | 0.01                                  |
| 20.0                 | 22.0      | DK 7181          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7182          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7183          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7184          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7185          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 7194          |                | Composite Sample              |                     |                                                  |                                            |                                          |                               | 0.01                                  |
| 30.0                 | 32.0      | DK 7186          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 7187          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 7188          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 7189          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 38.0                 | 40.0      | DK 7190          | TO             | Sand<br>quartz.               | light<br>grey       | coarse sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 40.0                 | 42.0      | DK 7191          | TO             | Sand<br>quartz.               | light<br>grey       | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000180

| DEPTH |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES       | COLOUR<br>L/<br>hue | GRAIN SIZE        | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION | HEAVY    | HEAVY           |
|-------|------|------------------|----------------|------------------|---------------------|-------------------|--------------------------------------------|-------------|----------|-----------------|
| FROM  | TO   |                  |                | major/<br>minor  |                     | RANGE/<br>SORTING | DEGREE/                                    | TYPE/       | MINERALS | MINERALS        |
| (m)   | (m)  |                  |                |                  |                     |                   | STRENGTH                                   |             | (visual) | (TBE Separtion) |
| 30.0  | 42.0 | DK 7195          |                | Composite Sample |                     |                   |                                            |             |          | 0.01            |

EOH at 42.0 m

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : HAMBIDGE  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 20-OCT-90

HOLE NUMBER : M075

LOGGED BY : PRD  
TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52

RELIABILITY: TOPO

EASTING: 684360

NORTHING: 6701900

R.L.: 244.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M075

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                  | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Calcrete                                       | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   |                                            |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | Q              | Sand<br>clayey<br>Clay                         | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | Q              | sandy<br>Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7196          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.          | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7197          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.          | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7198          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.          | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7199          | Q              | Sand<br>silty                                  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 2.0                  | 14.0      | DK 7208          |                | Composite Sample                               |                           |                                                  |                                            |                                          |                               | 0.03                                  |
| 14.0                 | 16.0      | DK 7200          | TO             | Sand<br>silty                                  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7201          | TO             | Sand<br>quartz.                                | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7202          | TO             | Sand<br>quartz.                                | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000182

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |      |                  |                |                               |                           |                                                  |                                            |                                          |                               |                                       |
| 20.0                        | 22.0 | DK 7203          | TO             | Sand<br>quartz.               | light<br>orange<br>yellow | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 7204          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 7205          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 7206          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 7207          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           | 0.01                                  |
| 14.0                        | 30.0 | DK 7209          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.02                                  |

EOH at 30.0 m

000183

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : HAMBIDGE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 683650 NORTHING: 6701200 R.L.: 228.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 20-OCT-90

HOLE NUMBER : M076

LOGGED BY : PRD  
 TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M076

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted |                                            |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted |                                            |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7210          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7211          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7212          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7213          | Q              | Sand<br>silty                         | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7214          | Q              | Sand<br>silty ferrug.                 | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7215          | Q              | Sand<br>silty ferrug.                 | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7216          | TO             | Sand                                  | light<br>orange<br>brown  | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 20.0      | DK 7222          |                | Composite Sample                      |                           |                                                |                                            |                                          |                               |                                       |

0.03

000184

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                |  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH |  | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|------------------------------------------------|--|--------------------------------------------|------------------------------------------|--|-------------------------------|---------------------------------------|
|                             |      |                  |                |                               |                           |                                                |  |                                            |                                          |  |                               |                                       |
| 20.0                        | 22.0 | DK 7217          | TO             | Sand                          | light<br>orange<br>brown  | fine sand to<br>medium sand<br>mod.well sorted |  | sub-rounded<br>sub-spherical               |                                          |  | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 7218          | TO             | Sand                          | light<br>orange<br>yellow | fine sand to<br>medium sand<br>mod.well sorted |  | sub-rounded<br>sub-spherical               |                                          |  | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 7219          | TO             | Sand                          | light<br>orange<br>grey   | fine sand to<br>medium sand<br>mod.well sorted |  | sub-rounded<br>sub-spherical               |                                          |  | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 7220          | TO             | Sand                          | light<br>grey             | fine sand to<br>medium sand<br>mod.well sorted |  | sub-rounded<br>sub-spherical               |                                          |  | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 7221          | TO             | Sand                          | light<br>grey             | fine sand to<br>medium sand<br>mod.well sorted |  | sub-rounded<br>sub-spherical               |                                          |  | 0.0                           |                                       |
| 20.0                        | 30.0 | DK 7223          |                | Composite Sample              |                           |                                                |  |                                            |                                          |  |                               | 0.01                                  |

EOH at 30.0 m

000185

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : HAMBIDGE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 682900 NORTHING: 6700410 R.L.: 218.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M077

LOGGED BY : PRD

TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M077

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt to<br>coarse sand<br>v.poorly sorted      |                                            |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt to<br>coarse sand<br>v.poorly sorted      |                                            |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7224          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7225          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7226          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7227          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 7228          | Q              | Sand<br>silty                         | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |

000186



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                 | 24.0      | DK 7229          | Q              | Sand<br>silty                 | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7230          | Q              | Sand<br>silty                 | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7231          | Q              | Sand<br>silty                 | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7232          | TO             | Sand<br>silty                 | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 30.0      | DK 7233          |                | Composite Sample              |                           |                                                |                                            |                                          |                               | 0.08                                  |

EOH at 30.0 m

000187

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : HAMBIDGE  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 21-OCT-90

HOLE NUMBER : M078

LOGGED BY : PRD  
TOTAL DEPTH : 36.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 682240 NORTHING: 6699750 R.L.: 205.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M078

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor   | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                   | light<br>red<br>brown     | silt to<br>v.crse sand<br>v.poorly sorted        | angular                                    |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                   | light<br>red<br>brown     | silt to<br>v.crse sand<br>v.poorly sorted        | angular                                    |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | angular                                    |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | angular                                    |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7234          | Q              | Sand<br>clayey<br>Clay<br>sandy | medium<br>red<br>brown    | v.fine sand to<br>coarse sand<br>poorly sorted   | angular                                    |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7235          | Q              | Sand<br>clayey                  | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7236          | Q              | Sand<br>ferrug. silty           | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7237          | Q              | Sand<br>ferrug. silty           | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7238          | Q              | Sand<br>Sandstone<br>ferrug.    | medium<br>orange<br>brown | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7239          | Q              | Sand<br>Sandstone<br>ferrug.    | medium<br>orange<br>brown | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 20.0      | DK 7248          |                | Composite Sample                |                           |                                                  |                                            |                                          |                               | 0.07                                  |

000188

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                        | 22.0 | DK 7240          | Q              | Sand<br>ferrug.               | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 7241          | Q              | Sand                          | light<br>orange<br>brown  | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 7242          | Q              | Sand                          | light<br>orange<br>yellow | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 7243          | Q              | Sand                          | light<br>orange<br>yellow | medium sand<br>well sorted                     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 7244          | TO             | Sand                          | light<br>orange<br>grey   | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 30.0                        | 32.0 | DK 7245          | TO             | Sand                          | light<br>orange<br>grey   | medium sand<br>well sorted                     | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 32.0                        | 34.0 | DK 7246          | TO             | Sand                          | light<br>grey             | medium sand<br>well sorted                     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 34.0                        | 36.0 | DK 7247          | TO             | Sand                          | light<br>grey             | medium sand<br>well sorted                     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 20.0                        | 36.0 | DK 7249          |                | Composite Sample              |                           |                                                |                                            |                                          |                               | 0.03                                  |

EOH at 36.0 m

000189

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : HAMBIDGE  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 21-OCT-90

HOLE NUMBER : M079

LOGGED BY : PRD  
TOTAL DEPTH : 42.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 681550 NORTHING: 6699000 R.L.: 196.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M079

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor   | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                   | light<br>red<br>brown    | silt to<br>coarse sand<br>v.poorly sorted        | angular                                    |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                   | light<br>red<br>brown    | silt to<br>coarse sand<br>v.poorly sorted        | angular                                    |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey | medium<br>red<br>brown   | clay to<br>medium sand<br>poorly sorted          | angular                                    |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey | medium<br>red<br>brown   | clay to<br>medium sand<br>poorly sorted          | angular                                    |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br>clayey<br>Clay<br>sandy | medium<br>red<br>brown   | v.fine sand to<br>coarse sand<br>poorly sorted   | angular                                    |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7250          | Q              | Sand<br>ferrug.                 | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7251          | Q              | Sand                            | medium<br>red<br>brown   | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7252          | Q              | Sand                            | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7253          | Q              | Sand                            | light<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7254          | Q              | Sand                            | light<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 20.0      | DK 7266          |                | Composite Sample                |                          |                                                  |                                            |                                          |                               | 0.06                                  |

000190

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7255          | Q              | Sand                          | light<br>orange<br>grey | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7256          | TO             | Sand<br>quartz.               | light<br>grey           | fine sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7257          | TO             | Sand<br>quartz.               | light<br>grey           | fine sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7258          | TO             | Sand<br>quartz.               | light<br>grey           | fine sand to<br>medium sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7259          | TO             | Sand<br>quartz.               | light<br>grey           | fine sand to<br>medium sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 7267          |                | Composite Sample              |                         |                                                |                                            |                                          |                               | 0.01                                  |
| 30.0                 | 32.0      | DK 7260          | TO             | Sand<br>quartz.               | light<br>grey           | fine sand to<br>medium sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 7261          | TO             | Sand<br>quartz.               | light<br>grey           | fine sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 34.0                 | 36.0      | DK 7262          | TO             | Sand<br>quartz.               | light<br>grey           | fine sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 7263          | TO             | Sand<br>quartz.               | light<br>grey           | fine sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 38.0                 | 40.0      | DK 7264          | TO             | Sand<br>quartz.               | light<br>grey           | fine sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 40.0                 | 42.0      | DK 7265          | TEP            | Sand                          | light<br>orange<br>grey | v.fine sand to<br>fine sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 30.0                 | 42.0      | DK 7268          |                | Composite Sample              |                         |                                                |                                            |                                          |                               | 0.01                                  |

000191

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : HAMBIDGE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 680850 NORTHING: 6698320 R.L.: 180.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M080

CONTRACTOR : Wallis Drilling

RIG TYPE : Mantis 75

LOGGED BY : PRD

DATE DRILLED: 21-OCT-90

TOTAL DEPTH : 45.0

SHEET 1 OF 2 HOLE NUMBER : M080

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt<br>coarse sand<br>v.poorly sorted         | to<br>angular                              |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt<br>coarse sand<br>v.poorly sorted         | to<br>angular                              |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay<br>medium sand<br>poorly sorted           | to                                         |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay<br>medium sand<br>poorly sorted           | to                                         |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay<br>medium sand<br>poorly sorted           | to                                         |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | Q              | Sand<br>clayey                        | medium<br>red<br>brown    | v.fine sand to<br>v.crse sand<br>poorly sorted |                                            |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      |                  | Q              | Sand<br>clayey                        | medium<br>red<br>brown    | v.fine sand to<br>v.crse sand<br>poorly sorted |                                            |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      |                  | Q              | Sand<br>clayey                        | medium<br>red<br>brown    | v.fine sand to<br>v.crse sand<br>poorly sorted |                                            |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7269          | Q              | Sand<br>ferrug.                       | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 18.0                 | 20.0      | DK 7270          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 20.0                 | 22.0      | DK 7271          | Q              | Sand<br>silty<br>Sandstone            | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000192

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                 | 24.0      | DK 7272          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           | 0.20                                  |
| 24.0                 | 26.0      | DK 7273          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           | 0.49                                  |
| 26.0                 | 28.0      | DK 7274          | TEP            | Ironstone<br>laterit                  | dark<br>red<br>brown      | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 1.0<br>Good trace             | 12.28                                 |
| 28.0                 | 30.0      | DK 7275          | TEP            | Ironstone<br>laterit<br>Sand          | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            | 0.75                                  |
| 16.0                 | 30.0      | DK 7283          |                | Composite Sample                      |                           |                                                  |                                            |                                          |                               | 1.70                                  |
| 30.0                 | 32.0      | DK 7276          | TEP            | Sand                                  | light<br>grey             | fine sand<br>well sorted                         | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            | 0.06                                  |
| 32.0                 | 34.0      | DK 7277          | TEP            | Sand                                  | light<br>brown<br>grey    | fine sand<br>well sorted                         | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 7278          | TEP            | Sand                                  | light<br>brown<br>grey    | fine sand<br>well sorted                         | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 7279          | TEP            | Sand                                  | light<br>brown<br>grey    | fine sand<br>well sorted                         | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 38.0                 | 40.0      | DK 7280          | TEP            | Sand                                  | light<br>brown<br>grey    | fine sand<br>well sorted                         | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 30.0                 | 40.0      | DK 7284          |                | Composite Sample                      |                           |                                                  |                                            |                                          |                               |                                       |
| 40.0                 | 44.0      | DK 7281          | TEP            | Clay                                  | light<br>grey             | clay to<br>coarse silt<br>well sorted            |                                            |                                          | 0.0                           |                                       |
| 44.0                 | 45.0      | DK 7282          | PAL            | Shale<br>laminat                      | medium<br>brown<br>grey   | v.fine sand to<br>fine sand<br>well sorted       |                                            |                                          | 0.0                           |                                       |

000193

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : HAMBIDGE  
 JOB NO : T62  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 680150 NORTHING: 6697600 R.L.: 180.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 21-OCT-90

HOLE NUMBER : M081

LOGGED BY : PRD

TOTAL DEPTH : 26.0

SHEET 1 OF 2 HOLE NUMBER : M081

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt to<br>coarse sand<br>v.poorly sorted      | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt to<br>coarse sand<br>v.poorly sorted      | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt to<br>coarse sand<br>v.poorly sorted      | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7285          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7286          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7287          | TO             | Sand                                  | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7288          | TO             | Sand<br>Sandstone<br>ferrug.          | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7289          | TO             | Sand<br>Sandstone<br>ferrug.          | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 7290          | TEP            | Sandstone                             | light<br>brown<br>grey    | fine sand<br>well sorted                       | sub-rounded<br>sub-spherical<br>smooth     | ceme<br>Calcareous<br>strong,            | 0.0                           |                                       |

000194



| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |      |                  |                |                               |                        |                                 |                                            |                                          |                               |                                       |
| 22.0                        | 24.0 | DK 7291          | TEP            | Sandstone                     | light<br>brown<br>grey | fine sand<br>well sorted        | sub-rounded<br>sub-spherical<br>smooth     | ceme<br>Calcareous<br>strong,<br>cons.   | 0.0                           |                                       |
| 24.0                        | 25.0 |                  |                |                               |                        |                                 |                                            |                                          |                               |                                       |
| 10.0                        | 25.0 | DK 7292          |                | Composite Sample              |                        |                                 |                                            |                                          |                               | 0.07                                  |
|                             |      |                  |                |                               |                        |                                 |                                            |                                          |                               |                                       |

EOH at 26.0 m

000195

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : WYOLA  
 JOB NO : T64

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 23-OCT-90

HOLE NUMBER : M082  
 LOGGED BY : PRD  
 TOTAL DEPTH : 19.5

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 645214 NORTHING: 6742036 R.L.: 226.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M082

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                    | light<br>red<br>brown     | silt to<br>v.crse sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand            | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand            | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7336          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7337          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7343          |                | Composite Sample                 |                           |                                                  |                                            |                                          |                               | 0.23                                  |
| 10.0                 | 12.0      | DK 7338          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7339          | TO             | Sand                             | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7340          | TO             | Sand                             | light<br>orange<br>yellow | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7341          | TEH            | Grit<br>quartz.<br>Sand          | light<br>orange<br>yellow | v.crse sand to<br>granule<br>mod.well sorted     | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 18.0                 | 19.5      | DK 7342          | TEH            | Grit<br><br>Sandstone            | light<br>grey             | v.crse sand to<br>granule<br>mod.well sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |

000196

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES       | COLOUR    | GRAIN SIZE        | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------|-----------|-------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                      |           |                  |                | major/<br>minor  | L/<br>hue | RANGE/<br>SORTING |                                            |                                          |                               |                                       |
| 10.0                 | 19.5      | DK 7344          |                | Composite Sample |           |                   |                                            |                                          |                               | 0.12                                  |

EOH at 19.5 m

000197

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1655  
SHEET : WYOLA  
JOB NO : T64

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 23-OCT-90

HOLE NUMBER : M083

LOGGED BY : PRD  
TOTAL DEPTH : 34.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 644824 NORTHING: 6741173 R.L.: 227.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M083

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                    | light<br>red<br>brown     | silt<br>coarse sand<br>poorly sorted             | to<br>sub-angular                          |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                    | light<br>red<br>brown     | silt<br>coarse sand<br>poorly sorted             | to<br>sub-angular                          |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey  | medium<br>red<br>brown    | clay<br>medium sand<br>poorly sorted             | to                                         |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7345          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7346          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7361          |                | Composite Sample                 |                           |                                                  |                                            |                                          |                               | 0.27                                  |
| 10.0                 | 12.0      | DK 7347          | TO             | Sand                             | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7348          | TO             | Sand                             | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7349          | TO             | Sand                             | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7350          | TO             | Sand                             | light<br>orange           | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7351          | TEH            | Grit<br>quartz.<br>Sandstone     | light<br>yellow<br>grey   | v.crse sand to<br>granule<br>f.poorly sorted     | sub-angular<br>sub-elongate                | cons<br>Siliceous                        | 0.0                           |                                       |

000198

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor       | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                 | 20.0      | DK 7362          |                | Composite Sample                    |                         |                                                  |                                            |                                          |                               | 0.15                                  |
| 20.0                 | 22.0      | DK 7352          | TEH            | Grit<br>quartz.                     | light<br>grey           | v.crse sand to<br>granule<br>poorly sorted       | sub-angular<br>sub-elongate                |                                          | 0.0                           | 0.02                                  |
| 22.0                 | 24.0      | DK 7353          | TEH            | Sand<br>gritty quartz.<br>Sandstone | light<br>grey           | v.crse sand to<br>granule<br>poorly sorted       | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            | 0.07                                  |
| 24.0                 | 26.0      | DK 7354          | TEH            | Sand<br>gritty quartz.<br>Sandstone | light<br>grey<br>brown  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           | 0.02                                  |
| 26.0                 | 28.0      | DK 7355          | TEH            | Sand<br>gritty quartz.<br>Sandstone | light<br>grey           | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            | 0.04                                  |
| 28.0                 | 30.0      | DK 7356          | TEH            | Sand<br>quartz.                     | medium<br>red<br>grey   | coarse sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           | 0.17                                  |
| 30.0                 | 32.0      | DK 7357          | TEH            | Sand<br>quartz.                     | pale<br>brown           | fine sand<br>well sorted                         | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            | 0.24                                  |
| 32.0                 | 34.0      | DK 7358          | TEH            | Sand<br>quartz.                     | pale<br>yellow<br>brown | fine sand<br>well sorted                         | rounded<br>sub-spherical                   |                                          | 2.0<br>V.good<br>trace        | 0.82                                  |
| 34.0                 | 36.0      | DK 7359          | TEH            | Sand<br>quartz.                     | pale<br>yellow<br>brown | fine sand<br>well sorted                         | rounded<br>sub-spherical                   |                                          | 1.0<br>Good trace             | 0.52                                  |
| 36.0                 | 38.0      | DK 7360          | TEH            | Sand<br>quartz.<br>Sandstone        | pale<br>yellow<br>brown | fine sand<br>well sorted                         | rounded<br>sub-spherical                   |                                          | 0.0                           | 0.65                                  |

EOH at 34.0 m

000199

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1655  
SHEET : WYOLA  
JOB NO : T64

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 23-OCT-90

HOLE NUMBER : M084

LOGGED BY : PRD  
TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 644579 NORTHING: 6740008 R.L.: 228.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M084

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt<br>coarse sand<br>poorly sorted           | to<br>sub-angular                          |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt<br>coarse sand<br>poorly sorted           | to<br>sub-angular                          |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay<br>medium sand<br>poorly sorted           | to                                         |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7363          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7364          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7375          |                | Composite Sample                      |                           |                                                |                                            |                                          |                               | 0.28                                  |
| 10.0                 | 12.0      | DK 7365          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7366          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7367          | TO             | Sand<br>gritty ferrug.                | medium<br>orange<br>brown | medium sand to<br>granule<br>poorly sorted     | angular<br>elongate                        |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7368          | TO             | Sand<br>gritty ferrug.                | light<br>orange<br>brown  | medium sand to<br>granule<br>poorly sorted     | angular<br>elongate                        |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7369          | TEH            | Grit<br>quartz.                       | light<br>grey             | v.crse sand to<br>granule<br>mod.well sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |

000200

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                      |           |                  |                |                               |                     |                                              |                                            |                                          |                               |                                       |
| 10.0                 | 20.0      | DK 7376          |                | Composite Sample              |                     |                                              |                                            |                                          |                               | 0.14                                  |
| 20.0                 | 22.0      | DK 7370          | TEH            | Grit<br>quartz.               | light<br>grey       | v.crse sand to<br>granule<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7371          | TEH            | Grit<br>quartz.               | light<br>grey       | v.crse sand to<br>granule<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7372          | TEH            | Sand<br>quartz. gritty        | light<br>grey       | coarse sand to<br>granule<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7373          | TEH            | Sand<br>quartz. gritty        | light<br>grey       | coarse sand to<br>granule<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7374          | TEH            | Sand<br>quartz. gritty        | light<br>grey       | v.crse sand<br>mod.well sorted               | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 7377          |                | Composite Sample              |                     |                                              |                                            |                                          |                               | 0.03                                  |

EOH at 30.0 m

000201

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1655  
SHEET : WYOLA  
JOB NO : T64

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 24-OCT-90

HOLE NUMBER : M085

LOGGED BY : PRD  
TOTAL DEPTH : 36.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 644117 NORTHING: 6739345 R.L.: 230.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M085

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor             | COLOUR<br>L/<br>hue           | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------------------|-------------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                             | light<br>red<br>brown         | silt<br>coarse sand<br>poorly sorted             | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                             | light<br>red<br>brown         | silt<br>coarse sand<br>poorly sorted             | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand                     | medium<br>red<br>brown        | clay<br>medium sand<br>poorly sorted             |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7378          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | fine sand<br>v.crse sand<br>poorly sorted        | sub-angular<br>sub-elongate<br>earthy      | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7379          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | fine sand<br>v.crse sand<br>poorly sorted        | angular<br>sub-elongate<br>earthy          | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7393          |                | Composite Sample                          |                               |                                                  |                                            |                                          |                               | 0.30                                  |
| 10.0                 | 12.0      | DK 7380          | TO             | Sand<br>ferrug.                           | medium<br>orange<br>brown     | medium sand to<br>v.crse sand<br>mod.well sorted | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7381          | TO             | Sand<br>ferrug.                           | medium<br>orange<br>brown     | medium sand to<br>v.crse sand<br>mod.well sorted | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7382          | TO             | Sand<br>ferrug.                           | medium<br>orange<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7383          | TO             | Sand                                      | light<br>orange<br>brown      | medium sand to<br>coarse sand<br>mod.well sorted | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7384          | TO             | Sand                                      | light                         | medium sand to                                   | sub-angular                                |                                          | 0.2                           |                                       |

000202



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                                                     | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|-------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                 | 20.0      | DK 7394          |                | Composite Sample              |                         |                                                                                     |                                            |                                          |                               | 0.17                                  |
| 20.0                 | 22.0      | DK 7385          | TO             | Sand<br>quartz.<br>Grit       | light<br>orange<br>grey | medium sand to<br>granule<br>poorly sorted                                          | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7386          | TEH            | Grit<br>quartz.               | light<br>grey           | v.crse sand to<br>granule<br>mod.well sorted                                        | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 24.0                 | 26.0      | DK 7387          | TEH            | Grit<br>quartz.<br>Sandstone  | light<br>grey           | v.crse sand to<br>granule<br>mod.well sorted                                        | sub-rounded<br>sub-spherical               |                                          | 0.0                           | 0.08                                  |
| 26.0                 | 28.0      | DK 7388          | TEH            | Grit<br>quartz.<br>Sand       | light<br>grey           | Comments: Hard layer at 25.5 metres<br>v.crse sand to<br>granule<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.5<br>trace                  | 0.07                                  |
| 28.0                 | 30.0      | DK 7389          | TEH            | Sand<br>gritty quartz.        | light<br>grey           | medium sand to<br>v.crse sand<br>poorly sorted                                      | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            | 0.03                                  |
| 30.0                 | 32.0      | DK 7390          | TEH            | Sand<br>quartz.               | light<br>brown<br>grey  | fine sand to<br>medium sand<br>mod.well sorted                                      | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 32.0                 | 34.0      | DK 7391          | TEH            | Sand<br>quartz.               | light<br>brown<br>grey  | fine sand to<br>medium sand<br>mod.well sorted                                      | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 34.0                 | 36.0      | DK 7392          | TEH            | Sand<br>quartz.               | light<br>brown<br>grey  | fine sand to<br>medium sand<br>mod.well sorted                                      | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 20.0                 | 36.0      | DK 7395          |                | Composite Sample              |                         |                                                                                     |                                            |                                          |                               | 0.24                                  |

EOH at 36.0 m

000203

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : WYOLA  
 JOB NO : T64  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 643701 NORTHING: 6738432 R.L.: 232.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M086

LOGGED BY : PRD

TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M086

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt<br>coarse sand<br>poorly sorted             | to<br>sub-angular                          |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty<br>Clay<br>sandy        | light<br>red<br>brown     | silt<br>coarse sand<br>poorly sorted             | to<br>sub-angular                          |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy                         | medium<br>red<br>brown    | clay<br>fine sand<br>mod.well sorted             | to                                         |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7396          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7397          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7398          | Q              | Sand<br>silty                         | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7399          | TO             | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7400          | TO             | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7401          | TO             | Sand<br>ferrug.<br>Sandstone          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7402          | TO             | Sand                                  | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 20.0      | DK 7408          |                | Composite Sample                      |                           |                                                  |                                            |                                          |                               |                                       |

0.14

000204

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-----------------------------|------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
|                             |      |                  |                |                               |                          |                                                  |                                            |                                          |                               |                                      |
| 20.0                        | 22.0 | DK 7403          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                      |
| 22.0                        | 24.0 | DK 7404          | TO             | Sand                          | light<br>orange<br>grey  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                      |
| 24.0                        | 26.0 | DK 7405          | TEH            | Sand<br>quartz.               | light<br>grey            | coarse sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                      |
| 26.0                        | 28.0 | DK 7406          | TEH            | Sand<br>quartz.               | light<br>grey            | coarse sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                      |
| 28.0                        | 30.0 | DK 7407          | TEH            | Sand<br>quartz.               | light<br>grey            | coarse sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                      |
| 20.0                        | 30.0 | DK 7409          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.03                                 |

EOH at 30.0 m

000205

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : WYOLA  
 JOB NO : T64

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 24-OCT-90

HOLE NUMBER : M087  
 LOGGED BY : PRD  
 TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 643237 NORTHING: 6737644 R.L.: 235.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M087

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor             | COLOUR<br>L/<br>hue           | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE   | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------------------|-------------------------------|--------------------------------------------------|----------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                             | light<br>red<br>brown         | silt<br>coarse sand<br>poorly sorted             | to<br>angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                             | light<br>red<br>brown         | silt<br>coarse sand<br>poorly sorted             | to<br>angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey           | medium<br>red<br>brown        | clay<br>fine sand<br>mod.well sorted             | to                                           |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7410          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | fine sand<br>coarse sand<br>poorly sorted        | to<br>sub-angular<br>sub-elongate            | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7411          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | fine sand<br>medium sand<br>mod.well sorted      | to<br>sub-angular<br>sub-elongate            | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7412          | Q              | Sand<br>ferrug.                           | medium<br>orange<br>brown     | medium sand<br>well sorted                       | sub-rounded<br>sub-spherical<br>earthy       |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7413          | TO             | Sand<br>ferrug.                           | medium<br>orange<br>brown     | fine sand<br>medium sand<br>mod.well sorted      | to<br>sub-rounded<br>sub-spherical<br>earthy |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7414          | TO             | Sand<br>ferrug.                           | medium<br>orange<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>earthy       |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7415          | TO             | Sand                                      | medium<br>orange<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical                 |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7416          | TO             | Sand                                      | light<br>orange<br>brown      | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical                 |                                          | 0.0                           |                                       |
| 6.0                  | 20.0      | DK 7422          |                | Composite Sample                          |                               |                                                  |                                              |                                          |                               | 0.15                                  |

000206

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |      |                  |                |                               |                          |                                                  |                                            |                                          |                               |                                       |
| 20.0                        | 22.0 | DK 7417          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 7418          | TO             | Sand                          | light<br>orange<br>grey  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 7419          | TO             | Sand                          | light<br>orange<br>grey  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 30.0                        | 28.0 | DK 7421          | TEH            | Sand                          | light<br>orange<br>grey  | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 7420          | TEH            | Sand                          | light<br>orange<br>grey  | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                        | 30.0 | DK 7423          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.02                                  |

EOH at 30.0 m

000207

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : WYOLA  
 JOB NO : T64  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 643122 NORTHING: 6736776 R.L.: 240.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M088

LOGGED BY : PRD

TOTAL DEPTH : 36.0

SHEET 1 OF 2 HOLE NUMBER : M088

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor             | COLOUR<br>L/<br>hue           | GRAIN SIZE<br>RANGE/<br>SORTING                      | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------------------|-------------------------------|------------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                             | light<br>red<br>brown         | silt<br>to<br>medium sand<br>poorly sorted           | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                             | light<br>red<br>brown         | silt<br>to<br>medium sand<br>poorly sorted           | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey           | medium<br>red<br>brown        | clay<br>to<br>medium sand<br>poorly sorted           |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7424          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-angular<br><br>sub-spherical           | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7425          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-angular<br><br>sub-spherical           | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7426          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | medium sand to<br><br>v.crse sand<br>poorly sorted   | sub-angular<br><br>sub-spherical           | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7427          | TO             | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-angular<br><br>sub-spherical           | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7428          | TO             | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-angular<br><br>sub-spherical           |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7429          | TO             | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | medium sand to<br><br>v.crse sand<br>poorly sorted   | sub-angular<br><br>sub-spherical           |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7430          | TO             | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-angular<br><br>sub-spherical           |                                          | 0.0                           |                                       |

000208

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE              | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|---------------------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 20.0                 | 22.0      | DK 7431          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical                            |                                          | 0.0                           |                                      |
| 22.0                 | 24.0      | DK 7432          | TO             | Sand                          | pale<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical                            |                                          | 0.0                           |                                      |
| 24.0                 | 26.0      | DK 7433          | TEH            | Grit<br>quartz.<br>Sand       | light<br>grey            | granule<br>mod.well sorted                       | rounded<br>sub-spherical                                |                                          | 0.0                           |                                      |
| 26.0                 | 28.0      | DK 7434          | TEH            | Grit<br>quartz.               | light<br>grey            | granule<br>mod.well sorted                       | rounded<br>sub-spherical                                |                                          | 0.0                           |                                      |
| 28.0                 | 30.0      | DK 7435          | TEH            | Sand<br>quartz.<br>Grit       | light<br>grey            | fine sand to<br>medium sand<br>mod.well sorted   | rounded<br>sub-spherical                                |                                          | 0.2                           | light trace                          |
| 30.0                 | 32.0      | DK 7436          | TEH            | Sand<br>quartz.<br>Grit       | light<br>grey            | fine sand to<br>medium sand<br>mod.well sorted   | rounded<br>sub-spherical                                |                                          | 0.2                           | light trace                          |
| 32.0                 | 34.0      | DK 7437          | TEH            | Sand<br>quartz.<br>Grit       | light<br>grey            | fine sand to<br>medium sand<br>mod.well sorted   | rounded<br>sub-spherical                                |                                          | 0.2                           | light trace                          |
| 34.0                 | 36.0      | DK 7438          | TEH            | Sand<br>quartz.<br>Grit       | light<br>grey            | fine sand to<br>medium sand<br>mod.well sorted   | Comments: Sponge spicules ?<br>rounded<br>sub-spherical |                                          | 0.2                           | light trace                          |
| 20.0                 | 36.0      | DK 7440          |                | Composite Sample              |                          | Comments: Sponge spicules ?                      |                                                         |                                          |                               | 0.10                                 |

EOH at 36.0 m

000209

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : WYOLA  
 JOB NO : T64

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 643154 NORTHING: 6735682 R.L.: 248.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 24-OCT-90

HOLE NUMBER : M089  
 LOGGED BY : PRD  
 TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M089

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor             | COLOUR<br>L/<br>hue           | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------------------|-------------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                             | light<br>red<br>brown         | silt to<br>coarse sand<br>poorly sorted          | angular                                    |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty<br>Clay                     | light<br>red<br>brown         | silt to<br>coarse sand<br>poorly sorted          | angular                                    |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy                             | medium<br>red<br>brown        | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7441          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7442          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7443          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7444          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7445          | TO             | Sand                                      | medium<br>orange<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7446          | TO             | Sand                                      | medium<br>orange<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7447          | TO             | Sand                                      | medium<br>orange<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |

000210



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7448          | TO             | Sand                          | light<br>orange<br>yellow | coarse sand<br>well sorted                     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7449          | TO             | Sand                          | light<br>orange<br>yellow | coarse sand<br>well sorted                     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7450          | TO             | Sand                          | light<br>orange<br>yellow | coarse sand<br>well sorted                     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7451          | TO             | Sand                          | light<br>grey             | medium sand to<br>v.crse sand<br>poorly sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7452          | TO             | Sand                          | light<br>grey             | medium sand to<br>v.crse sand<br>poorly sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 7454          |                | Composite Sample              |                           |                                                |                                            |                                          |                               | 0.05                                  |

EOH at 30.0 m

000211

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : CHILBINGA  
 JOB NO : T64  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 642937 NORTHING: 6734716 R.L.: 249.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M090

LOGGED BY : PRD

TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M090

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor  | COLOUR<br>L/<br>hue           | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|--------------------------------|-------------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                  | light<br>red<br>brown         | silt to<br>coarse sand<br>poorly sorted          | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                  | light<br>red<br>brown         | silt to<br>coarse sand<br>poorly sorted          | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand          | medium<br>red<br>brown        | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7455          | Q              | Sand<br><br>silty<br>Sandstone | medium<br><br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | angular<br><br>sub-elongate<br>earthy      | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7456          | Q              | Sand<br><br>silty<br>Sandstone | medium<br><br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | angular<br><br>sub-elongate<br>earthy      | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7457          | Q              | Sand<br><br>silty<br>Sandstone | medium<br><br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br><br>sub-elongate<br>earthy  | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7458          | TO             | Sand                           | medium<br>orange<br>brown     | medium sand<br><br>well sorted                   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 7459          | TO             | Sand                           | medium<br>orange<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 7460          | TO             | Sand                           | light<br>orange<br>brown      | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7461          | TO             | Sand                           | light<br>orange<br>yellow     | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000212

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 20.0                 | 22.0      | DK 7462          | TO             | Sand                          | light<br>orange<br>yellow | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                      |
| 22.0                 | 24.0      | DK 7463          | TO             | Sand                          | light<br>orange<br>yellow | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                      |
| 24.0                 | 26.0      | DK 7464          | TO             | Sand<br>quartz.               | light<br>grey             | coarse sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                      |
| 26.0                 | 28.0      | DK 7465          | TO             | Sand<br>quartz.               | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                      |
| 28.0                 | 30.0      | DK 7466          | TO             | Sand<br>quartz.               | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                      |
| 20.0                 | 30.0      | DK 7468          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.01                                 |

EOH at 30.0 m

000213

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : CHILBINGA  
 JOB NO : T64  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 642491 NORTHING: 6733530 R.L.: 252.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 24-OCT-90

HOLE NUMBER : M091

LOGGED BY : PRD  
 TOTAL DEPTH : 36.0

SHEET 1 OF 2 HOLE NUMBER : M091

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 3.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown     | silt<br>coarse sand<br>poorly sorted             | angular<br>sub-elongate                    |                                          | 0.2<br>light trace            |                                       |
| 3.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown    | clay<br>fine sand<br>poorly sorted               |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7469          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 7470          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 12.0      | DK 7471          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7472          | TO             | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7473          | TO             | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7474          | TO             | Sand<br>ferrug.               | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7475          | TO             | Sand<br>ferrug.               | light<br>orange<br>brown  | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 20.0      | DK 7484          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.07                                  |
| 20.0                 | 22.0      | DK 7476          | TO             | Sand<br>quartz.               | pale<br>orange<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000214

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                 | 24.0      | DK 7477          | TO             | Sand<br>quartz.               | pale<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7478          | TO             | Sand<br>quartz.               | pale<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7479          | TO             | Sand<br>quartz.               | light<br>orange<br>grey | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7480          | TO             | Sand<br>quartz.               | pale<br>yellow<br>grey  | coarse sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 7481          | TO             | Sand<br>quartz.               | pale<br>yellow<br>grey  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 7482          | TO             | Sand<br>quartz.               | light<br>grey           | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 7483          | TO             | Sand<br>quartz.               | light<br>grey           | coarse sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 20.0                 | 36.0      | DK 7485          |                | Composite Sample              |                         |                                                  |                                            |                                          |                               | 0.01                                  |

EOH at 36.0 m

000215

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1655  
SHEET : CHILBINGA  
JOB NO : T64

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 24-OCT-90

HOLE NUMBER : M092

LOGGED BY : PRD

TOTAL DEPTH : 42.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 642098 NORTHING: 6732467 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M092

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor            | COLOUR<br>L/<br>hue           | GRAIN SIZE<br>RANGE/<br>SORTING                      | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------------------------|-------------------------------|------------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Calcrete<br>sandy<br>Sandstone           | light<br>red<br>brown         | v.fine sand to<br>coarse sand<br>poorly sorted       | sub-angular                                | ceme<br>Calcareous                       | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Sandstone<br><br>ferrug. laterit<br>Sand | medium<br><br>red<br>brown    | fine sand to<br><br>coarse sand<br>poorly sorted     | sub-angular<br><br>sub-spherical           | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 7486          | Q              | Sand<br><br>Sandstone<br>ferrug.<br>Sand | medium<br><br>orange<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-rounded<br><br>sub-spherical           | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7487          | Q              | Sand<br><br>Sandstone<br>ferrug.<br>Sand | medium<br><br>orange<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-rounded<br><br>sub-spherical           | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7488          | Q              | Sand<br>ferrug.                          | medium<br>orange<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7489          | Q              | Sand<br>ferrug.                          | medium<br>orange<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7490          | Q              | Sand<br>ferrug.                          | medium<br>orange<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7491          | Q              | Sand<br>ferrug.                          | medium<br>orange<br>brown     | medium sand<br>well sorted                           | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 7492          | TO             | Sand                                     | medium<br>orange<br>brown     | medium sand<br>well sorted                           | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 18.0                 | 20.0      | DK 7493          | TO             | Sand                                     | light<br>orange<br>brown      | fine sand to<br>medium sand<br>mod.well sorted       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000216

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7494          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7495          | TO             | Sand                          | pale<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 24.0                 | 26.0      | DK 7496          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7497          | TO             | Sand<br>quartz.               | light<br>grey            | coarse sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7498          | TO             | Sand<br>quartz.               | light<br>grey            | coarse sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 7506          |                | Composite Sample              |                          | Comments: Sponge spicule ? (see bag)             |                                            |                                          |                               | 0.03                                  |
| 30.0                 | 32.0      | DK 7499          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 7500          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 7501          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 7502          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 38.0                 | 40.0      | DK 7503          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 40.0                 | 42.0      | DK 7504          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 30.0                 | 42.0      | DK 7507          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.01                                  |

000217

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : CHILBINGA  
 JOB NO : T64  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 641686 NORTHING: 6731803 R.L.: 251.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 24-OCT-90

HOLE NUMBER : M093

LOGGED BY : PRD

TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M093

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty<br>Clay         | light<br>red<br>brown  | silt<br>to<br>medium sand<br>poorly sorted       | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 7508          | Q              | Sand<br>ferrug.               | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 7509          | Q              | Sand<br>ferrug.<br>Sandstone  | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 7510          | Q              | Sand<br>quartz.               | light<br>grey          | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 7511          | TO             | Sand<br>quartz.               | pale<br>yellow<br>grey | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | Comments: Heavies are coarse!            | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7512          | TO             | Sand<br>quartz.               | light<br>grey          | medium sand<br>well sorted                       | rounded<br>sub-spherical                   | Comments: Heavies are coarse!            | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7513          | TO             | Sand<br>quartz.               | light<br>grey          | medium sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7514          | TO             | Sand<br>quartz.               | light<br>grey          | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7515          | TO             | Sand<br>quartz.               | light<br>grey          | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7516          | TO             | Sand<br>quartz.               | light<br>grey          | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 2.0                  | 20.0      | DK 7522          |                | Composite Sample              |                        |                                                  |                                            |                                          |                               | 0.04                                  |

000218



| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                        | 22.0 | DK 7517          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 7518          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 7519          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 7520          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 7521          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 20.0                        | 30.0 | DK 7523          |                | Composite Sample              |                     |                                                  |                                            |                                          |                               | 0.01                                  |

EOH at 30.0 m

000219

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : CHILBINGA  
 JOB NO : T64  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 641192 NORTHING: 6730742 R.L.: 240.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M094

LOGGED BY : PRD

TOTAL DEPTH : 30.0

SHEET 1 OF 2 HOLE NUMBER : M094

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue           | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|-------------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                    | medium<br>red<br>brown        | silt<br>to<br>medium sand<br>poorly sorted       |                                            |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty<br>Clay            | medium<br>red<br>brown        | silt<br>to<br>medium sand<br>poorly sorted       |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand            | medium<br>red<br>brown        | clay<br>to<br>medium sand<br>poorly sorted       |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7524          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown     | fine sand<br>to<br>coarse sand<br>poorly sorted  | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7525          | Q              | Sandstone<br><br>ferrug.<br>Sand | medium<br><br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7526          | TO             | Sand<br><br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7527          | TO             | Sand                             | light<br>orange<br>brown      | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7528          | TO             | Sand                             | light<br>brown<br>tan         | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7529          | TO             | Sand<br>quartz.                  | light<br>grey                 | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               | Comments: Sponge spicules ?              | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7530          | TO             | Sand<br>quartz.                  | light<br>grey                 | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 20.0      | DK 7536          |                | Composite Sample                 |                               |                                                  |                                            |                                          |                               | 0.04                                  |

000220

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7531          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7532          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7533          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7534          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7535          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 7537          |                | Composite Sample              |                     |                                                  |                                            |                                          |                               | 0.01                                  |

EOH at 30.0 m

000221

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : CHILBINGA  
 JOB NO : T64

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 25-OCT-90

HOLE NUMBER : M095

LOGGED BY : PRD  
 TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 640728 NORTHING: 6729930 R.L.: 230.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M095

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue           | GRAIN SIZE<br>RANGE/<br>SORTING                      | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|-------------------------------|------------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty<br>Silt            | medium<br>red<br>brown        | silt to<br>coarse sand<br>v.poorly sorted            | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty<br>Silt            | medium<br>red<br>brown        | silt to<br>coarse sand<br>v.poorly sorted            | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QA             | Sand<br><br>Clay                 | medium<br>red<br>brown        | clay to<br>coarse sand<br>v.poorly sorted            |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy<br>Sand            | medium<br>red<br>brown        | clay to<br>medium sand<br>poorly sorted              |                                            |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | QB             | Clay<br>sandy<br>Sand            | medium<br>red<br>brown        | clay to<br>medium sand<br>poorly sorted              |                                            |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7538          | Q              | Sand<br>ferrug.                  | medium<br>orange<br>brown     | medium sand to<br>v.crse sand<br>poorly sorted       | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7539          | Q              | Sand<br><br>ferrug.<br>Sandstone | medium<br><br>orange<br>brown | medium sand to<br><br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7540          | Q              | Sand<br><br>ferrug.<br>Sandstone | medium<br><br>orange<br>brown | medium sand to<br><br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7541          | Q              | Sand<br><br>ferrug.<br>Sandstone | medium<br><br>orange<br>brown | medium sand to<br><br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7542          | TO             | Sand<br><br>Sandstone            | medium<br><br>orange<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |

000222

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7543          | TO             | Sand                          | medium              | medium sand to                  | sub-rounded                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | Sandstone<br>ferrug.          | orange<br>brown     | v.crse sand<br>poorly sorted    | sub-elongate                               | Ferruginous                              |                               |                                       |
| 22.0                 | 24.0      | DK 7544          | TO             | Sand                          | medium              | medium sand to                  | sub-rounded                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | Sandstone<br>ferrug.          | orange<br>brown     | v.crse sand<br>poorly sorted    | sub-elongate                               | Ferruginous                              |                               |                                       |
| 24.0                 | 26.0      | DK 7545          | TO             | Sand                          | medium              | medium sand to                  | sub-rounded                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | Sandstone<br>ferrug.          | orange<br>brown     | v.crse sand<br>poorly sorted    | sub-elongate                               | Ferruginous                              |                               |                                       |
| 26.0                 | 28.0      | DK 7546          | TO             | Sand                          | medium              | medium sand to                  | sub-rounded                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | Sandstone<br>ferrug.          | orange<br>brown     | v.crse sand<br>poorly sorted    | sub-elongate                               | Ferruginous                              |                               |                                       |
| 28.0                 | 30.0      | DK 7547          | TO             | Sand                          | medium              | medium sand to                  | sub-rounded                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | Sandstone<br>ferrug.          | orange<br>brown     | v.crse sand<br>poorly sorted    | sub-elongate                               | Ferruginous                              |                               |                                       |
| 20.0                 | 30.0      | DK 7549          |                | Composite Sample              |                     |                                 |                                            |                                          |                               | 0.09                                  |

EOH at 30.0 m

000223

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : CHILBINGA  
 JOB NO : T64

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 25-OCT-90

HOLE NUMBER : M096

LOGGED BY : PRD  
 TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 640238 NORTHING: 6729093 R.L.: 220.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M096

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown     | silt<br>to<br>medium sand<br>poorly sorted       | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown     | silt<br>to<br>medium sand<br>poorly sorted       | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QA             | Sand<br>silty<br>Clay         | medium<br>red<br>brown    | silt<br>to<br>medium sand<br>poorly sorted       | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy                 | medium<br>red<br>brown    | clay<br>to<br>medium sand<br>poorly sorted       |                                            |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | QB             | Clay<br>sandy                 | medium<br>red<br>brown    | clay<br>to<br>medium sand<br>poorly sorted       |                                            |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | QB             | Clay<br>sandy                 | medium<br>red<br>brown    | clay<br>to<br>medium sand<br>poorly sorted       |                                            |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7550          | Q              | Sand<br>Sandstone             | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7551          | Q              | Sand<br>Sandstone             | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7552          | Q              | Sand<br>Sandstone             | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7553          | Q              | Sand<br>Sandstone             | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 7554          | Q              | Sand<br>Sandstone             | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000224

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 22.0                 | 24.0      | DK 7555          | Q              | Sand<br>Sandstone             | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7556          | TO             | Sand<br>Sandstone             | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7557          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7558          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 30.0      | DK 7559          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.17                                  |

EOH at 30.0 m

000225

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : CHILBINGA  
 JOB NO : T64

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 25-OCT-90

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 639772 NORTHING: 6728181 R.L.: 215.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M097

LOGGED BY : PRD

TOTAL DEPTH : 35.0

SHEET 1 OF 2 HOLE NUMBER : M097

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor            | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING           | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------------------------|------------------------|-------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                            | light<br>red<br>brown  | silt to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                            | light<br>red<br>brown  | silt to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QA             | Sand<br>Clay                             | medium<br>red<br>brown | silt to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy<br>Sand                    | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted   |                                            |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | QB             | Clay<br>sandy<br>Sand                    | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted   |                                            |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | QB             | Clay<br>sandy<br>Sand                    | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted   |                                            |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      |                  | QB             | Clay<br>sandy<br>Sand                    | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted   |                                            |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      |                  | QB             | Clay                                     | medium<br>red<br>brown | clay to<br>v.fine sand<br>mod.well sorted |                                            |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      |                  | QB             | Clay                                     | medium<br>red<br>brown | clay to<br>v.fine sand<br>mod.well sorted |                                            |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7560          | Q              | Sand                                     | medium                 | medium sand to                            | sub-angular                                | weak<br>cons                             | 0.2                           |                                       |
|                      |           |                  |                | Sandstone<br>ferrug.<br>Composite Sample | orange<br>brown        | coarse sand<br>mod.well sorted            | sub-spherical                              | Ferruginous                              | light trace                   |                                       |
| 0.0                  | 20.0      | DK 7568          |                |                                          |                        |                                           |                                            |                                          |                               | 0.21                                  |

000226



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7561          | Q              | Sand                          | medium                 | medium sand to                                 | sub-angular                                | weak<br>cons                             | 0.2                           |                                       |
|                      |           |                  |                | Sandstone<br>ferrug.          | orange<br>brown        | coarse sand<br>mod.well sorted                 | sub-spherical                              | Ferruginous                              | light trace                   |                                       |
| 22.0                 | 24.0      | DK 7562          | Q              | Sand                          | medium                 | fine sand to                                   | sub-angular                                |                                          | 0.0                           |                                       |
|                      |           |                  |                | Sandstone<br>ferrug.          | orange<br>brown        | medium sand<br>mod.well sorted                 | sub-spherical                              |                                          |                               |                                       |
| 24.0                 | 26.0      | DK 7563          | Q              | Sand                          | medium                 | fine sand to                                   | sub-angular                                |                                          | 0.0                           |                                       |
|                      |           |                  |                | Sandstone<br>ferrug.          | orange<br>brown        | medium sand<br>mod.well sorted                 | sub-spherical                              |                                          |                               |                                       |
| 26.0                 | 28.0      |                  | Q              | Clay<br>sandy<br>Sand         | medium<br>red<br>brown | clay to<br>fine sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7564          | Q              | Sand                          | medium                 | fine sand to                                   | angular                                    |                                          | 0.0                           |                                       |
|                      |           |                  |                | Sandstone                     | orange<br>brown        | v.crse sand<br>v.poorly sorted                 | sub-elongate                               |                                          |                               |                                       |
| 30.0                 | 32.0      | DK 7565          | Q              | Sand<br>clayey                | medium<br>brown        | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 32.0                 | 34.0      | DK 7566          | Q              | Sand<br>Sandstone             | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 34.0                 | 35.0      | DK 7567          | TEH            | Sandstone<br>Sand             | light<br>grey          | fine sand<br>well sorted                       | sub-rounded<br>sub-spherical               | ceme<br>Siliceous                        | 0.0                           |                                       |
| 20.0                 | 35.0      | DK 7569          |                | Composite Sample              |                        |                                                |                                            |                                          |                               | 0.12                                  |

EOH at 35.0 m

000227

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1655  
SHEET : WYOLA  
JOB NO : T64  
GRID: AMG  
ZONE: 52  
RELIABILITY: TOPO  
EASTING: 632607  
NORTHING: 6744038  
HOLE NUMBER : M098  
CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 25-OCT-90  
LOGGED BY : PRD  
TOTAL DEPTH : 1.5  
R.L.: 230.0  
AZIM.: 0.0  
INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M098

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue   | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|-------------------------------|-----------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 0.0                  | 1.5       |                  | QA             | Calcrete                      | light<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted |                                            |                                          | 0.0                           |                                      |

EOH at 1.5 m

000228

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1655  
SHEET : WYOLA  
JOB NO : T64  
GRID: AMG  
ZONE: 52  
RELIABILITY: TOPO  
CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 25-OCT-90  
EASTING: 632390  
NORTHING: 6743022  
HOLE NUMBER : M099  
LOGGED BY : PRD  
TOTAL DEPTH : 7.0  
R.L.: 235.0  
AZIM.: 0.0  
INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M099

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue   | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|-------------------------------|-----------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                      |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty<br>Sandstone    | light<br>red<br>brown | fine sand to<br>v.crse sand<br>poorly sorted     | angular<br>sub-elongate                    |                                          | 0.2<br>light trace            |                                      |
| 4.0                  | 6.0       |                  | QA             | Calcrete<br>silty<br>Sand     | medium<br>brown       | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                      |
| 6.0                  | 7.0       |                  | QA             | Calcrete                      | light<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted   |                                            |                                          | 0.0                           |                                      |
| 0.0                  | 7.0       | DK 7570          | QA             | Composite Sample              |                       |                                                  |                                            |                                          |                               | 0.21                                 |

EOH at 7.0 m

000229

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1655  
SHEET : WYOLA  
JOB NO : T64  
GRID: AMG  
ZONE: 52  
RELIABILITY: TOPO  
CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 25-OCT-90  
EASTING: 632074  
NORTHING: 6742133  
HOLE NUMBER : M100  
LOGGED BY : PRD  
TOTAL DEPTH : 5.0  
R.L.: 240.0  
AZIM.: 0.0  
INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M100

| DEPTH<br>FROM TO<br>(m) (m) |     | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue   | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-----------------------------|-----|------------------|----------------|-------------------------------|-----------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 0.0                         | 2.0 |                  | QA             | Sand<br>silty<br>Calcrete     | light<br>red<br>brown | v.fine sand to<br>coarse sand<br>poorly sorted |                                            |                                          | 0.2<br>light trace            |                                      |
| 2.0                         | 4.0 |                  | QA             | Sand<br>silty<br>Calcrete     | light<br>red<br>brown | v.fine sand to<br>coarse sand<br>poorly sorted |                                            |                                          | 0.2<br>light trace            |                                      |
| 4.0                         | 5.0 |                  | QA             | Sand<br>silty<br>Calcrete     | light<br>red<br>brown | v.fine sand to<br>coarse sand<br>poorly sorted |                                            |                                          | 0.2<br>light trace            |                                      |

EOH at 5.0 m

Comments: Very hard, hole abandoned

000230

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : CHILBINGA  
 JOB NO : T64  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 628378 NORTHING: 6730858 R.L.: 200.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M101

LOGGED BY : PRD

TOTAL DEPTH : 26.0

SHEET 1 OF 2 HOLE NUMBER : M101

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown  | silt to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown  | silt to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | Q              | Sand                          | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       |                  | Q              | Sand                          | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 7571          | Q              | Sand                          | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 10.0      | DK 7580          |                | Composite Sample              |                        |                                                  |                                            |                                          |                               | 0.35                                  |
| 10.0                 | 12.0      | DK 7572          | Q              | Sand<br>Sandstone             | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 7573          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 7574          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7575          | TEH            | Sand<br>Sandstone<br>ferrug.  | pale<br>brown          | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7576          | TEH            | Sand<br>Clay                  | pale<br>brown          | v.fine sand to<br>medium sand<br>poorly sorted   |                                            |                                          | 0.0                           |                                       |

000231

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor           | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-----------------------------------------|--------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7577          | TEH            | Sandstone<br>massive<br>Clay<br>laminat | medium<br>khaki<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               | ceme<br>Siliceous                        | 0.2<br>light trace            |                                       |
| 22.0                 | 24.0      | DK 7578          | TEH            | Sandstone<br>massive                    | light<br>brown<br>grey   | fine sand to<br>medium sand<br>f.poorly sorted | sub-rounded<br>sub-spherical               | ceme<br>Siliceous                        | 0.0                           | 0.61                                  |
| 10.0                 | 24.0      | DK 7581          |                | Composite Sample                        |                          |                                                |                                            |                                          |                               | 0.50                                  |
| 24.0                 | 26.0      | DK 7579          | TEH            | Sand<br>quartz.<br>Sandstone            | light<br>grey            | v.fine sand to<br>fine sand<br>mod.well sorted | sub-rounded<br>spherical<br>polished       |                                          | 0.5<br>trace                  | 0.18                                  |
| EOH at 26.0 m        |           |                  |                |                                         |                          | Comments: Intermittent hard layers 5-10cm      |                                            |                                          |                               |                                       |

000232

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1655  
SHEET : CHILBINGA  
JOB NO : T64

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 26-OCT-90

HOLE NUMBER : M102

LOGGED BY : PRD  
TOTAL DEPTH : 28.0

GRID: AMG

ZONE: 52

RELIABILITY: TOPO

EASTING: 628721

NORTHING: 6731896

R.L.: 210.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M102

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty<br>Calcrete             | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QA             | Sand<br>silty<br>Calcrete             | medium<br>red<br>brown    | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 7582          | QA             | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7583          | QA             | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7593          | Q              | Composite Sample                      |                           |                                                  |                                            |                                          |                               | 0.24                                  |
| 10.0                 | 12.0      | DK 7584          | TO             | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7585          | TO             | Sand                                  | light<br>orange           | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate<br>earthy      |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7586          | TO             | Sand                                  | light<br>orange           | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7587          | TO             | Sand<br>quartz.                       | light<br>orange<br>yellow | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7588          | TO             | Sand<br>quartz.                       | light<br>orange<br>yellow | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000233

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7589          | TO             | Sand<br>quartz.<br>Sandstone<br>bedded | light<br>grey           | fine sand to<br>medium sand<br>mod.well sorted   | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7590          | TEH            | Sand<br>quartz.                        | light<br>yellow<br>grey | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 24.0                 | 26.0      | DK 7591          | TEH            | Sand<br>quartz.<br>Sandstone<br>bedded | pale<br>tan<br>grey     | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 26.0                 | 28.0      | DK 7592          | TEH            | Sandstone<br>quartz. massive           | pale<br>grey            | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 10.0                 | 28.0      | DK 7594          |                | Composite Sample                       |                         |                                                  |                                            |                                          |                               | 0.11                                  |
| 28.0                 | 28.1      |                  | TEH            | Sandstone<br>massive                   | pale<br>grey            | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-elongate                | ceme<br>Siliceous                        | 0.0                           |                                       |
| EOH at 28.0 m        |           |                  |                |                                        |                         | Comments: Too hard to drill                      |                                            |                                          |                               |                                       |

000234



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : CHILBINGA  
 JOB NO : T64  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 629065 NORTHING: 6732960 R.L.: 220.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 26-OCT-90

HOLE NUMBER : M103

LOGGED BY : PRD  
 TOTAL DEPTH : 48.0

SHEET 1 OF 3 HOLE NUMBER : M103

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>poorly sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>poorly sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QA             | Sand<br>silty<br>Calcrete             | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>poorly sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 7595          | QA             | Sand<br>silty clayey                  | medium<br>red<br>brown    | v.fine sand to<br>coarse sand<br>poorly sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      |                  | QB             | Clay<br>sandy                         | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7614          |                | Composite Sample                      |                           |                                                |                                            |                                          |                               | 0.26                                  |
| 10.0                 | 12.0      |                  | QB             | Clay<br>sandy                         | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7596          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7597          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7598          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7599          | Q              | Sand<br>silty<br>Sandstone            | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |

000235

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH            | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|---------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|-----------------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                        | 20.0 | DK 7615          |                | Composite Sample                      |                           |                                                  |                                            |                                                     |                               | 0.18                                  |
| 20.0                        | 22.0 | DK 7600          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                                     | 0.2<br>light trace            |                                       |
| 22.0                        | 24.0 | DK 7601          | TO             | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                                     | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 7602          | TO             | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                                     | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 7603          | TO             | Sand                                  | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                                     | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 7604          | TO             | Sand                                  | light<br>brown<br>grey    | fine sand<br>well sorted                         | sub-rounded<br>sub-spherical               |                                                     | 0.0                           |                                       |
| 20.0                        | 30.0 | DK 7616          |                | Composite Sample                      |                           |                                                  |                                            |                                                     |                               | 0.12                                  |
| 30.0                        | 32.0 | DK 7605          | TO             | Sand                                  | light<br>brown<br>grey    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                                     | 0.0                           | 0.12                                  |
| 32.0                        | 34.0 | DK 7606          | TEH            | Sand                                  | light<br>khaki<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                                     | 0.0                           | 0.05                                  |
| 34.0                        | 36.0 | DK 7607          | TEH            | Sandstone<br>quartz. bedded<br>Sand   | light<br>grey             | medium sand to<br>coarse sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                                     | 0.2<br>light trace            | 0.07                                  |
| 36.0                        | 38.0 | DK 7608          | TEH            | Sandstone                             | light                     | fine sand to                                     | sub-rounded                                | Comments: Thin band of heavies in core<br>weak cons | 0.0                           | 0.19                                  |
|                             |      |                  |                | Sand                                  | red<br>brown              | medium sand<br>mod.well sorted                   | sub-spherical                              |                                                     |                               |                                       |
| 38.0                        | 40.0 | DK 7609          | TEH            | Sandstone<br>Sand                     | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                                     | 0.5<br>trace                  | 2.26                                  |
| 40.0                        | 42.0 | DK 7610          | TEH            | Sandstone                             | medium<br>red             | fine sand to<br>granule                          | sub-angular<br>sub-elongate                |                                                     | 0.2<br>light trace            | 0.65                                  |

000236

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 42.0                 | 44.0      | DK 7611          | TEH            | Clay<br>laminat<br>Sandstone  | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           | 0.61                                  |
| 44.0                 | 46.0      | DK 7612          | TEH            | Sandstone                     | dark<br>grey           | v.fine sand to<br>fine sand<br>mod.well sorted |                                            |                                          | 0.2<br>light trace            | 0.77                                  |
| 46.0                 | 48.0      | DK 7613          | TEH            | Clay<br>laminat<br>Sandstone  | dark<br>grey           | v.fine sand to<br>fine sand<br>mod.well sorted |                                            |                                          | 0.2<br>light trace            | 0.83                                  |
| 30.0                 | 48.0      | DK 7617          |                | Composite Sample              |                        |                                                |                                            |                                          |                               |                                       |

EOH at 48.0 m

000237

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : CHILBINGA  
 JOB NO : T64  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 629181 NORTHING: 6733902 R.L.: 225.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 26-OCT-90

HOLE NUMBER : M104  
 LOGGED BY : PRD  
 TOTAL DEPTH : 36.0

SHEET 1 OF 2 HOLE NUMBER : M104

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor           | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-----------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                           | light<br>red<br>brown     | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                           | light<br>red<br>brown     | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QA             | Sand<br>silty                           | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 7618          | QA             | Sand                                    | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | QB             | Clay<br>sandy                           | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7632          |                | Composite Sample                        |                           |                                                  |                                            |                                          |                               | 0.31                                  |
| 10.0                 | 12.0      | DK 7619          | Q              | Sand                                    | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7620          | Q              | Sandstone<br>ferrug.<br>Sand            | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7621          | TO             | Sandstone<br>ferrug.<br>Sand<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7622          | TO             | Sand<br>ferrug.                         | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7623          | TO             | Sand                                    | medium                    | medium sand to                                   | sub-angular                                |                                          | 0.0                           |                                       |

000238

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                        | 20.0 | DK 7633          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.20                                  |
| 20.0                        | 22.0 | DK 7624          | TO             | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 7625          | TO             | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 7626          | TO             | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 7627          | TO             | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 28.0                        | 30.0 | DK 7628          | TEH            | Sandstone                     | light<br>brown<br>tan     | v.fine sand to<br>fine sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               | cons<br>Siliceous                        | 0.0                           |                                       |
| 30.0                        | 32.0 | DK 7629          | TEH            | Sandstone                     | light<br>brown<br>tan     | v.fine sand to<br>fine sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               | cons<br>Siliceous                        | 0.0                           |                                       |
| 32.0                        | 34.0 | DK 7630          | TEH            | Claystone<br>Sandstone        | medium<br>brown<br>grey   | clay to<br>fine sand<br>mod.well sorted          |                                            |                                          | 0.0                           |                                       |
| 34.0                        | 36.0 | DK 7631          | TEH            | Sandstone<br>quartz.          | medium<br>brown           | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                        | 36.0 | DK 7634          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.10                                  |

EOH at 36.0 m

000239

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : CHILBINGA  
 JOB NO : T64  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 629473 NORTHING: 6734892 R.L.: 230.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 26-OCT-90

HOLE NUMBER : M105

LOGGED BY : PRD  
 TOTAL DEPTH : 36.0

SHEET 1 OF 2 HOLE NUMBER : M105

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt<br>medium sand<br>poorly sorted             | to<br>sub-angular                          |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt<br>medium sand<br>poorly sorted             | to<br>sub-angular                          |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QA             | Sand<br>silty                         | medium<br>red<br>brown    | silt<br>medium sand<br>poorly sorted             | to<br>sub-angular                          |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay                                  | medium<br>red<br>brown    | clay<br>well sorted                              |                                            |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7648          |                | Composite Sample                      |                           |                                                  |                                            |                                          |                               | 0.29                                  |
| 10.0                 | 12.0      | DK 7635          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7636          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7637          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7638          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7639          | TO             | Sand<br>silty ferrug.                 | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000240

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                 | 20.0      | DK 7649          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.14                                  |
| 20.0                 | 22.0      | DK 7640          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7641          | TO             | Sand                          | light<br>orange<br>brown  | coarse sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7642          | TO             | Sand                          | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7643          | TO             | Sand                          | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7644          | TO             | Sand                          | light<br>orange<br>brown  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 7645          | TO             | Sand<br>quartz.               | light<br>yellow<br>grey   | v.crse sand<br>mod.well sorted                   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 7646          | TEH            | Sand<br>quartz. gritty        | light<br>yellow<br>grey   | v.crse sand<br>mod.well sorted                   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 7647          | TEH            | Sand<br>quartz.               | light<br>grey             | v.crse sand<br>mod.well sorted                   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 36.0      | DK 7650          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.15                                  |

EOH at 36.0 m

000241

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : CHILBINGA  
 JOB NO : T64  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 629639 NORTHING: 6735784 R.L.: 240.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 26-OCT-90

HOLE NUMBER : M106

LOGGED BY : PRD

TOTAL DEPTH : 60.0

SHEET 1 OF 3 HOLE NUMBER : M106

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING             | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|---------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt<br>coarse sand<br>v.poorly sorted      | to<br>angular                              |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt<br>coarse sand<br>v.poorly sorted      | to<br>angular                              |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>Sand                          | medium<br>red<br>brown    | clay<br>medium sand<br>poorly sorted        | to                                         |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7651          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand<br>coarse sand<br>poorly sorted   | to<br>sub-angular<br>sub-elongate          | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7652          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand<br>coarse sand<br>poorly sorted   | to<br>sub-angular<br>sub-elongate          | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7653          | Q              | Sand<br>silty ferrug.                 | medium<br>orange<br>brown | fine sand<br>coarse sand<br>poorly sorted   | to<br>sub-angular<br>sub-elongate          |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7654          | Q              | Sand<br>silty ferrug.                 | medium<br>orange<br>brown | fine sand<br>medium sand<br>mod.well sorted | to<br>sub-rounded<br>sub-spherical         |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7655          | Q              | Sand<br>silty ferrug.                 | medium<br>orange<br>brown | fine sand<br>medium sand<br>mod.well sorted | to<br>sub-rounded<br>sub-spherical         |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7656          | TO             | Sand<br>silty ferrug.                 | medium<br>orange<br>brown | fine sand<br>medium sand<br>mod.well sorted | to<br>sub-rounded<br>sub-spherical         |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7657          | TO             | Sand                                  | light<br>orange<br>brown  | fine sand<br>medium sand<br>mod.well sorted | to<br>sub-rounded<br>sub-spherical         |                                          | 0.0                           |                                       |
| 0.0                  | 20.0      | DK 7678          |                | Composite Sample                      |                           |                                             |                                            |                                          |                               |                                       |

0.15

000242



| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                        | 22.0 | DK 7658          | TO             | Sand<br>quartz.               | light<br>orange          | medium sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 7659          | TO             | Sand<br>quartz.               | light<br>orange          | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 7660          | TO             | Sand<br>quartz.               | light<br>orange          | medium sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 26.0                        | 28.0 | DK 7661          | TO             | Sand<br>quartz.               | light<br>orange          | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 28.0                        | 30.0 | DK 7662          | TO             | Sand<br>quartz.               | light<br>orange          | medium sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 30.0                        | 32.0 | DK 7663          | TO             | Sand<br>quartz.               | light<br>orange          | medium sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 32.0                        | 34.0 | DK 7664          | TO             | Sand<br>quartz.               | light<br>orange          | fine sand to<br>medium sand<br>mod.well sorted   | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 34.0                        | 36.0 | DK 7665          | TO             | Sand<br>quartz.               | light<br>grey            | fine sand to<br>coarse sand<br>f.poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 36.0                        | 38.0 | DK 7666          | TO             | Sand<br>quartz.               | light<br>grey            | fine sand to<br>coarse sand<br>f.poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 38.0                        | 40.0 | DK 7667          | TO             | Sand<br>quartz. gritty        | light<br>grey            | coarse sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                        | 40.0 | DK 7679          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.04                                  |
| 40.0                        | 42.0 | DK 7668          | TEH            | Grit<br>quartz.               | light<br>grey            | coarse sand to<br>granule<br>poorly sorted       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 42.0                        | 44.0 | DK 7669          | TEH            | Grit<br>quartz.               | medium<br>yellow<br>grey | coarse sand to<br>granule<br>poorly sorted       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000243

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 44.0                 | 46.0      | DK 7670          | TEH            | Sand<br>quartz. gritty        | medium<br>yellow<br>grey | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 46.0                 | 48.0      | DK 7671          | TEH            | Sand<br>quartz. gritty        | medium<br>grey           | coarse sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 48.0                 | 50.0      | DK 7672          | TEH            | Sand<br>quartz. gritty        | medium<br>grey           | coarse sand<br>well sorted                       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 50.0                 | 52.0      | DK 7673          | TEH            | Sand<br>quartz. gritty        | medium<br>grey           | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 52.0                 | 54.0      | DK 7674          | TEH            | Sand<br>quartz. gritty        | medium<br>grey           | fine sand to<br>medium sand<br>mod.well sorted   | rounded<br>sub-spherical                   |                                          | 0.0                           | 0.56                                  |
| 54.0                 | 56.0      | DK 7675          | TEH            | Sand                          | medium<br>brown          | v.fine sand to<br>fine sand<br>mod.well sorted   | rounded<br>sub-spherical                   | Good trace                               | 1.0                           | 0.71                                  |
| 56.0                 | 58.0      | DK 7676          | TEH            | Sand                          | medium<br>brown          | v.fine sand to<br>fine sand<br>mod.well sorted   | rounded<br>sub-spherical                   | light trace                              | 0.2                           |                                       |
| 58.0                 | 60.0      | DK 7677          | TEH            | Sandstone                     | medium<br>brown<br>grey  | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>mod.spherical             | ceme                                     | 0.0                           |                                       |
| 40.0                 | 60.0      | DK 7680          |                | Composite Sample              |                          | Comments: Weathered bedrock ?                    |                                            |                                          |                               | 0.20                                  |

EOH at 60.0 m

000244

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : WYOLA  
 JOB NO : T64  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 629879 NORTHING: 6736675 R.L.: 253.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M107

CONTRACTOR : Wallis Drilling

RIG TYPE : Mantis 75

DATE DRILLED: 27-OCT-90

LOGGED BY : PRD

TOTAL DEPTH : 42.0

SHEET 1 OF 2 HOLE NUMBER : M107

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue   | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-----------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown | v.fine sand to<br>coarse sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       | DK 7681          | QA             | Sand                          | medium                | fine sand to                                     | sub-angular                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | Sandstone<br>ferrug.          | orange<br>brown       | coarse sand<br>poorly sorted                     | sub-spherical                              | Ferruginous                              |                               |                                       |
| 4.0                  | 6.0       | DK 7682          | TO             | Sand<br>quartz.               | light<br>grey         | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7683          | TO             | Sand<br>quartz.               | light<br>grey         | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7684          | TO             | Sand<br>quartz.               | light<br>grey         | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7701          |                | Composite Sample              |                       |                                                  |                                            |                                          |                               | 0.10                                  |
| 10.0                 | 12.0      | DK 7685          | TO             | Sand<br>quartz.               | light<br>grey         | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 7686          | TO             | Sand<br>quartz.               | light<br>grey         | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7687          | TO             | Sand<br>quartz.               | light<br>grey         | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 7688          | TO             | Sand<br>quartz.               | light<br>grey         | fine sand<br>well sorted                         | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7689          | TO             | Sand<br>quartz.               | light<br>grey         | fine sand                                        | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |

000245

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                        | 20.0 | DK 7702          |                | Composite Sample              |                        |                                                  |                                            |                                          |                               | 0.05                                  |
| 20.0                        | 22.0 | DK 7690          | TO             | Sand<br>quartz.               | light<br>grey          | fine sand<br>well sorted                         | sub-rounded<br>spherical                   |                                          | 0.2<br>light trace            | 0.09                                  |
| 22.0                        | 24.0 | DK 7691          | TO             | Sand<br>quartz.               | pale<br>grey<br>yellow | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>spherical                   |                                          | 0.2<br>light trace            | 0.10                                  |
| 24.0                        | 26.0 | DK 7692          | TO             | Sand<br>quartz.               | pale<br>grey<br>yellow | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>spherical                   |                                          | 0.2<br>light trace            | 0.07                                  |
| 26.0                        | 28.0 | DK 7693          | TO             | Sand<br>quartz.               | pale<br>grey<br>yellow | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>spherical                   |                                          | 0.0                           | 0.04                                  |
| 28.0                        | 30.0 | DK 7694          | TO             | Sand<br>quartz.               | pale<br>grey<br>yellow | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>spherical                   |                                          | 0.0                           | 0.04                                  |
| 30.0                        | 32.0 | DK 7695          | TO             | Sand<br>quartz.               | pale<br>grey           | medium sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 32.0                        | 34.0 | DK 7696          | TO             | Sand<br>quartz.               | pale<br>grey           | medium sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 34.0                        | 36.0 | DK 7697          | TO             | Sand<br>quartz.               | pale<br>grey           | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 36.0                        | 38.0 | DK 7698          | TO             | Sand<br>quartz.               | pale<br>grey           | coarse sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 38.0                        | 40.0 | DK 7699          | TO             | Sand<br>quartz.               | pale<br>grey           | coarse sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 40.0                        | 42.0 | DK 7700          | TO             | Sand<br>quartz.<br>Sandstone  | pale<br>grey           | coarse sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 30.0                        | 42.0 | DK 7703          | TO             | Composite Sample              |                        |                                                  |                                            |                                          |                               | 0.02                                  |

000246

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : WYOLA  
 JOB NO : T64

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 27-OCT-90

HOLE NUMBER : M108  
 LOGGED BY : PRD  
 TOTAL DEPTH : 36.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 630245 NORTHING: 6737589 R.L.: 260.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M108

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor             | COLOUR<br>L/<br>hue           | GRAIN SIZE<br>RANGE/<br>SORTING               | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------------------|-------------------------------|-----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                             | light<br>red<br>brown         | silt<br>coarse sand<br>poorly sorted          | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand                     | medium<br>red<br>brown        | clay<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sandstone<br>ferrug.     | medium<br>red<br>brown        | clay<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7704          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | fine sand<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7705          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | fine sand<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7719          |                | Composite Sample                          |                               |                                               |                                            |                                          |                               | 0.24                                  |
| 10.0                 | 12.0      | DK 7706          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | medium sand<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7707          | Q              | Sand<br>silty                             | medium<br>orange<br>brown     | medium sand<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7708          | TO             | Sand<br>ferrug.                           | medium<br>orange<br>brown     | medium sand<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7709          | TO             | Sand<br>ferrug.                           | medium<br>orange<br>brown     | medium sand<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000247

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 7710          | TO             | Sand<br>ferrug.               | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 20.0      | DK 7720          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.10                                  |
| 20.0                 | 22.0      | DK 7711          | TO             | Sand                          | light<br>orange<br>brown  | coarse sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7712          | TO             | Sand                          | light<br>orange<br>brown  | coarse sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7713          | TO             | Sand                          | light<br>orange<br>brown  | coarse sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7714          | TO             | Sand                          | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7715          | TO             | Sand                          | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 7716          | TO             | Sand                          | pale<br>orange<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 7717          | TO             | Sand                          | pale<br>orange<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 7718          | TO             | Sand                          | pale<br>orange<br>brown   |                                                  |                                            |                                          |                               |                                       |
| 20.0                 | 36.0      | DK 7721          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.04                                  |

EOH at 36.0 m

000248

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1655  
 SHEET : WYOLA  
 JOB NO : T64

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 27-OCT-90

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 630610 NORTHING: 6738453 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M109  
 LOGGED BY : PRD  
 TOTAL DEPTH : 36.0

SHEET 1 OF 2 HOLE NUMBER : M109

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt to<br>coarse sand<br>poorly sorted        | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | silt to<br>coarse sand<br>poorly sorted        | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7722          | QA             | Sand<br>clayey<br>Clay                | medium<br>red<br>brown    | clay to<br>coarse sand<br>v.poorly sorted      |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay                                  | medium<br>red<br>brown    | clay to<br>fine sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7723          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7737          |                | Composite Sample                      |                           |                                                |                                            |                                          |                               | 0.27                                  |
| 10.0                 | 12.0      | DK 7724          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7725          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7726          | TO             | Sand<br>ferrug. silty                 | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7727          | TO             | Sand<br>ferrug. silty                 | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7728          | TO             | Sand<br>ferrug. silty                 | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |

000249

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                      |           |                  |                |                               |                           |                                                  |                                            |                                          |                               |                                       |
| 10.0                 | 20.0      | DK 7738          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.19                                  |
| 20.0                 | 22.0      | DK 7729          | TO             | Sand<br>ferrug. silty         | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7730          | TO             | Sand                          | light<br>orange<br>brown  | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7731          | TO             | Sand                          | light<br>orange<br>brown  | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7732          | TO             | Sand                          | light<br>orange<br>brown  | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 28.0                 | 30.0      | DK 7733          | TO             | Sand                          | light<br>orange<br>brown  | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 30.0                 | 32.0      | DK 7734          | TO             | Sand<br>quartz.               | pale<br>yellow<br>grey    | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 32.0                 | 34.0      | DK 7735          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 7736          | TO             | Sand<br>quartz.               | light<br>grey             | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 20.0                 | 36.0      | DK 7739          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.09                                  |

EOH at 36.0 m

000250



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1655  
SHEET : WYOLA  
JOB NO : T64

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 27-OCT-90

HOLE NUMBER : M110

LOGGED BY : PRD  
TOTAL DEPTH : 11.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 630954 NORTHING: 6739516 R.L.: 248.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M110

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                     | COLOUR<br>L/<br>hue           | GRAIN SIZE<br>RANGE/<br>SORTING                 | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------------------|-------------------------------|-------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                                     | light<br>red<br>brown         | silt to<br>medium sand<br>poorly sorted         | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                                     | light<br>red<br>brown         | silt to<br>medium sand<br>poorly sorted         | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>silty<br>Clay                             | light<br>red<br>brown         | silt to<br>medium sand<br>poorly sorted         | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7740          | Q              | Sand<br><br>silty ferrug.<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted    | sub-angular<br>sub-elongate<br>earthy      | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7741          | Q              | Sand<br><br>silty ferrug.<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted    | sub-angular<br>sub-elongate<br>earthy      | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7742          |                | Composite Sample                                  |                               |                                                 |                                            |                                          |                               | 0.22                                  |
| 10.0                 | 11.0      |                  | Q              | Sand<br><br>silty ferrug.<br>Sandstone<br>ferrug. | medium<br><br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted    | sub-angular<br>sub-elongate<br>earthy      | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 11.0                 | 11.3      |                  | Q              | Calcrete                                          | light<br>red<br>grey          | fine sand to<br>medium sand<br>mod. well sorted |                                            |                                          | 0.0                           |                                       |

EOH at 11.0 m

000251

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1655  
SHEET : WYOLA  
JOB NO : T64

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 27-OCT-90

HOLE NUMBER : M111

LOGGED BY : PRD  
TOTAL DEPTH : 23.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 631450 NORTHING: 6740726 R.L.: 240.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M111

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Calcrete                      | light<br>red<br>brown     | silt to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 2.0                  | 12.0      |                  | QA             | Sand<br>silty<br>Calcrete     | pale<br>red<br>grey       | silt to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7743          | TO             | Sand<br>quartz.               | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7744          | TO             | Sand<br>quartz.               | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7745          | TEH            | Grit<br>quartz.               | light<br>grey             | coarse sand to<br>granule<br>mod.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 18.0      | DK 7749          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.01                                  |
| 18.0                 | 20.0      | DK 7746          | TEH            | Sand<br>quartz.               | banded<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 1.0<br>Good trace             | 0.32                                  |
| 20.0                 | 22.0      | DK 7747          | TEH            | Sand<br>quartz.               | medium<br>purple<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 1.0<br>Good trace             | 0.47                                  |
| 22.0                 | 23.0      | DK 7748          | TEH            | Sand<br>Sandstone             | medium<br>purple<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           | 0.10                                  |

EOH at 23.0 m

000252

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : CHILBINGA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 609940 NORTHING: 6725549 R.L.: 190.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M112

LOGGED BY : PRD

TOTAL DEPTH : 14.3

SHEET 1 OF 1 HOLE NUMBER : M112

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor   | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------|--------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                   | light<br>red<br>brown    | v.fine sand to<br>coarse sand<br>poorly sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty<br>Calcrete       | light<br>red<br>brown    | v.fine sand to<br>coarse sand<br>poorly sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | Q              | Clay<br>sandy<br>Sand<br>clayey | medium<br>red<br>brown   | clay to<br>medium sand<br>v.poorly sorted      |                                            | soft                                     | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | Q              | Clay<br>sandy<br>Sand           | mottled<br>grey<br>brown | silt to<br>medium sand<br>poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Claystone<br>sandy              | medium<br>grey<br>brown  | silt to<br>medium sand<br>poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | PAL            | Clay                            | dark<br>brown<br>grey    | clay to<br>fine sand<br>mod.well sorted        |                                            |                                          | 0.0                           |                                       |
| 0.0                  | 12.0      | DK 7750          |                | Composite Sample                |                          |                                                | Comments: Fissile, weathered bedrock ?     |                                          |                               | 0.62                                  |
| 12.0                 | 14.0      |                  | PAL            | Sandstone                       | dark<br>brown            | v.fine sand to<br>fine sand<br>mod.well sorted |                                            | ceme<br>Siliceous<br>very<br>strong      | 0.0                           |                                       |
| 14.0                 | 14.3      |                  | PAL            | Sandstone<br>bedded             | dark<br>brown            | v.fine sand to<br>fine sand<br>mod.well sorted |                                            | ceme<br>Siliceous<br>very<br>strong      | 0.0                           |                                       |
| EOH at 14.3 m        |           |                  |                |                                 |                          |                                                | Comments: Bedrock ?                        |                                          |                               |                                       |

000253

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : CHILBINGA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 610155 NORTHING: 6726390 R.L.: 193.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 28-OCT-90

HOLE NUMBER : M113  
 LOGGED BY : PRD  
 TOTAL DEPTH : 11.0

SHEET 1 OF 1 HOLE NUMBER : M113

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING         | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|-----------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty<br>Calcrete     | light<br>red<br>brown   | silt to<br>medium sand<br>poorly sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty<br>Calcrete     | light<br>red<br>brown   | silt to<br>medium sand<br>poorly sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | Q              | Sand<br>silty<br>Calcrete     | light<br>red<br>brown   | silt to<br>medium sand<br>poorly sorted | sub-angular                                | Comments: Calcrete pisoliths             | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       |                  | PAL            | Sandstone<br>weath. laminat   | light<br>red<br>brown   | fine sand<br>f.well sorted              | rounded<br>spherical                       | Comments: Calcrete pisoliths             | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | PAL            | Clay<br>sandy<br>Sandstone    | medium<br>brown<br>grey | clay to<br>fine sand<br>poorly sorted   |                                            |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7751          |                | Composite Sample              |                         | Comments: Weathered bedrock             |                                            |                                          |                               | 0.17                                  |
| 10.0                 | 11.0      |                  | PAL            | Sandstone                     | pale<br>tan             | fine sand<br>well sorted                | rounded                                    | ceme<br>Siliceous<br>strong,<br>cons.    | 0.0                           |                                       |
| EOH at 11.0 m        |           |                  |                |                               |                         | Comments: Bedrock                       |                                            |                                          |                               |                                       |

000254

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1654  
SHEET : CHILBINGA  
JOB NO : T63  
GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 610023 NORTHING: 6727462 R.L.: 196.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 28-OCT-90

HOLE NUMBER : M114  
LOGGED BY : PRD  
TOTAL DEPTH : 5.7

SHEET 1 OF 1 HOLE NUMBER : M114

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor   | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                   | light<br>red<br>brown  | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                   | light<br>red<br>brown  | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 5.7       |                  | Q              | Sand<br>clayey<br>Clay<br>sandy | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 0.0                  | 5.7       | DK 7752          |                | Composite Sample                |                        |                                                |                                            |                                          |                               | 0.45                                  |
| 5.7                  | 5.9       |                  | Q              | Sandstone                       | pale<br>tan            | fine sand<br>well sorted                       | rounded                                    | ceme<br>Siliceous<br>very<br>strong      | 0.0                           |                                       |

EOH at 5.7 m

000255

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : CHILBINGA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 610167 NORTHING: 6728603 R.L.: 198.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 28-OCT-90

HOLE NUMBER : M115  
 LOGGED BY : PRD  
 TOTAL DEPTH : 21.0

SHEET 1 OF 1 HOLE NUMBER : M115

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown  | silt to<br>coarse sand<br>poorly sorted        | angular<br>sub-elongate                    |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty<br>Calcrete     | light<br>red<br>brown  | silt to<br>coarse sand<br>poorly sorted        | angular<br>sub-elongate                    |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7753          | Q              | Sand<br>ferrug.<br>Sandstone  | medium<br>brown<br>red | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7754          | Q              | Sand<br>ferrug.<br>Sandstone  | medium<br>brown<br>red | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 8.0       | DK 7755          |                | ferrug.<br>Composite Sample   |                        |                                                |                                            |                                          |                               | 0.26                                  |
| 8.0                  | 10.0      |                  | PAL            | Clay<br>sandy<br>Ironstone    | medium<br>red<br>grey  | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Ferruginous<br>mod.str.co        | 0.5<br>trace                  |                                       |
| 10.0                 | 12.0      |                  | PAL            | Clay<br>sandy<br>Sandstone    | mottled<br>red<br>grey | clay to<br>v.fine sand<br>mod.well sorted      |                                            |                                          | 0.0                           |                                       |
| 12.0                 | 21.0      |                  | PAL            | Shale<br>weath. sandy         | dark<br>blue<br>brown  | v.fine sand to<br>fine sand<br>mod.well sorted | Comments: Weathered bedrock ?              |                                          | 0.0                           |                                       |
| 8.0                  | 21.0      | DK 7756          |                | Composite Sample              |                        | Comments: Graphitic                            |                                            |                                          |                               |                                       |

EOH at 21.0 m

Comments: Assay for Au + Cu, Pb, Zn

000256

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : CHILBINGA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 610580 NORTHING: 6729317 R.L.: 200.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M116

LOGGED BY : PRD  
 TOTAL DEPTH : 33.0

SHEET 1 OF 2 HOLE NUMBER : M116

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                          | light<br>red<br>brown   | silt to<br>coarse sand<br>v.poorly sorted      | angular<br>sub-elongate                    |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                          | light<br>red<br>brown   | silt to<br>coarse sand<br>v.poorly sorted      | angular<br>sub-elongate                    |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7757          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.  | light<br>red<br>brown   | silt to<br>coarse sand<br>v.poorly sorted      | angular<br>sub-elongate                    |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 7758          | Q              | Sand<br>silty                          | light<br>red<br>brown   | v.fine sand to<br>coarse sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 7759          | Q              | Sand<br>clayey                         | medium<br>red<br>brown  | v.fine sand to<br>coarse sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 12.0      | DK 7760          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | medium<br>red<br>brown  | v.fine sand to<br>coarse sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 12.0      | DK 7767          |                | Composite Sample                       |                         |                                                |                                            |                                          |                               | 0.35                                  |
| 12.0                 | 14.0      | DK 7761          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.  | medium<br>red<br>brown  | v.fine sand to<br>coarse sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           | 0.22                                  |
| 14.0                 | 16.0      | DK 7762          | TEH            | Sand                                   | medium<br>red<br>grey   | fine sand to<br>coarse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           | 0.07                                  |
| 16.0                 | 18.0      | DK 7763          | TEH            | Sand                                   | light<br>yellow<br>grey | fine sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.5<br>trace                  | 0.05                                  |
| 18.0                 | 20.0      | DK 7764          | TEH            | Sand<br>clayey<br>Sandstone            | light<br>brown<br>grey  | fine sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.2<br>light trace            | 0.13                                  |

000257

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue  | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7765          | TEH            | Sand                          | light<br>grey        | fine sand                       | rounded<br>spherical                       |                                          | 0.5                           | 0.22                                  |
|                      |           |                  |                | Grit                          |                      | well sorted                     |                                            | trace                                    |                               |                                       |
| 22.0                 | 24.0      | DK 7766          | PAL            | Sand                          | light<br>grey        | fine sand                       | rounded<br>spherical                       |                                          | 0.5                           | 0.23                                  |
|                      |           |                  |                | Clay                          |                      | well sorted                     |                                            | trace                                    |                               |                                       |
| 24.0                 | 31.0      |                  | PAL            | Clay                          | dark<br>blue<br>grey | clay                            |                                            |                                          | 0.0                           |                                       |
|                      |           |                  |                |                               |                      | well sorted                     |                                            |                                          |                               |                                       |
| 31.0                 | 33.0      |                  | PAL            | Shale<br>weath.               | dark<br>blue<br>grey | clay                            |                                            |                                          | 0.0                           |                                       |
|                      |           |                  |                |                               |                      | well sorted                     |                                            |                                          |                               |                                       |
| EOH at 33.0 m        |           |                  |                |                               |                      | Comments: Bedrock               |                                            |                                          |                               |                                       |



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1654  
SHEET : CHILBINGA  
JOB NO : T63

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 28-OCT-90

HOLE NUMBER : M117

LOGGED BY : PRD  
TOTAL DEPTH : 45.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 610298 NORTHING: 6730391 R.L.: 202.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M117

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  |                | Sand<br>silty                 | light<br>red<br>brown  | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 7768          |                | Sand<br>silty                 | light<br>red<br>brown  | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7769          |                | Sand<br>silty                 | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 7770          |                | Sand<br>silty                 | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 7771          |                | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 10.0      | DK 7786          |                | Composite Sample              |                        |                                                |                                            |                                          |                               | 0.53                                  |
| 10.0                 | 12.0      | DK 7772          |                | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 7773          |                | Sand<br>silty<br>Sandstone    | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 7774          |                | Sand<br>silty                 | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 7775          |                | Sand<br>silty                 | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 18.0                 | 20.0      | DK 7776          |                | Sand<br>silty<br>Sandstone    | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |

000259

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|----------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                 | 20.0      | DK 7787          |                | Composite Sample                      |                            |                                                |                                            |                                          |                               | 0.33                                  |
| 20.0                 | 22.0      | DK 7777          |                | Sand<br>silty<br>Sandstone            | medium<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 22.0                 | 24.0      | DK 7778          |                | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7779          |                | Sand<br>silty                         | medium<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7780          |                | Sand<br>silty                         | medium<br>red<br>brown     | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7781          |                | Sand<br>silty                         | medium<br>red<br>brown     | fine sand<br>well sorted                       | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 7782          |                | Sand<br>white<br>red                  | patchy<br>white<br>red     | fine sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 7783          |                | Sand<br>clayey                        | medium<br>brown            | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 34.0                 | 36.0      | DK 7784          |                | Sand<br>clayey                        | medium<br>yellow<br>orange | v.fine sand to<br>fine sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 36.0      | DK 7788          |                | Composite Sample                      |                            |                                                |                                            |                                          |                               | 0.13                                  |
| 36.0                 | 38.0      | DK 7785          |                | Shale<br>weath.<br>Clay               | medium<br>brown<br>red     | fine sand<br>mod.well sorted                   |                                            |                                          | 0.0                           |                                       |
| 38.0                 | 40.0      |                  |                | Shale<br>weath.<br>Clay               | black                      | fine sand<br>mod.well sorted                   |                                            |                                          | 0.0                           |                                       |
| 40.0                 | 45.0      |                  |                | Shale<br>weath.<br>Clay               | dark<br>blue<br>grey       | fine sand<br>mod.well sorted                   |                                            |                                          | 0.0                           |                                       |

000260

| DEPTH |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-------|------|------------------|----------------|-------------------------------|---------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| FROM  | TO   |                  |                |                               |                     |                                 |                                            |                                          |                               |                                       |
| (m)   | (m)  |                  |                |                               |                     |                                 |                                            |                                          |                               |                                       |
| 36.0  | 45.0 | DK 7789          |                | Composite Sample              |                     |                                 |                                            |                                          |                               |                                       |

EOH at 45.0 m

Comments: Assay for Au + Cu, Pb, Zn

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1654  
SHEET : CHILBINGA  
JOB NO : T63

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 28-OCT-90

HOLE NUMBER : M118

LOGGED BY : PRD  
TOTAL DEPTH : 48.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 610366 NORTHING: 6731458 R.L.: 207.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M118

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown  | silt to<br>medium sand<br>poorly sorted        | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown  | silt to<br>medium sand<br>poorly sorted        | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7790          | Q              | Sand<br>silty                         | medium<br>red<br>brown | v.fine sand to<br>coarse sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.5<br>trace                  | 0.36                                  |
| 6.0                  | 8.0       | DK 7791          | Q              | Sand<br>silty                         | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            | 0.38                                  |
| 8.0                  | 10.0      | DK 7792          | Q              | Sand<br>silty                         | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 12.0      | DK 7793          | Q              | Sand<br>silty                         | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 7794          | Q              | Sand<br>silty                         | dark<br>red<br>brown   | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 7795          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown   | v.fine sand to<br>medium sand<br>poorly sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7796          | TEH            | Sand<br>silty                         | dark<br>red<br>brown   | v.fine sand to<br>medium sand<br>poorly sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7797          | TEH            | Sand<br>silty                         | dark<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 20.0      | DK 7812          |                | Composite Sample                      |                        |                                                |                                            |                                          |                               | 0.33                                  |

000262

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7798          | TEH            | Sand<br>silty                                         | dark<br>red<br>brown      | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7799          | TEH            | Sand<br>silty                                         | dark<br>red<br>brown      | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7800          | TEH            | Sand<br>silty                                         | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7801          | TEH            | Sand                                                  | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7802          | TEH            | Sand                                                  | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 7803          | TEH            | Sand<br>Sandstone                                     | medium<br>brown           | medium sand<br>well sorted                     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 7804          | TEH            | Sand<br>Sandstone                                     | medium<br>brown           | medium sand<br>well sorted                     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 7805          | TEH            | Sand                                                  | medium<br>brown<br>red    | medium sand<br>well sorted                     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 7806          | TEP            | Sand<br>clayey carbon.<br>Sandstone                   | black                     | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 38.0                 | 40.0      | DK 7807          | TEP            | Sand<br>quartz. gritty<br>Sandstone<br>clayey carbon. | dark<br>grey<br>black     | fine sand to<br>v.crse sand<br>poorly sorted   | angular<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 40.0                 | 42.0      | DK 7808          | TEP            | Grit<br>quartz.                                       | dark<br>grey              | medium sand to<br>granule<br>poorly sorted     | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 42.0                 | 44.0      | DK 7809          | TEP            | Grit<br>quartz.                                       | dark<br>grey              | medium sand to<br>granule<br>poorly sorted     | angular<br>sub-elongate                    | trace                                    | 0.5                           | 0.07                                  |
| 44.0                 | 46.0      | DK 7810          | TEP            | Grit<br>quartz.                                       | dark<br>grey              | medium sand to<br>granule<br>poorly sorted     | angular<br>sub-elongate                    | light trace                              | 0.2                           |                                       |

000263

| DEPTH       |           | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING         | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-------------|-----------|------------------|----------------|-------------------------------|---------------------|-----------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| FROM<br>(m) | TO<br>(m) |                  |                |                               |                     |                                         |                                            |                                          |                               |                                       |
| 46.0        | 48.0      | DK 7811          | TEP            | Sand<br>clayey<br>Clay        | medium<br>grey      | clay to<br>medium sand<br>poorly sorted |                                            |                                          | 0.0                           |                                       |
| 20.0        | 48.0      | DK 7813          |                | Composite Sample              |                     |                                         |                                            |                                          |                               | 0.20                                  |

EOH at 48.0 m

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : CHILBINGA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 610258 NORTHING: 6732455 R.L.: 208.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 28-OCT-90

HOLE NUMBER : M119  
 LOGGED BY : PRD  
 TOTAL DEPTH : 42.0

SHEET 1 OF 2 HOLE NUMBER : M119

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown  | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown  | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7814          | Q              | Sand<br>silty                 | medium<br>red<br>brown | v.fine sand to<br>fine sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 7815          | Q              | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 7816          | Q              | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 10.0      | DK 7833          |                | Composite Sample              |                        |                                                |                                            |                                          |                               | 0.33                                  |
| 10.0                 | 12.0      | DK 7817          | Q              | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 7818          | Q              | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 7819          | Q              | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7820          | Q              | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7821          | TEH            | Sand<br>silty<br>Sandstone    | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |

000265

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                      |           |                  |                |                                       |                           |                                                |                                            |                                          |                               |                                       |
| 10.0                 | 20.0      | DK 7834          |                | Composite Sample                      |                           |                                                |                                            |                                          |                               | 0.35                                  |
| 20.0                 | 22.0      | DK 7822          | TEH            | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7823          | TEH            | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7824          | TEH            | Sand                                  | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7825          | TEH            | Sand                                  | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7826          | TEH            | Sand                                  | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 7827          | TEH            | Sand                                  | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 7828          | TEH            | Sand                                  | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 7829          | TEH            | Sand<br><br>Sandstone                 | medium<br>red<br>grey     | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 7830          | TEP            | Sand<br>clayey                        | medium<br>brown           | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 38.0                 | 40.0      | DK 7831          | TEP            | Sand<br>clayey                        | medium<br>brown           | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 40.0                 | 42.0      | DK 7832          | TEP            | Sand<br>clayey carbon.<br>Sandstone   | medium<br>brown           | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 42.0      | DK 7835          |                | Composite Sample                      |                           |                                                |                                            |                                          |                               | 0.18                                  |

000266



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : CHILBINGA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 610402 NORTHING: 6733596 R.L.: 210.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M120

LOGGED BY : PRD

TOTAL DEPTH : 33.0

SHEET 1 OF 2 HOLE NUMBER : M120

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown   | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty<br>Sandstone<br>ferrug. | light<br>red<br>brown   | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7836          | Q              | Sand<br>silty                         | light<br>red<br>brown   | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 7837          | Q              | Sand<br>silty                         | light<br>red<br>brown   | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 7838          | Q              | Sand<br>silty                         | light<br>red<br>brown   | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7848          |                | Composite Sample                      |                         |                                                |                                            |                                          |                               | 0.27                                  |
| 10.0                 | 12.0      | DK 7839          | Q              | Sand<br>silty                         | light<br>red<br>brown   | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7840          | Q              | Sand<br>silty                         | light<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7841          | Q              | Sand<br>silty                         | light<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7842          | TEH            | Sandstone<br>Sand                     | light<br>grey           | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7843          | TEH            | Sand                                  | medium<br>grey<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |

000267

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7844          | TEH            | Sand<br>clayey                | medium<br>grey<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7845          | TEH            | Sand<br>clayey carbon.        | dark<br>brown           | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7846          | TEH            | Sand<br>clayey carbon.        | dark<br>grey<br>black   | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7847          | TEP            | Clay<br>sandy                 | dark<br>grey<br>black   | clay to<br>fine sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 10.0                 | 28.0      | DK 7849          |                | Composite Sample              |                         |                                                |                                            |                                          |                               | 0.21                                  |
| 28.0                 | 30.0      |                  | TEP            | Clay<br>sandy                 | dark<br>grey            | clay to<br>v.fine sand<br>mod.well sorted      |                                            |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      |                  | TEP            | Clay<br>sandy                 | dark<br>grey            | clay to<br>v.fine sand<br>mod.well sorted      |                                            |                                          | 0.0                           |                                       |
| 32.0                 | 33.0      |                  | TEP            | Clay                          | dark<br>grey            | clay to<br>v.fine sand<br>mod.well sorted      |                                            |                                          | 0.0                           |                                       |
| EOH at 33.0 m        |           |                  |                |                               |                         |                                                |                                            |                                          |                               |                                       |

000268

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : CHILBINGA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 610814 NORTHING: 6734260 R.L.: 208.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M121

CONTRACTOR : Wallis Drilling

RIG TYPE : Mantis 75

DATE DRILLED: 28-OCT-90

LOGGED BY : PRD

TOTAL DEPTH : 19.0

SHEET 1 OF 2 HOLE NUMBER : M121

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown  | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | Q              | Sand<br>silty                         | light<br>red<br>brown  | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7850          | Q              | Sand<br>silty                         | light<br>red<br>brown  | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 7851          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | light<br>red<br>brown  | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br>clayey<br>Clay<br>sandy       | medium<br>red<br>brown | clay to<br>medium sand<br>v.poorly sorted      |                                            |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7854          |                | Composite Sample                      |                        |                                                |                                            |                                          |                               | 0.29                                  |
| 10.0                 | 12.0      | DK 7852          | Q              | Sand<br>clayey<br>Clay<br>sandy       | medium<br>red<br>brown | clay to<br>medium sand<br>v.poorly sorted      |                                            |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      |                  | Q              | Sand<br>clayey<br>Clay<br>sandy       | medium<br>red<br>brown | clay to<br>medium sand<br>v.poorly sorted      |                                            |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      |                  | Q              | Sand<br>clayey<br>Clay<br>sandy       | medium<br>red<br>brown | clay to<br>medium sand<br>v.poorly sorted      |                                            |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7853          | Q              | Sand<br>Sandstone<br>ferrug.          | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 18.0      | DK 7855          |                | Composite Sample                      |                        |                                                |                                            |                                          |                               | 0.33                                  |

000269

| DEPTH |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-------|------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| FROM  | TO   |                  |                |                               |                        |                                                |                                            |                                          |                               |                                      |
| (m)   | (m)  |                  |                |                               |                        |                                                |                                            |                                          |                               |                                      |
| 18.0  | 19.0 |                  | TEH            | Ironstone                     | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | sub-angular<br>sub-elongate                | ceme<br>Ferruginous<br>very<br>strong    | 0.0                           |                                      |

EOH at 19.0 m

Comments: Too hard to drill

000270

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : CHILBINGA  
 JOB NO : T63

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 28-OCT-90

HOLE NUMBER : M122

LOGGED BY : PRD

TOTAL DEPTH : 39.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 611630 NORTHING: 6735166 R.L.: 206.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M122

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown  | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Sand<br>silty                 | light<br>red<br>brown  | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7856          | Q              | Sand<br>silty                 | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            | 0.45                                  |
| 6.0                  | 8.0       | DK 7857          | Q              | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 1.0<br>Good trace             | 0.39                                  |
| 8.0                  | 10.0      | DK 7858          | Q              | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.5<br>trace                  | 0.46                                  |
| 10.0                 | 12.0      | DK 7859          | Q              | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            | 0.43                                  |
| 12.0                 | 14.0      | DK 7860          | Q              | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 7861          | Q              | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 7862          | TEH            | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 18.0                 | 20.0      | DK 7863          | TEH            | Sand<br>clayey<br>Clay        | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 0.0                  | 20.0      | DK 7870          |                | Composite Sample              |                        |                                                |                                            |                                          |                               | 0.41                                  |

000271

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7864          | TEH            | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7865          | TEH            | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7866          | TEH            | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7867          | TEH            | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      |                  | TEP            | Clay<br>sandy                 | medium<br>red<br>brown | clay to<br>v.fine sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      |                  | TEP            | Clay<br>sandy                 | medium<br>brown        | clay to<br>v.fine sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 7868          | TEP            | Sand<br>clayey                | medium<br>brown        | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 7869          | TEP            | Sand<br>clayey                | medium<br>brown        | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      |                  | TEP            | Clay<br>sandy                 | medium<br>brown        | clay to<br>fine sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 38.0                 | 39.0      |                  | TEP            | Clay                          | medium<br>brown        | clay<br>well sorted                            |                                            |                                          | 0.0                           |                                       |
| 20.0                 | 39.0      | DK 7871          |                | Composite Sample              |                        |                                                |                                            |                                          |                               | 0.16                                  |

EOH at 39.0 m

000272

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : CHILBINGA  
 JOB NO : T63  
 GRID: AMG ZONE: 52  
 RELIABILITY: TOPO EASTING: 612218 NORTHING: 6735878  
 CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 28-OCT-90  
 HOLE NUMBER : M123  
 LOGGED BY : PRD  
 TOTAL DEPTH : 8.4  
 R.L.: 205.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M123

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor   | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                   | light<br>red<br>brown  | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Sand<br>clayey<br>Clay<br>sandy | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7872          | Q              | Sand<br>silty                   | medium<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 7873          | Q              | Sand<br>quartz.<br>Sandstone    | light<br>grey          | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | ceme<br>Siliceous<br>very<br>strong      | 0.0                           |                                       |
| 0.0                  | 8.0       | DK 7874          |                | Composite Sample                |                        |                                                |                                            |                                          |                               | 0.29                                  |
| 8.0                  | 8.4       |                  | TEH            | Sandstone<br>quartz.            | light<br>grey          | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | ceme<br>Siliceous<br>very<br>strong      | 0.0                           |                                       |

EOH at 8.4 m

000273

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : CHILBINGA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 612834 NORTHING: 6736737 R.L.: 205.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M124

LOGGED BY : PRD  
 TOTAL DEPTH : 17.5

SHEET 1 OF 1 HOLE NUMBER : M124

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                    | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH        | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|----------------------------|----------------------------------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown      | fine sand to<br>coarse sand<br>poorly sorted       | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown      | fine sand to<br>coarse sand<br>poorly sorted       | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7875          | QB             | Sand<br>silty                         | light<br>red<br>brown      | fine sand to<br>coarse sand<br>poorly sorted       | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 7876          | Q              | Sand<br>clayey                        | medium<br>red<br>brown     | fine sand to<br>coarse sand<br>poorly sorted       | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 7877          | Q              | Sand<br>clayey                        | medium<br>red<br>brown     | fine sand to<br>coarse sand<br>poorly sorted       | sub-angular<br>sub-elongate                |                                                 | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7878          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                                 | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7879          | TEH            | Sandstone<br><br>ferrug.<br>Sand      | medium<br><br>red<br>brown | fine sand to<br><br>medium sand<br>mod.well sorted | sub-rounded<br><br>sub-spherical           | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7880          | TEH            | Sandstone<br><br>ferrug.<br>Sand      | medium<br><br>red<br>brown | fine sand to<br><br>medium sand<br>mod.well sorted | sub-rounded<br><br>sub-spherical           | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 0.0                  | 16.0      | DK 7881          |                | Composite Sample                      |                            |                                                    |                                            |                                                 |                               | 0.43                                  |
| 16.0                 | 17.5      |                  | TEH            | Sandstone                             | light<br>grey              | fine sand to<br>medium sand<br>mod.well sorted     | sub-angular<br>sub-spherical               | ceme<br>Siliceous<br>strong,                    | 0.0                           |                                       |

000274



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : WYOLA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 613444 NORTHING: 6737299 R.L.: 204.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 29-OCT-90

HOLE NUMBER : M125  
 LOGGED BY : PRD  
 TOTAL DEPTH : 33.0

SHEET 1 OF 2 HOLE NUMBER : M125

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH        | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|----------------------------|------------------------------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown      | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 7882          | QA             | Sand<br>silty                         | light<br>red<br>brown      | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7883          | QA             | Sand<br>silty                         | light<br>red<br>brown      | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 7884          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | light<br>red<br>brown      | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 7885          | Q              | Sand<br>clayey                        | medium<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 0.0                  | 10.0      | DK 7892          |                | Composite Sample                      |                            |                                                |                                            |                                                 |                               | 6.50                                  |
| 10.0                 | 12.0      | DK 7886          | Q              | Sand<br>clayey                        | medium<br>red<br>brown     | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>spherical                   |                                                 | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7887          | Q              | Sand                                  | medium<br>red<br>brown     | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 7888          | Q              | Sand                                  | medium<br>red<br>brown     | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 7889          | TEH            | Sandstone<br><br>ferrug.<br>Sand      | medium<br><br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br><br>mod.spherical           | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7890          | TEH            | Sandstone                             | light                      | fine sand                                      | sub-rounded                                | cons                                            | 0.2                           |                                       |

000275

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7891          | TEH            | Sandstone<br>ferrug.          | medium<br>grey<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               | ceme<br>Ferruginous<br>very<br>strong    | 0.5<br>trace                  | 6.35                                  |
| 10.0                 | 22.0      | DK 7895          |                | Composite Sample              |                         |                                                  |                                            |                                          |                               | 0.37                                  |
| 22.0                 | 24.0      | DK 7896          | TEH            | Sandstone<br>ferrug.          | dark<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               | ceme<br>Ferruginous<br>very<br>strong    | 0.5<br>trace                  | 1.23                                  |
| 24.0                 | 26.0      | DK 7893          | TEH            | Sand<br>clayey<br>Sandstone   | medium<br>red<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               | ceme<br>Ferruginous<br>very<br>strong    | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7894          | TEH            | Sand<br>clayey carbon.        | black                   | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      |                  | TEP            | Clay                          | dark<br>grey            | clay<br>well sorted                              |                                            |                                          | 0.0                           |                                       |
| 30.0                 | 33.0      |                  | TEP            | Clay                          | dark<br>grey            | clay<br>well sorted                              |                                            |                                          | 0.0                           |                                       |
| EOH at 33.0 m        |           |                  |                |                               |                         |                                                  |                                            |                                          |                               |                                       |

000276

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : WYOLA  
 JOB NO : T63

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 29-OCT-90

HOLE NUMBER : M126  
 LOGGED BY : PRD  
 TOTAL DEPTH : 15.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 613312 NORTHING: 6738345 R.L.: 203.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M126

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH        | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                                 | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown     | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                                 | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7897          | Q              | Sand<br>silty                 | light<br>red<br>brown     | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               |                                                 | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 7898          | Q              | Sand<br>silty                 | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                                 | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 7899          | Q              | Sand                          | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                                 | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7900          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               |                                                 | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7901          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical<br>earthy     | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 14.0                 | 15.0      | DK 7902          | TEH            | Sandstone<br>quartz.          | light<br>yellow<br>brown  | medium sand<br>well sorted                       | sub-angular<br>sub-spherical               | ceme<br>Siliceous<br>very<br>strong             | 0.0                           |                                       |
| 0.0                  | 15.0      | DK 7903          |                | Composite Sample              |                           |                                                  |                                            |                                                 |                               | 0.20                                  |

EOH at 15.0 m

000277

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : WYOLA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 613504 NORTHING: 6739337 R.L.: 205.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M127

LOGGED BY : PRD  
 TOTAL DEPTH : 15.0

SHEET 1 OF 1 HOLE NUMBER : M127

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH        | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown      | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 7904          | QA             | Sand<br>silty<br>Sandstone<br>ferrug. | light<br>red<br>brown      | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown     | clay to<br>medium sand<br>poorly sorted          |                                            |                                                 | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7905          | Q              | Sand<br>clayey<br>Clay                | medium<br>red<br>brown     | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                                 | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7906          | Q              | Sand<br><br>Sandstone<br>ferrug.      | medium<br><br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7907          | Q              | Sand<br><br>Sandstone<br>ferrug.      | medium<br><br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7908          | Q              | Sand<br><br>Sandstone<br>ferrug.      | medium<br><br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 14.0                 | 15.0      | DK 7909          | TEH            | Sandstone<br>Sand                     | light<br>grey<br>brown     | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               | ceme<br>Ferruginous<br>very<br>strong           | 0.0                           |                                       |
| 0.0                  | 15.0      | DK 7910          |                | Composite Sample                      |                            |                                                  |                                            |                                                 |                               | 0.22                                  |

EOH at 15.0 m

000278

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : WYOLA  
 JOB NO : T63

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 29-OCT-90

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 613667 NORTHING: 6740080 R.L.: 210.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M128

LOGGED BY : PRD

TOTAL DEPTH : 32.0

SHEET 1 OF 2 HOLE NUMBER : M128

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown  | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                 | light<br>red<br>brown  | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7911          | QB             | Sand<br>silty<br>Sandstone    | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7912          | QB             | Sand                          | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7913          | QB             | Sand                          | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7925          |                | Composite Sample              |                        |                                                  |                                            |                                          |                               | 0.44                                  |
| 10.0                 | 12.0      | DK 7914          | QB             | Sand                          | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               |                                          | 0.5<br>trace                  | 0.67                                  |
| 12.0                 | 14.0      | DK 7915          | QB             | Sand                          | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 7916          | QB             | Sand                          | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 16.0                 | 18.0      | DK 7917          | QB             | Sand                          | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 18.0                 | 20.0      | DK 7918          | QB             | Sand                          | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |

000279

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH        | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                 | 20.0      | DK 7926          |                | Composite Sample              |                        |                                                  |                                            |                                                 |                               | 0.35                                  |
| 20.0                 | 22.0      | DK 7919          | QB             | Sand                          | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                                 | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7920          | TEH            | Sand                          | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7921          | TEH            | ferrug.<br>Sand               | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7922          | TEH            | ferrug.<br>Sand               | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7923          | TEH            | ferrug.<br>Sand               | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 7924          | TEH            | ferrug.<br>Sand               | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 20.0                 | 32.0      | DK 7927          |                | Composite Sample              |                        |                                                  |                                            |                                                 |                               | 0.36                                  |
| 32.0                 | 32.1      |                  |                | Mudstone<br>sandy             | dark<br>red<br>brown   | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular<br>sub-spherical               | ceme<br>very<br>strong                          | 0.0                           |                                       |

EOH at 32.0 m

000280

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 29-OCT-90

HOLE NUMBER : M129

LOGGED BY : PRD  
TOTAL DEPTH : 29.5

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 613835 NORTHING: 6741171 R.L.: 215.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M129

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH        | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|------------------------|------------------------------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown  | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                                 | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Sand<br>clayey                        | light<br>red<br>brown  | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                                 | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7928          | Q              | Sand<br>silty ferrug.                 | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                                 | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 7929          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-spherical<br>pitted     | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 7930          | Q              | Sand<br>silty                         | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                                 | 0.2<br>light trace            |                                       |
| 0.0                  | 10.0      | DK 7941          |                | Composite Sample                      |                        |                                                |                                            |                                                 |                               | 0.35                                  |
| 10.0                 | 12.0      | DK 7931          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-spherical<br>pitted     | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 7932          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-spherical<br>pitted     | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.2<br>light trace            |                                       |
| 14.0                 | 16.0      | DK 7933          | Q              | Sand<br>silty<br>Sandstone            | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | sub-angular<br>sub-spherical<br>pitted     | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.2<br>light trace            |                                       |

000281

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 16.0                 | 18.0      | DK 7934          | Q              | Sand                          | medium                 | medium sand to                                   | sub-angular                                | weak<br>cons                             | 0.2                           |                                       |
|                      |           |                  |                | silty<br>Sandstone            | red<br>brown           | v.crse sand<br>poorly sorted                     | sub-spherical<br>pitted                    | Ferruginous<br>weak,<br>consol.          | light trace                   |                                       |
|                      |           |                  |                | ferrug.                       |                        |                                                  |                                            |                                          |                               |                                       |
| 18.0                 | 20.0      | DK 7935          | Q              | Sand                          | medium                 | medium sand to                                   | sub-angular                                | weak                                     | 0.0                           |                                       |
|                      |           |                  |                | silty<br>Sandstone            | red<br>brown           | coarse sand<br>mod.well sorted                   | sub-spherical<br>pitted                    | Ferruginous<br>weak,<br>consol.          |                               |                                       |
|                      |           |                  |                | ferrug.                       |                        |                                                  |                                            |                                          |                               |                                       |
| 10.0                 | 20.0      | DK 7942          |                | Composite Sample              |                        |                                                  |                                            | consol.                                  |                               | 0.24                                  |
| 20.0                 | 22.0      | DK 7936          | Q              | Sand                          | medium                 | medium sand to                                   | sub-angular                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | silty<br>Sandstone            | red<br>brown           | coarse sand<br>mod.well sorted                   | sub-spherical<br>pitted                    | Ferruginous<br>weak,<br>consol.          |                               |                                       |
|                      |           |                  |                | ferrug.                       |                        |                                                  |                                            |                                          |                               |                                       |
| 22.0                 | 24.0      | DK 7937          | Q              | Sand                          | medium                 | medium sand to                                   | sub-angular                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | silty<br>Sandstone            | red<br>brown           | coarse sand<br>mod.well sorted                   | sub-spherical<br>pitted                    | Ferruginous<br>weak,<br>consol.          |                               |                                       |
|                      |           |                  |                | ferrug.                       |                        |                                                  |                                            |                                          |                               |                                       |
| 24.0                 | 26.0      | DK 7938          | Q              | Sand                          | medium                 | medium sand to                                   | sub-angular                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | silty<br>Sandstone            | red<br>brown           | coarse sand<br>mod.well sorted                   | sub-spherical<br>pitted                    | Ferruginous<br>weak,<br>consol.          |                               |                                       |
|                      |           |                  |                | ferrug.                       |                        |                                                  |                                            |                                          |                               |                                       |
| 26.0                 | 28.0      | DK 7939          | TEH            | Sandstone                     | medium<br>blue<br>grey | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
|                      |           |                  |                | Sand                          |                        |                                                  |                                            |                                          |                               |                                       |
| 28.0                 | 29.5      | DK 7940          | TEH            | Sandstone<br>quartz.          | medium<br>grey         | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | ceme<br>Siliceous<br>very<br>strong      | 0.0                           |                                       |
| 20.0                 | 29.5      | DK 7943          |                | Composite Sample              |                        |                                                  |                                            |                                          |                               | 0.10                                  |

EOH at 29.5 m

000282



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : WYOLA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 613978 NORTHING: 6742213 R.L.: 225.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 29-OCT-90

HOLE NUMBER : M130  
 LOGGED BY : PRD  
 TOTAL DEPTH : 24.0

SHEET 1 OF 2 HOLE NUMBER : M130

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor              | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH        | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|--------------------------------------------|----------------------------|------------------------------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                              | light<br>red<br>brown      | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                              | light<br>red<br>brown      | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 7944          | QA             | Sand<br><br>silty<br>Sandstone             | light<br><br>red<br>brown  | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       |                  | QB             | ferrug.<br>Clay<br>sandy<br>Sand<br>clayey | medium<br>red<br>brown     | clay to<br>medium sand<br>poorly sorted        |                                            |                                                 | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7945          | Q              | Sand<br><br>Sandstone                      | medium<br><br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7953          |                | ferrug.<br>Composite Sample                |                            |                                                |                                            |                                                 |                               | 0.29                                  |
| 10.0                 | 12.0      | DK 7946          | Q              | Sand<br>clayey                             | medium<br>red<br>brown     | medium sand to<br>v.crse sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                                 | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7947          | Q              | Sand<br><br>Sandstone                      | medium<br><br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7948          | Q              | ferrug.<br>Sand<br><br>Sandstone           | medium<br><br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | sub-angular<br>sub-elongate                | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |

000283

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 16.0                        | 18.0 | DK 7949          | TO             | Sand<br>quartz.               | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                        | 20.0 | DK 7950          | TEH            | Sand<br>quartz. gritty        | light<br>orange<br>brown | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 20.0                        | 22.0 | DK 7951          | TEH            | Sand<br>gritty                | light<br>orange<br>grey  | coarse sand to<br>granule<br>poorly sorted       | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 22.0                        | 23.0 | DK 7952          | TEH            | Sand<br>gritty                | light<br>orange<br>grey  | coarse sand to<br>granule<br>poorly sorted       | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 23.0                        | 23.5 |                  | TEH            | Sandstone<br>gritty           | light<br>grey            | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   | ceme<br>Siliceous<br>very<br>strong      | 0.0                           |                                       |
| 10.0                        | 23.5 | DK 7954          |                | Composite Sample              |                          | Comments: Too hard to drill                      |                                            |                                          |                               | 0.16                                  |

EOH at 24.0 m

000284

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : WYOLA  
 JOB NO : T63

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 29-OCT-90

HOLE NUMBER : M131  
 LOGGED BY : PRD  
 TOTAL DEPTH : 46.0  
 R.L.: 235.0 AZIM.: 0.0 INCL.: -90.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 614121 NORTHING: 6743230

SHEET 1 OF 2 HOLE NUMBER : M131

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor             | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH        | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                             | light<br>red<br>brown      | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                                 | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                             | light<br>red<br>brown      | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                                 | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy                             | medium<br>red<br>brown     | clay to<br>medium sand<br>poorly sorted          |                                            |                                                 | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7955          | Q              | Sand<br><br>silty<br>Sandstone            | medium<br><br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7956          | Q              | ferrug.<br>Sand<br><br>silty<br>Sandstone | medium<br><br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7976          |                | ferrug.<br>Composite Sample               |                            |                                                  |                                            |                                                 |                               | 0.28                                  |
| 10.0                 | 12.0      | DK 7957          | Q              | Sand<br><br>silty<br>Sandstone            | medium<br><br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           | 0.22                                  |
| 12.0                 | 14.0      | DK 7958          | TO             | ferrug.<br>Sand<br>silty                  | medium<br>red<br>brown     | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                                 | 0.0                           | 0.23                                  |
| 14.0                 | 16.0      | DK 7959          | TO             | Sand                                      | medium<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                                 | 0.0                           | 0.20                                  |

000285

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 16.0                 | 18.0      | DK 7960          | TO             | Sand<br>quartz.               | medium<br>orange<br>grey | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            | 0.25                                 |
| 18.0                 | 20.0      | DK 7961          | TO             | Sand<br>quartz.               | light<br>yellow<br>grey  | medium sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 1.0<br>Good trace             | 0.43                                 |
| 20.0                 | 22.0      | DK 7962          | TO             | Sand<br>quartz.               | light<br>yellow<br>grey  | medium sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 1.0<br>Good trace             | 0.35                                 |
| 22.0                 | 24.0      | DK 7963          | TO             | Sand<br>quartz.               | light<br>grey            | coarse sand to<br>granule<br>mod.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                      |
| 24.0                 | 26.0      | DK 7964          | TEH            | Grit<br>quartz.               | light<br>grey            | granule<br>well sorted                           | rounded<br>spherical                       |                                          | 0.0                           |                                      |
| 26.0                 | 28.0      | DK 7965          | TEH            | Grit<br>quartz.<br>Sand       | light<br>grey            | granule<br>well sorted                           | rounded<br>spherical                       |                                          | 0.0                           |                                      |
| 28.0                 | 30.0      | DK 7966          | TEH            | Sand<br>quartz.               | light<br>grey            | v.crse sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.0                           |                                      |
| 20.0                 | 30.0      | DK 7977          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.06                                 |
| 30.0                 | 32.0      | DK 7967          | TEH            | Sand<br>quartz.               | light<br>grey            | v.crse sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.0                           |                                      |
| 32.0                 | 34.0      | DK 7968          | TEH            | Sand<br>quartz.               | light<br>grey            | v.crse sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.0                           |                                      |
| 34.0                 | 36.0      | DK 7969          | TEH            | Sand<br>quartz.               | medium<br>brown<br>grey  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>spherical                   |                                          | 0.0                           |                                      |
| 36.0                 | 38.0      | DK 7970          | TEH            | Sand<br>quartz.               | medium<br>brown<br>grey  | fine sand<br>well sorted                         | rounded<br>spherical                       |                                          | 2.0<br>V.good<br>trace        | 1.35                                 |
| 38.0                 | 39.0      | DK 7971          | TEH            | Sand<br>quartz.               | medium<br>brown          | fine sand                                        | rounded<br>spherical                       |                                          | 0.2<br>light trace            |                                      |

000286

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 39.0                 | 40.0      | DK 7972          | TEH            | Sand<br>quartz.               | medium<br>brown     | fine sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.2<br>light trace            |                                       |
| 40.0                 | 42.0      | DK 7973          | TEH            | Sand<br>Sandstone             | medium<br>brown     | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 42.0                 | 44.0      | DK 7974          | TEH            | Sand<br>clayey<br>Sandstone   | medium<br>brown     | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 44.0                 | 46.0      | DK 7975          | TEH            | Sand<br>clayey<br>Clay        | medium<br>brown     | clay to<br>medium sand<br>mod.well sorted      | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 30.0                 | 46.0      | DK 7978          |                | Composite Sample              |                     |                                                |                                            |                                          |                               | 0.44                                  |

EOH at 46.0 m

000287

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : WYOLA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 614362 NORTHING: 6744195 R.L.: 244.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M132

LOGGED BY : PRD

TOTAL DEPTH : 36.0

SHEET 1 OF 2 HOLE NUMBER : M132

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor   | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                   | light<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey | medium<br>red<br>brown   | clay to<br>fine sand<br>poorly sorted            |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy                   | medium<br>red<br>brown   | clay to<br>fine sand<br>poorly sorted            |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | Q              | Sand<br>clayey<br>Clay<br>sandy | medium<br>red<br>brown   | clay to<br>fine sand<br>poorly sorted            |                                            |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7979          | Q              | Sand                            | medium                   | fine sand to                                     | sub-angular                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | Sandstone                       | red<br>brown             | coarse sand<br>poorly sorted                     | sub-spherical<br>earthy                    | Ferruginous<br>weak,<br>consol.          |                               |                                       |
| 0.0                  | 10.0      | DK 7993          |                | ferrug.<br>Composite Sample     |                          |                                                  |                                            |                                          |                               | 0.20                                  |
| 10.0                 | 12.0      | DK 7980          | Q              | Sand                            | medium                   | fine sand to                                     | sub-angular                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | Sandstone                       | red<br>brown             | coarse sand<br>poorly sorted                     | sub-spherical<br>earthy                    | Ferruginous<br>weak,<br>consol.          |                               |                                       |
| 12.0                 | 14.0      | DK 7981          | Q              | ferrug.<br>Sand                 | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7982          | TO             | Sand                            | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7983          | TO             | Sand                            | light<br>yellow<br>grey  | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |

000288

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 7984          | TO             | Sand<br>quartz.               | light<br>grey       | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 20.0      | DK 7994          |                | Composite Sample              |                     |                                                  |                                            |                                          |                               | 0.08                                  |
| 20.0                 | 22.0      | DK 7985          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 7986          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 7987          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 7988          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 7989          | TO             | Sand<br>quartz.               | light<br>grey       | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 7990          | TO             | Sand<br>quartz.               | light<br>grey       | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 7991          | TEH            | Grit<br>quartz.               | light<br>grey       | coarse sand to<br>granule<br>mod.well sorted     | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 7992          | TEH            | Sand<br>gritty quartz.        | light<br>grey       | medium sand to<br>granule<br>mod.well sorted     | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 36.0      | DK 7995          |                | Composite Sample              |                     |                                                  |                                            |                                          |                               | 0.01                                  |

EOH at 36.0 m

000289

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : WYOLA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 614501 NORTHING: 6744963 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M133

LOGGED BY : PRD

TOTAL DEPTH : 36.0

SHEET 1 OF 2 HOLE NUMBER : M133

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor             | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                      | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH        | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------------------|----------------------------|------------------------------------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                             | light<br>red<br>brown      | v.fine sand to<br>coarse sand<br>poorly sorted       | sub-angular<br>sub-spherical               |                                                 | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                             | light<br>red<br>brown      | v.fine sand to<br>coarse sand<br>poorly sorted       | sub-angular<br>sub-spherical               |                                                 | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy                             | medium<br>red<br>brown     | clay to<br>medium sand<br>poorly sorted              |                                            |                                                 | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | Q              | Clay<br>sandy                             | medium<br>red<br>brown     | clay to<br>medium sand<br>poorly sorted              |                                            |                                                 | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7996          | Q              | Sand<br><br>silty<br>Sandstone            | medium<br><br>red<br>brown | fine sand to<br><br>coarse sand<br>poorly sorted     | sub-angular<br><br>sub-spherical<br>earthy | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 8010          |                | ferrug.<br>Composite Sample               |                            |                                                      |                                            |                                                 |                               | 0.31                                  |
| 10.0                 | 12.0      | DK 7997          | Q              | Sand<br><br>silty<br>Sandstone            | medium<br><br>red<br>brown | fine sand to<br><br>coarse sand<br>poorly sorted     | sub-angular<br><br>sub-spherical<br>earthy | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7998          | Q              | ferrug.<br>Sand<br><br>silty<br>Sandstone | medium<br><br>red<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-angular<br><br>sub-spherical<br>earthy | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7999          | Q              | ferrug.<br>Sand<br><br>silty<br>Sandstone | medium<br><br>red<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-angular<br><br>sub-spherical<br>earthy | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |

000290



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 16.0                 | 18.0      | DK 8000          | Q              | Sand<br>silty                 | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8001          | Q              | Sand<br>silty                 | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 20.0      | DK 8011          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.15                                  |
| 20.0                 | 22.0      | DK 8002          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8003          | TO             | Sand                          | light<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8004          | TO             | Sand                          | light<br>yellow<br>grey  | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8005          | TO             | Sand<br>quartz.               | light<br>grey            | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8006          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8007          | TO             | Sand<br>quartz.               | light<br>grey            | coarse sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8008          | TO             | Sand<br>quartz.               | light<br>grey            | coarse sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 8009          | TO             | Sand<br>quartz.               | light<br>grey            | coarse sand<br>well sorted                       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 36.0      | DK 8012          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.05                                  |

EOH at 36.0 m

000291

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : WYOLA  
 JOB NO : T63

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 614720 NORTHING: 6746079 R.L.: 248.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 30-OCT-90

HOLE NUMBER : M134  
 LOGGED BY : PRD  
 TOTAL DEPTH : 42.0

SHEET 1 OF 2 HOLE NUMBER : M134

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown  | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown  | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand                 | medium<br>red<br>brown | clay to<br>medium sand<br>poorly sorted        |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 8013          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8014          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 8031          |                | Composite Sample                      |                        |                                                |                                            |                                          |                               | 0.23                                  |
| 10.0                 | 12.0      | DK 8015          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8016          | Q              | Sand<br>silty                         | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8017          | Q              | Sand<br>silty                         | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8018          | Q              | Sand<br>silty                         | medium<br>red<br>brown | medium sand to<br>v.crse sand<br>poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8019          | Q              | Sand<br>silty                         | medium<br>red<br>brown | fine sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |

000292

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                 | 20.0      | DK 8032          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.13                                  |
| 20.0                 | 22.0      | DK 8020          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8021          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8022          | TO             | Sand<br>quartz.               | light<br>yellow<br>grey  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8023          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8024          | TEH            | Grit<br>quartz.               | light<br>grey            | coarse sand to<br>granule<br>f.well sorted       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 8033          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.01                                  |
| 30.0                 | 32.0      | DK 8025          | TEH            | Sand<br>quartz.               | light<br>grey            | fine sand<br>well sorted                         | rounded<br>spherical                       |                                          | 0.2<br>light trace            | 0.12                                  |
| 32.0                 | 34.0      | DK 8026          | TEH            | Sand<br>quartz.<br>Mudstone   | light<br>grey            | fine sand to<br>medium sand<br>f.well sorted     | rounded<br>spherical                       |                                          | 0.5<br>trace                  | 0.08                                  |
| 34.0                 | 36.0      | DK 8027          | TEH            | Sand<br>quartz.<br>Sandstone  | light<br>grey            | fine sand to<br>medium sand<br>f.well sorted     | rounded<br>spherical                       |                                          | 0.5<br>trace                  | 0.12                                  |
| 36.0                 | 38.0      | DK 8028          | TEH            | Sand<br>Sandstone             | pale<br>brown<br>grey    | fine sand to<br>medium sand<br>f.well sorted     | rounded<br>spherical                       |                                          | 0.5<br>trace                  | 0.09                                  |
| 38.0                 | 40.0      | DK 8029          | TEH            | Sand<br>Sandstone             | light<br>brown           | fine sand to<br>medium sand<br>f.well sorted     | rounded<br>spherical                       |                                          | 0.5<br>trace                  | 0.98                                  |
| 40.0                 | 41.8      | DK 8030          | TEH            | Sand                          | light<br>brown           | fine sand to<br>medium sand<br>f.well sorted     | rounded<br>spherical                       |                                          | 0.5<br>trace                  | 1.42                                  |

000293

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : WYOLA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 614961 NORTHING: 6747044 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M135

LOGGED BY : PRD

TOTAL DEPTH : 42.0

SHEET 1 OF 2 HOLE NUMBER : M135

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown    | v.fine sand to<br>coarse sand<br>poorly sorted   | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown   | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 8034          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8035          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 8052          |                | Composite Sample                      |                          |                                                  |                                            |                                          |                               | 0.23                                  |
| 10.0                 | 12.0      | DK 8036          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8037          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8038          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8039          | TO             | Sand                                  | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8040          | TO             | Sand                                  | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000295

| DEPTH       |           | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-------------|-----------|------------------|----------------|-------------------------------|---------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| FROM<br>(m) | TO<br>(m) |                  |                |                               |                     |                                              |                                            |                                          |                               |                                      |
| 41.8        | 42.0      |                  | TEH            | Sandstone                     | black               | v.fine sand to<br>fine sand<br>f.well sorted | sub-rounded<br>sub-spherical               | ceme<br>Siliceous<br>very<br>strong      | 0.0                           |                                      |

EOH at 42.0 m

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                 | 20.0      | DK 8053          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.10                                  |
| 20.0                 | 22.0      | DK 8041          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8042          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8043          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8044          | TO             | Sand                          | light<br>yellow<br>grey  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8045          | TO             | Sand                          | light<br>grey            | coarse sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 8054          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.02                                  |
| 30.0                 | 32.0      | DK 8046          | TO             | Sand                          | light<br>grey            | coarse sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8047          | TO             | Sand                          | light<br>grey            | coarse sand to<br>v.crse sand<br>mod.well sorted | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 8048          | TEH            | Sand<br>gritty                | light<br>grey            | coarse sand to<br>granule<br>mod.well sorted     | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 8049          | TEH            | Sand                          | light<br>grey            | fine sand to<br>coarse sand<br>mod.well sorted   | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 38.0                 | 40.0      | DK 8050          | TEH            | Sand<br>Sandstone             | pale<br>brown<br>grey    | fine sand to<br>coarse sand<br>mod.well sorted   | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 40.0                 | 42.0      | DK 8051          | TEH            | Sand<br>Sandstone             | pale<br>brown<br>grey    | fine sand to<br>coarse sand<br>mod.well sorted   | rounded<br>spherical                       |                                          | 0.0                           |                                       |

000296

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                      |           |                  |                |                               |                     |                                 |                                            |                                          |                               |                                       |
| 30.0                 | 42.0      | DK 8055          |                | Composite Sample              |                     |                                 |                                            |                                          |                               | 0.02                                  |

EOH at 42.0 m

000297

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : WYOLA  
 JOB NO : T63

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 615104 NORTHING: 6748061 R.L.: 252.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 30-OCT-90

HOLE NUMBER : M136  
 LOGGED BY : PRD  
 TOTAL DEPTH : 32.3

SHEET 1 OF 2 HOLE NUMBER : M136

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown  | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>Sandstone                     | light<br>red<br>brown  | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 8056          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 8057          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8058          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 8070          |                | Composite Sample                      |                        |                                                  |                                            |                                          |                               | 0.09                                  |
| 10.0                 | 12.0      | DK 8059          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8060          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8061          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8062          | TO             | Sand<br>silty                         | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8063          | TO             | Sand<br>silty                         | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000298



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                 | 20.0      | DK 8071          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.14                                  |
| 20.0                 | 22.0      | DK 8064          | TO             | Sand                          | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8065          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8066          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8067          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8068          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8069          | TO             | Sand<br>quartz.               | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 20.0                 | 32.0      | DK 8072          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.02                                  |
| 32.0                 | 32.3      |                  | TO             | Sandstone<br>quartz.          | light<br>grey            | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical<br>vitreous   | ceme<br>Siliceous<br>very<br>strong      | 0.0                           |                                       |

EOH at 32.3 m

000299

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1654  
 SHEET : WYOLA  
 JOB NO : T63

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 30-OCT-90

HOLE NUMBER : M137  
 LOGGED BY : PRD  
 TOTAL DEPTH : 36.0  
 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 615245 NORTHING: 6748979

SHEET 1 OF 2 HOLE NUMBER : M137

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                            | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                    | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH        | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------------------------|----------------------------|----------------------------------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                                            | light<br>red<br>brown      | v.fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                                            | light<br>red<br>brown      | v.fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey                          | medium<br>red<br>brown     | clay to<br>medium sand<br>poorly sorted            |                                            |                                                 | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 8073          | Q              | Sand<br><br>silty<br>Sandstone                           | medium<br><br>red<br>brown | medium sand to<br><br>v.crse sand<br>poorly sorted | sub-angular<br><br>sub-elongate<br>earthy  | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8074          | Q              | ferrug.<br>Sand<br><br>silty<br>Sandstone                | medium<br><br>red<br>brown | medium sand to<br><br>v.crse sand<br>poorly sorted | sub-angular<br><br>sub-elongate<br>earthy  | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 8088          |                | ferrug.<br>Composite Sample                              |                            |                                                    |                                            |                                                 |                               | 0.22                                  |
| 10.0                 | 12.0      | DK 8075          | Q              | Sand<br><br>silty<br>Sandstone                           | medium<br><br>red<br>brown | fine sand to<br><br>coarse sand<br>poorly sorted   | sub-angular<br><br>sub-elongate<br>earthy  | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8076          | Q              | ferrug.<br>Sand<br><br>silty<br>Sandstone<br><br>ferrug. | medium<br><br>red<br>brown | medium sand to<br><br>v.crse sand<br>poorly sorted | sub-angular<br><br>sub-elongate<br>earthy  | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |

000300

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 14.0                 | 16.0      | DK 8077          | Q              | Sand                          | medium                   | medium sand to                                   | sub-angular                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | silty<br>Sandstone            | red<br>brown             | coarse sand<br>mod.well sorted                   | sub-spherical<br>earthy                    | Ferruginous<br>weak,<br>consol.          |                               |                                       |
| 16.0                 | 18.0      | DK 8078          | Q              | ferrug.<br>Sand               | medium                   | medium sand to                                   | sub-angular                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | silty<br>Sandstone            | red<br>brown             | coarse sand<br>mod.well sorted                   | sub-spherical<br>earthy                    | Ferruginous<br>weak,<br>consol.          |                               |                                       |
| 18.0                 | 20.0      | DK 8079          | TO             | ferrug.<br>Sand<br>silty      | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 20.0      | DK 8089          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.10                                  |
| 20.0                 | 22.0      | DK 8080          | TO             | Sand<br>silty                 | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8081          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8082          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8083          | TO             | Sand<br>gritty quartz.        | light<br>grey            | v.crse sand to<br>granule<br>mod.well sorted     | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8084          | TEH            | Grit<br>quartz.               | light<br>grey            | v.crse sand to<br>granule<br>mod.well sorted     | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8085          | TEH            | Sand<br>gritty                | light<br>grey            | v.crse sand to<br>granule<br>mod.well sorted     | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8086          | TEH            | Sand<br>gritty<br>Mudstone    | light<br>grey            | v.crse sand to<br>granule<br>mod.well sorted     | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 8087          | TEH            | Sand<br>Sandstone             | pale<br>brown<br>grey    | medium sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |

000301

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 30-OCT-90

HOLE NUMBER : M138

LOGGED BY : PRD  
TOTAL DEPTH : 44.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 615389 NORTHING: 6750095 R.L.: 258.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M138

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                            | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH        | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                                            | light<br>red<br>brown      | v.fine sand to<br>coarse sand<br>v.poorly sorted | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                                            | light<br>red<br>brown      | v.fine sand to<br>coarse sand<br>v.poorly sorted | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy                                            | medium<br>red<br>brown     | clay to<br>medium sand<br>v.poorly sorted        |                                            |                                                 | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 8091          | Q              | Sand<br><br>silty<br>Sandstone                           | medium<br><br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate<br>earthy      | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8092          | Q              | ferrug.<br>Sand<br><br>silty<br>Sandstone                | medium<br><br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate<br>earthy      | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 8111          |                | ferrug.<br>Composite Sample                              |                            |                                                  |                                            |                                                 |                               | 0.22                                  |
| 10.0                 | 12.0      | DK 8093          | Q              | Sand<br><br>silty<br>Sandstone                           | medium<br><br>red<br>brown | fine sand to<br>v.crse sand<br>poorly sorted     | sub-angular<br>sub-elongate<br>earthy      | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8094          | Q              | ferrug.<br>Sand<br><br>silty<br>Sandstone<br><br>ferrug. | medium<br><br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate<br>earthy      | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |

000302

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 14.0                 | 16.0      | DK 8095          | Q              | Sand                          | medium                   | medium sand to                                   | sub-rounded                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | silty<br>Sandstone            | red<br>brown             | coarse sand<br>mod.well sorted                   | sub-elongate<br>earthy                     | Ferruginous<br>weak,<br>consol.          |                               |                                       |
| 16.0                 | 18.0      | DK 8096          | TO             | ferrug.<br>Sand<br>silty      | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8097          | TO             | Sand                          | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 20.0      | DK 8112          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.08                                  |
| 20.0                 | 22.0      | DK 8098          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8099          | TO             | Sand                          | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8100          | TO             | Sand                          | light<br>orange<br>grey  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8101          | TO             | Sand                          | light<br>grey            | coarse sand<br>f.well sorted                     | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8102          | TO             | Sand                          | light<br>grey            | coarse sand<br>well sorted                       | sub-angular<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8103          | TEH            | Sand<br>Sandstone             | light<br>grey            | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8104          | TEH            | Sand                          | light<br>grey            | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 20.0                 | 34.0      | DK 8113          |                | Composite Sample              |                          |                                                  |                                            |                                          |                               | 0.02                                  |

000303

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE                    | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|--------------------------------------------------|---------------------------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 34.0                 | 36.0      | DK 8105          | TEH            | Sand                          | light<br>grey          | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous                      |                                          | 0.0                           | 0.01                                  |
| 36.0                 | 38.0      | DK 8106          | TEH            | Sand<br><br>Sandstone         | pale<br>brown          | fine sand<br><br>well sorted                     | Comments: A few thin f-grained layers<br>rounded<br>spherical | light trace                              | 0.2                           | 0.16                                  |
| 38.0                 | 40.0      | DK 8107          | TEH            | Sand                          | pale<br>brown          | fine sand<br><br>well sorted                     | rounded<br>spherical                                          | light trace                              | 0.2                           | 0.50                                  |
| 40.0                 | 42.0      | DK 8108          | TEH            | Sand<br><br>Ironstone         | medium<br>brown        | v.fine sand to<br>fine sand<br>well sorted       | rounded<br>spherical                                          | trace                                    | 0.5                           | 1.02                                  |
| 42.0                 | 44.0      | DK 8109          | TEH            | Sand<br><br>Grit              | medium<br>red<br>brown | find sand to<br>granule<br>poorly sorted         | rounded<br>spherical                                          | light trace                              | 0.2                           | 1.11                                  |
| 44.0                 | 44.1      | DK 8110          |                | Sandstone                     | medium<br>red<br>brown | fine sand<br><br>f.well sorted                   |                                                               |                                          | 0.0                           |                                       |
| EOH at 44.0 m        |           |                  |                |                               |                        | Comments: Bedrock ? see plastic bag              |                                                               |                                          |                               |                                       |

000304

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 30-OCT-90

HOLE NUMBER : M139

LOGGED BY : PRD  
TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 615679 NORTHING: 6750960 R.L.: 263.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M139

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                            | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH        | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                                            | light<br>red<br>brown      | v.fine sand to<br>coarse sand<br>poorly sorted   |                                            |                                                 | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand                                    | medium<br>red<br>brown     | clay to<br>medium sand<br>poorly sorted          |                                            |                                                 | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 8114          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug.                   | medium<br>red<br>brown     | clay to<br>medium sand<br>poorly sorted          |                                            |                                                 | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 8115          | Q              | Sand<br><br>silty<br>Sandstone                           | medium<br><br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br><br>sub-elongate<br>earthy  | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8116          | Q              | ferrug.<br>Sand<br><br>silty<br>Sandstone                | medium<br><br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br><br>sub-elongate<br>earthy  | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8117          | Q              | ferrug.<br>Sand<br><br>silty<br>Sandstone                | medium<br><br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br><br>sub-elongate<br>earthy  | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8118          | Q              | ferrug.<br>Sand<br><br>silty<br>Sandstone                | medium<br><br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br><br>sub-spherical<br>earthy | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8119          | Q              | ferrug.<br>Sand<br><br>silty<br>Sandstone<br><br>ferrug. | medium<br><br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br><br>sub-spherical<br>earthy | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |

000305

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 16.0                 | 18.0      | DK 8120          | TO             | Sand                          | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8121          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 20.0      | DK 8127          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.11                                  |
| 20.0                 | 22.0      | DK 8122          | TO             | Sand                          | medium<br>orange<br>grey  | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8123          | TO             | Sand                          | light<br>orange<br>grey   | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8124          | TO             | Sand<br>gritty quartz.        | light<br>grey             | coarse sand to<br>granule<br>mod.well sorted     | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8125          | TO             | Sand<br>gritty quartz.        | light<br>grey             | coarse sand to<br>granule<br>mod.well sorted     | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8126          | TO             | Sand                          | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 8128          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.03                                  |

EOH at 30.0 m

000306



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 30-OCT-90

HOLE NUMBER : M140

LOGGED BY : PRD

TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 615795 NORTHING: 6751903 R.L.: 261.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M140

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor  | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH        | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|--------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                  | light<br>red<br>brown      | v.fine sand to<br>coarse sand<br>v.poorly sorted | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty<br>Clay          | light<br>red<br>brown      | v.fine sand to<br>coarse sand<br>v.poorly sorted | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy                  | medium<br>red<br>brown     | clay to<br>medium sand<br>v.poorly sorted        |                                            |                                                 | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 8129          | Q              | Sand<br>clayey                 | medium<br>red<br>brown     | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                                 | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8130          | Q              | Sand<br><br>silty<br>Sandstone | medium<br><br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate<br>earthy      | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8131          | Q              | Sand<br><br>silty<br>Sandstone | medium<br><br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate<br>earthy      | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8132          | Q              | Sand<br><br>silty<br>Sandstone | medium<br><br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate<br>earthy      | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8133          | Q              | Sand<br><br>silty<br>Sandstone | medium<br><br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>earthy     | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8134          | TO             | Sand                           | light<br>orange<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>smooth     |                                                 | 0.0                           |                                       |

000307

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8135          | TO             | Sand                          | light<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 8.0                  | 20.0      | DK 8141          |                | Composite Sample              |                          |                                                |                                            |                                          |                               | 0.17                                  |
| 20.0                 | 22.0      | DK 8136          | TO             | Sand                          | light<br>yellow<br>grey  | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8137          | TO             | Sand<br>quartz.               | light<br>grey            | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.2<br>light trace            |                                       |
| 24.0                 | 26.0      | DK 8138          | TEH            | Grit<br>quartz.               | light<br>grey            | coarse sand to<br>granule<br>mod.well sorted   | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8139          | TEH            | Sand<br>quartz.               | light<br>grey            | fine sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8140          | TEH            | Sand<br>quartz.<br>Sandstone  | light<br>grey            | fine sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   | Comments: Interbedded coarse + fine sand | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 8142          |                | Composite Sample              |                          | Comments: Interbedded coarse + fine sand       |                                            |                                          |                               | 0.09                                  |

EOH at 30.0 m

000308

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 30-OCT-90

HOLE NUMBER : M141

LOGGED BY : PRD  
TOTAL DEPTH : 36.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 616113 NORTHING: 6752942 R.L.: 258.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M141

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor             | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                             | light<br>red<br>brown      | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                             | light<br>red<br>brown      | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy                             | medium<br>red<br>brown     | clay to<br>medium sand<br>poorly sorted          | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy                             | medium<br>red<br>brown     | clay to<br>medium sand<br>poorly sorted          | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8143          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-rounded<br>sub-spherical<br>earthy     | weak<br>cons<br>Ferruginous<br>hard      | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8144          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-rounded<br>sub-spherical<br>earthy     | weak<br>cons<br>Ferruginous<br>hard      | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8145          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-rounded<br>sub-spherical<br>earthy     | weak<br>cons<br>Ferruginous<br>hard      | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8146          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>red<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-rounded<br>sub-spherical<br>earthy     | weak<br>cons<br>Ferruginous<br>hard      | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8147          | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | medium<br><br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8148          | TO             | Sand<br><br>Sandstone                     | medium<br>red<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000309

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor       | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 8149          | TO             | Sand                                | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8150          | TO             | Sand                                | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8151          | TO             | Sand                                | light<br>orange<br>grey   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8152          | TO             | Sand                                | light<br>grey             | medium sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8153          | TEH            | Grit<br>quartz.                     | light<br>grey             | v.crse sand to<br>granule<br>mod.well sorted     | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8154          | TEH            | Sand<br>quartz.<br>Sandstone        | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8155          | TEH            | Sand<br>quartz. gritty<br>Sandstone | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 8156          | TEH            | Sand                                | medium<br>brown           | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 20.0                 | 36.0      | DK 8158          |                | Composite Sample                    |                           |                                                  |                                            |                                          |                               | 0.02                                  |

EOH at 36.0 m

000310

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 30-OCT-90

HOLE NUMBER : M142

LOGGED BY : PRD  
TOTAL DEPTH : 42.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 616334 NORTHING: 6754181 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M142

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                            | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                      | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH        | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------------------------|----------------------------|------------------------------------------------------|--------------------------------------------|-------------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                                            | light<br>red<br>brown      | fine sand to<br>coarse sand<br>poorly sorted         | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Sand<br>silty<br>Clay                                    | light<br>red<br>brown      | fine sand to<br>coarse sand<br>poorly sorted         | sub-angular<br>sub-elongate                |                                                 | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 8159          | Q              | Sand<br><br>silty<br>Sandstone                           | medium<br><br>red<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-rounded<br><br>sub-spherical<br>earthy | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 8160          | Q              | ferrug.<br>Sand<br><br>silty<br>Sandstone                | medium<br><br>red<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-rounded<br><br>sub-spherical<br>earthy | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8161          | Q              | ferrug.<br>Sand<br><br>silty<br>Sandstone                | medium<br><br>red<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-rounded<br><br>sub-spherical<br>earthy | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 8178          |                | ferrug.<br>Composite Sample                              |                            |                                                      |                                            |                                                 |                               | 0.30                                  |
| 10.0                 | 12.0      | DK 8162          | Q              | Sand<br><br>silty<br>Sandstone                           | medium<br><br>red<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-rounded<br><br>sub-spherical<br>earthy | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8163          | Q              | ferrug.<br>Sand<br><br>silty<br>Sandstone<br><br>ferrug. | medium<br><br>red<br>brown | medium sand to<br><br>coarse sand<br>mod.well sorted | sub-rounded<br><br>sub-spherical<br>earthy | weak<br>cons<br>Ferruginous<br>weak,<br>consol. | 0.0                           |                                       |

000311

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                                     | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH      | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|---------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------|-------------------------------|---------------------------------------|
| 14.0                 | 16.0      | DK 8164          | Q              | Sand<br>silty                 | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted                    | sub-rounded<br>sub-spherical               |                                               | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8165          | TO             | Sand<br>silty                 | medium<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted                    | sub-rounded<br>sub-spherical               |                                               | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8166          | TEH            | Grit<br>quartz.               | light<br>grey          | granule<br>mod.well sorted<br>Comments: Pebbles up to 1 cm diameter | sub-rounded<br>sub-spherical               |                                               | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8167          | TEH            | Grit<br>quartz.<br>Sandstone  | light<br>grey          | v.crse sand to<br>granule<br>poorly sorted                          | sub-rounded<br>sub-spherical               |                                               | 0.0                           |                                       |
| 10.0                 | 22.0      | DK 8179          |                | Composite Sample              |                        |                                                                     |                                            |                                               |                               | 0.09                                  |
| 22.0                 | 24.0      | DK 8168          | TEH            | Sand<br>Grit                  | light<br>grey<br>brown | fine sand to<br>v.crse sand<br>poorly sorted                        | sub-rounded<br>sub-spherical<br>smooth     |                                               | 0.2<br>light trace            | 0.13                                  |
| 24.0                 | 26.0      | DK 8169          | TEH            | Sand                          | pale<br>tan            | fine sand to<br>medium sand<br>mod.well sorted                      | sub-rounded<br>sub-spherical<br>smooth     |                                               | 0.2<br>light trace            | 0.38                                  |
| 26.0                 | 28.0      | DK 8170          | TEH            | Sand                          | pale<br>tan            | v.fine sand to<br>fine sand<br>f.well sorted                        | sub-rounded<br>sub-spherical<br>smooth     |                                               | 0.2<br>light trace            | 0.22                                  |
| 28.0                 | 30.0      | DK 8171          | TEH            | Sand<br>Sandstone             | pale<br>tan            | fine sand to<br>medium sand<br>mod.well sorted                      | sub-rounded<br>sub-spherical<br>smooth     | weak<br>cons<br>Siliceous<br>weak,<br>consol. | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8172          | TEH            | Sandstone                     | medium<br>brown        | fine sand to<br>medium sand<br>mod.well sorted                      | sub-rounded<br>sub-spherical<br>smooth     | cons<br>Siliceous<br>weak,<br>consol.         | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8173          | TEH            | Sandstone<br>Sand             | medium<br>brown        | fine sand to<br>medium sand<br>mod.well sorted                      | sub-rounded<br>sub-spherical<br>smooth     | cons<br>Siliceous<br>weak,<br>consol.         | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 8174          | TEH            | Sandstone                     | medium<br>brown        | fine sand to<br>medium sand                                         | sub-rounded<br>sub-spherical               | cons<br>Siliceous                             | 0.0                           |                                       |

000012

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|--------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 36.0                        | 38.0 | DK 8175          | TEH            | Sandstone<br>Sand             | light<br>yellow<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Siliceous<br>strong,<br>cons.    | 0.0                           |                                       |
| 38.0                        | 40.0 | DK 8176          | TEH            | Sandstone<br>Sand             | light<br>yellow<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Siliceous<br>strong,<br>cons.    | 0.0                           |                                       |
| 40.0                        | 42.0 | DK 8177          | TEH            | Sandstone<br>Sand             | light<br>yellow<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Siliceous<br>strong,<br>cons.    | 0.0                           |                                       |

EOH at 42.0 m

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 31-OCT-90

HOLE NUMBER : M143

LOGGED BY : CJB  
TOTAL DEPTH : 39.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 611100 NORTHING: 6752800 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M143

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | med.lgt<br>red<br>brown  | v.fine sand to<br>coarse sand<br>f.poorly sorted | angular                                    |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy                         | medium<br>red<br>brown   | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       | DK 8180          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                          | 0.1                           |                                       |
| 6.0                  | 8.0       | DK 8181          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                          | 0.1                           |                                       |
| 8.0                  | 10.0      | DK 8182          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                          | 0.1                           |                                       |
| 10.0                 | 12.0      | DK 8183          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                          | 0.1                           |                                       |
| 12.0                 | 14.0      | DK 8184          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               |                                          | 0.1                           |                                       |
| 14.0                 | 16.0      | DK 8185          | TO             | Sand                                  | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 4.0                  | 16.0      | DK 8198          |                | Composite Sample                      |                          |                                                  |                                            |                                          |                               | 0.16                                  |
| 16.0                 | 18.0      | DK 8186          | TO             | Sand                                  | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8187          | TO             | Sand                                  | light<br>grey            | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000314



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 8188          | TO             | Sand<br>gritty                | light<br>grey              | medium sand to<br>granule<br>mod.well sorted     | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8189          | TEH            | Sand<br>gritty                | light<br>grey              | medium sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8190          | TEH            | Sand<br>gritty                | light<br>grey              | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8191          | TEH            | Sand<br>gritty                | light<br>grey              | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>smooth     | Calcareous                               | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8192          | TEH            | Sand                          | light<br>grey              | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical<br>smooth     | Calcareous                               | 0.1                           |                                       |
| 30.0                 | 32.0      | DK 8193          | TEH            | Sand                          | light<br>grey<br>yellow    | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-spherical<br>polished |                                          | 0.1                           | 0.24                                  |
| 16.0                 | 32.0      | DK 8199          |                | Composite Sample              |                            |                                                  |                                            |                                          |                               | 0.05                                  |
| 32.0                 | 34.0      | DK 8194          | TEH            | Sand                          | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              | Ferruginous                              | 0.1                           | 1.00                                  |
| 34.0                 | 36.0      | DK 8195          | TEH            | Sand                          | med.lgt<br>red<br>brown    | v.fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>sub-elongate              | Ferruginous                              | 0.1                           | 1.96                                  |
| 36.0                 | 38.0      | DK 8196          | TEH            | Sand                          | medium<br>red<br><br>brown | v.fine sand to<br>fine sand<br><br>f.well sorted | interm.round.<br>sub-elongate              |                                          | 2.0<br>V.good<br>trace        | 3.64                                  |
| 38.0                 | 39.0      | DK 8197          | TEH            | Sand                          | med.lgt<br>red<br>brown    | v.fine sand to<br>fine sand<br>f.well sorted     | interm.round.<br>sub-elongate              | Calcareous                               | 0.1                           | 0.49                                  |

EOH at 39.0 m

000315

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WYOLA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 31-OCT-90

HOLE NUMBER : M144  
 LOGGED BY : CJB  
 TOTAL DEPTH : 39.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 610000 NORTHING: 6752600 R.L.: 252.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M144

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                    | medium<br>red<br>brown    | fine sand to<br>medium sand<br>poorly sorted     | sub-angular                                |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       | DK 8200          | QA             | Sand<br>silty                    | medium<br>red<br>brown    | v.fine sand to<br>fine sand<br>f.poorly sorted   | interm.round.                              |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       | DK 8201          | QB             | Sand                             | medium<br>red<br>brown    | silt to<br>fine sand<br>f.poorly sorted          | interm.round.                              |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 8202          | QB             | Sand<br>clayey                   | medium<br>red<br>brown    | coarse silt to<br>fine sand<br>f.poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8203          | Q              | Sand<br>silty<br>Sand<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               | Ferruginous                              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8204          | Q              | Sand<br>silty<br>Sand<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               | Ferruginous                              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8205          | Q              | Sand<br>silty<br>Sand<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               | Ferruginous                              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8206          | Q              | Sand<br>silty<br>Sand<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               | Ferruginous                              | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8207          | Q              | Sand<br>silty<br>Sand<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-spherical               | Ferruginous                              | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8208          | TO             | Sand<br>gritty                   | med.lgt<br>yellow<br>grey | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>polished   |                                          | 0.0                           |                                       |
| 0.0                  | 20.0      | DK 8219          |                | Composite Sample                 |                           |                                                  |                                            |                                          |                               | 0.18                                  |

000316

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 8209          | TO             | Sand<br>gritty                | med.lgt<br>yellow<br>grey | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>polished   |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8210          | TO             | Sand<br>gritty                | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8211          | TO             | Sand<br>gritty                | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8212          | TEH            | Sand<br>gritty                | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8213          | TEH            | Sand<br>gritty                | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>vitreous   | Calcareous                               | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8214          | TEH            | Sand<br>gritty                | light<br>grey             | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>frosted    | Calcareous                               | 0.0                           |                                       |
| 20.0                 | 32.0      | DK 8220          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.01                                  |
| 32.0                 | 34.0      | DK 8215          | TEH            | Sand<br>gritty                | med.lgt<br>red<br>grey    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>clear      |                                          | 0.0                           | 0.06                                  |
| 34.0                 | 36.0      | DK 8216          | TEH            | Sand                          | med.lgt<br>yellow<br>grey | medium sand to<br>coarse sand<br>f.poorly sorted | sub-rounded<br>mod.spherical               |                                          | 2.0<br>V.good<br>trace        | 0.65                                  |
| 36.0                 | 38.0      | DK 8217          | TEH            | Sand                          | med.lgt<br>grey           | v.fine sand to<br>fine sand<br>f.poorly sorted   | sub-rounded<br>mod.spherical               |                                          | 0.1                           | 0.45                                  |
| 38.0                 | 39.0      | DK 8218          | TEH            | Sand<br>ferrug.               | medium<br>red<br>brown    | v.fine sand to<br>fine sand<br>f.poorly sorted   | sub-rounded<br>mod.spherical               |                                          | 0.5<br>trace                  | 0.82                                  |

EOH at 39.0 m

000317

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WYOLA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 31-OCT-90

HOLE NUMBER : M145  
 LOGGED BY : CJB  
 TOTAL DEPTH : 42.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 609100 NORTHING: 6752200 R.L.: 245.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M145

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand                                  | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>poorly sorted   | sub-angular                                |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Sand<br>clayey                        | med.lgt<br>red<br>brown | v.fine sand to<br>fine sand<br>poorly sorted   | sub-angular                                |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand                                  | med.lgt<br>red<br>brown | v.fine sand to<br>fine sand<br>poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8238          | QB             | Composite Sample                      |                         |                                                |                                            |                                          |                               | 0.32                                  |
| 6.0                  | 8.0       |                  | QB             | Sand<br>clayey                        | med.lgt<br>red<br>brown | coarse silt to<br>v.fine sand<br>poorly sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8221          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8222          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8223          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8224          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8225          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8226          | Q              | Sand<br>gritty<br>Sandstone           | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000318

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 6.0                  | 20.0      | DK 8239          |                | Composite Sample              |                            |                                                  |                                            |                                          |                               | 0.23                                  |
| 20.0                 | 22.0      | DK 8227          | TO             | Sand<br>gritty                | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8228          | TEH            | Sand<br>gritty                | med.lgt<br>yellow          | medium sand to<br>coarse sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8229          | TEH            | Sand<br>gritty                | light<br>yellow<br>brown   | coarse sand to<br>v.crse sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8230          | TEH            | Sand<br>gritty                | light<br>yellow<br>brown   | coarse sand to<br>v.crse sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8231          | TEH            | Sand<br>gritty                | light<br>yellow<br>brown   | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>mod.spherical<br>polished   |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 8240          | TEH            | Composite Sample              |                            |                                                  |                                            |                                          |                               | 0.06                                  |
| 30.0                 | 32.0      | DK 8232          | TEH            | Sand<br>gritty                | light<br>grey              | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>mod.spherical<br>polished   |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8233          | TEH            | Sand<br>gritty                | light<br>grey              | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>mod.spherical<br>polished   | Calcareous                               | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 8234          | TEH            | Sand<br>gritty                | light<br>grey              | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>mod.spherical<br>polished   | Calcareous                               | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 8235          | TEH            | Sand<br>gritty                | light<br>grey              | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>mod.spherical<br>polished   | Calcareous                               | 0.0                           |                                       |
| 38.0                 | 40.0      | DK 8236          | TEH            | Sand<br>gritty                | medium<br>red<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted | interm.round.<br>mod.spherical<br>smooth   | Ferruginous                              | 1.0<br>Good trace             | 3.14                                  |
| 40.0                 | 42.0      | DK 8237          |                |                               |                            | Comments: hm = goethite                          |                                            |                                          |                               | 3.24                                  |

000319

| DEPTH |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES       |  | COLOUR<br>L/<br>hue | GRAIN SIZE        |  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION         |       | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |  |  |
|-------|------|------------------|----------------|------------------|--|---------------------|-------------------|--|--------------------------------------------|---------------------|-------|-------------------------------|---------------------------------------|--|--|
| FROM  | TO   |                  |                | major/<br>minor  |  |                     | RANGE/<br>SORTING |  |                                            | DEGREE/<br>STRENGTH | TYPE/ |                               |                                       |  |  |
| (m)   | (m)  |                  |                |                  |  |                     |                   |  |                                            |                     |       |                               |                                       |  |  |
| 30.0  | 42.0 | DK 8241          |                | Composite Sample |  |                     |                   |  |                                            |                     |       |                               | 1.57                                  |  |  |

EOH at 42.0 m

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 31-OCT-90

HOLE NUMBER : M146

LOGGED BY : CJB  
TOTAL DEPTH : 39.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 608200 NORTHING: 6752000 R.L.: 245.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M146

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand                                  | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>poorly sorted     | sub-angular                                |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand                                  | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>clayey<br>Clay                | medium<br>red<br>brown     | coarse silt to<br>v.fine sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8259          | Q              | Composite Sample                      |                            |                                                  |                                            |                                          |                               | 0.31                                  |
| 6.0                  | 8.0       | DK 8242          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown     | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8243          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown     | fine sand to<br>medium sand<br>mod.well sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8244          | Q              | Sand                                  | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8245          | TO             | Sand                                  | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8246          | TO             | Sand<br>gritty                        | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>well sorted     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8247          | TO             | Sand<br>gritty                        | light<br>grey              | medium sand to<br>coarse sand<br>well sorted     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8248          | TO             | Sand<br>gritty                        | light<br>grey              | coarse sand to<br>v.crse sand<br>f.well sorted   | rounded<br>sub-spherical<br>smooth         |                                          | 0.0                           |                                       |

000321

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 8249          | TO             | Sand<br>gritty                        | light<br>grey           | coarse sand to<br>v.crse sand<br>f.well sorted   | rounded<br>sub-spherical<br>smooth         |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8250          | TO             | Sand<br>gritty                        | light<br>grey           | coarse sand to<br>v.crse sand<br>f.poorly sorted | rounded<br>sub-spherical<br>smooth         |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8251          | TO             | Sand<br>gritty                        | light<br>grey           | coarse sand to<br>v.crse sand<br>f.poorly sorted | rounded<br>sub-spherical<br>smooth         |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8252          | TO             | Sand<br>gritty                        | light<br>grey           | v.crse sand to<br>granule<br>f.poorly sorted     | rounded<br>sub-spherical<br>polished       |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8253          | TEH            | Sand<br>gritty                        | light<br>grey           | v.crse sand to<br>granule<br>f.poorly sorted     | rounded<br>sub-spherical<br>polished       | Calcareous                               | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8254          | TEH            | Sand<br>gritty                        | light<br>grey           | v.crse sand to<br>granule<br>f.poorly sorted     | rounded<br>sub-spherical<br>polished       |                                          | 0.1                           |                                       |
| 6.0                  | 32.0      | DK 8260          |                | Composite Sample                      |                         |                                                  |                                            |                                          |                               | 0.04                                  |
| 32.0                 | 34.0      | DK 8255          | TEH            | Sand                                  | med.lgt<br>red<br>brown | coarse sand to<br>v.crse sand<br>f.poorly sorted | rounded<br>sub-spherical<br>polished       |                                          | 0.0                           | 0.82                                  |
| 34.0                 | 36.0      | DK 8256          | TEH            | Sand                                  | medium<br>red<br>brown  | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical<br>polished   | trace                                    | 0.5                           | 0.63                                  |
| 36.0                 | 38.0      | DK 8257          | TEH            | Sand<br>silty                         | light<br>grey           | coarse silt to<br>v.fine sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>polished   |                                          | 0.0                           | 0.08                                  |
| 38.0                 | 39.0      | DK 8258          | TEH            | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.poorly sorted   | sub-angular<br>mod.spherical<br>earthy     | light trace                              | 0.2                           | 0.40                                  |
| 32.0                 | 39.0      | DK 8261          |                | Composite Sample                      |                         |                                                  |                                            |                                          |                               |                                       |

EOH at 39.0 m

000322



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WYOLA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 31-OCT-90

HOLE NUMBER : M147  
 LOGGED BY : CJB  
 TOTAL DEPTH : 39.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 607200 NORTHING: 6751700 R.L.: 245.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M147

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>calcar.<br>Calcrete           | medium<br>red<br>brown     | fine sand to<br>medium sand<br>f.well sorted     | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>calcar.<br>Calcrete           | medium<br>red<br>brown     | fine sand to<br>medium sand<br>f.well sorted     | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QA             | Sand<br>calcar.                       | medium<br>red<br>brown     | fine sand to<br>medium sand<br>f.well sorted     | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8278          |                | Composite Sample                      |                            |                                                  |                                            |                                          |                               | 0.13                                  |
| 6.0                  | 8.0       |                  | Q              | Sand                                  | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8262          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>f.poorly sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8263          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>f.poorly sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8264          | Q              | Sand<br>ferrug.                       | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>f.poorly sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8265          | TO             | Sand                                  | medium<br>yellow<br>brown  | medium sand to<br>coarse sand<br>f.poorly sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8266          | TO             | Sand<br>gritty                        | med.lgt<br>yellow<br>brown | coarse sand to<br>v.crse sand<br>f.well sorted   | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8267          | TO             | Sand<br>gritty                        | light<br>yellow<br>brown   | coarse sand to<br>v.crse sand<br>f.well sorted   | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |

000323

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 6.0                  | 20.0      | DK 8279          |                | Composite Sample                 |                           |                                                  |                                            |                                          |                               | 0.11                                  |
| 20.0                 | 22.0      | DK 8268          | TEH            | Grit                             | light<br>grey             | v.crse sand to<br>granule<br>f.well sorted       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8269          | TEH            | Grit                             | light<br>grey             | v.crse sand to<br>granule<br>f.well sorted       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8270          | TEH            | Grit<br>Sandstone                | light<br>grey             | v.crse sand to<br>granule<br>f.well sorted       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8271          | TEH            | Grit<br>Sandstone                | light<br>grey             | v.crse sand to<br>granule<br>f.well sorted       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8272          | TEH            | Grit<br>Sandstone                | light<br>grey             | v.crse sand to<br>granule<br>f.well sorted       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8273          | TEH            | Grit                             | light<br>grey             | v.crse sand to<br>granule<br>mod.well sorted     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 20.0                 | 32.0      | DK 8280          |                | Composite Sample                 |                           |                                                  |                                            |                                          |                               | 0.02                                  |
| 32.0                 | 34.0      | DK 8274          | TEH            | Grit<br>sandy                    | med.lgt<br>grey           | coarse sand to<br>v.crse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.1                           | 0.12                                  |
| 34.0                 | 36.0      | DK 8275          | TEH            | Sand<br>silty                    | medium<br>yellow<br>brown | v.fine sand to<br>fine sand<br>mod.well sorted   | rounded<br>sub-elongate                    | trace                                    | 0.5                           | 0.94                                  |
| 36.0                 | 38.0      | DK 8276          | TEH            | Sand<br>silty<br>Sand<br>ferrug. | med.drk<br>red<br>brown   | v.fine sand to<br>fine sand<br>mod.well sorted   | rounded<br>sub-elongate                    | light trace                              | 0.2                           | 1.78                                  |
| 38.0                 | 39.0      | DK 8277          | TEH            | Sand<br>silty<br>Sand<br>ferrug. | med.drk<br>red<br>brown   | v.fine sand to<br>fine sand<br>mod.well sorted   | rounded<br>sub-elongate                    |                                          | 0.0                           | 0.70                                  |

EOH at 39.0 m

000324

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 31-OCT-90

HOLE NUMBER : M148

LOGGED BY : CJB  
TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 606200 NORTHING: 6751500 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M148

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor           | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-----------------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>calcar.                         | medium<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>sub-spherical             |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>calcar.<br>Calcrete             | medium<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>sub-spherical             |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       |                  | QA             | Sand<br><br>Sandstone<br>ferrug.        | med.drk<br>red<br>brown   | v.fine sand to<br>fine sand<br>f.well sorted   | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8292          |                | Composite Sample                        |                           |                                                |                                            |                                          |                               | 0.16                                  |
| 6.0                  | 8.0       |                  | Q              | Sand<br><br>Sandstone<br>ferrug.        | med.drk<br>red<br>brown   | v.fine sand to<br>coarse sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8281          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.   | med.drk<br>red<br>brown   | v.fine sand to<br>coarse sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8282          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.   | med.drk<br>red<br>brown   | v.fine sand to<br>coarse sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8283          | Q              | Sand<br>ferrug.                         | med.drk<br>red<br>brown   | v.fine sand to<br>coarse sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8284          | Q              | Sand<br>ferrug.                         | med.drk<br>red<br>brown   | v.fine sand to<br>coarse sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8285          | Q              | Sand<br>ferrug.<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | v.fine sand to<br>coarse sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8286          | TO             | Sand<br>gritty                          | medium<br>yellow<br>brown | coarse sand to<br>v.crse sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |

000325

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 6.0                  | 20.0      | DK 8293          |                | Composite Sample              |                            |                                                |                                            |                                          |                               | 0.12                                  |
| 20.0                 | 22.0      | DK 8287          | TO             | Sand<br>gritty                | med.lgt<br>yellow<br>brown | coarse sand to<br>v.crse sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8288          | TO             | Sand<br>gritty                | med.lgt<br>yellow<br>brown | coarse sand to<br>v.crse sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8289          | TO             | Sand<br>gritty                | med.lgt<br>yellow<br>brown | coarse sand to<br>v.crse sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8290          | TEH            | Grit                          | light<br>grey              | v.crse sand to<br>granule<br>well sorted       | rounded<br>sub-spherical<br>smooth         |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8291          | TEH            | Grit                          | light<br>grey              | v.crse sand to<br>granule<br>well sorted       | rounded<br>sub-spherical<br>smooth         |                                          | 0.0                           |                                       |
| 20.0                 | 30.0      | DK 8294          |                | Composite Sample              |                            | Comments: hard ground                          |                                            |                                          |                               | 0.13                                  |

EOH at 30.0 m

000326

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 31-OCT-90

HOLE NUMBER : M149

LOGGED BY : CJB  
TOTAL DEPTH : 34.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 605300 NORTHING: 6751200 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M149

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor           | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-----------------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>calcar.                         | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>calcar.                         | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       |                  | Q              | Sand<br>ferrug.                         | med.drk<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8309          |                | Composite Sample                        |                            |                                                  |                                            |                                          |                               | 0.41                                  |
| 6.0                  | 8.0       | DK 8295          | Q              | Sand<br>ferrug.<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8296          | Q              | Sand<br>ferrug.<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8297          | Q              | Sand<br>ferrug.<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8298          | Q              | Sand<br>ferrug.<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8299          | Q              | Sand<br>ferrug.                         | med.drk<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8300          | Q              | Sand<br>gritty                          | medium<br>red<br>brown     | coarse sand to<br>v.crse sand<br>f.well sorted   | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8301          | Q              | Sand<br>gritty                          | medium<br>red<br>brown     | coarse sand to<br>v.crse sand<br>f.well sorted   | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |

000327

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 6.0                  | 20.0      | DK 8310          |                | Composite Sample              |                            |                                                |                                            |                                          |                               | 0.16                                  |
| 20.0                 | 22.0      | DK 8302          | TO             | Grit<br>sandy                 | medium<br>yellow<br>brown  | coarse sand to<br>v.crse sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8303          | TO             | Grit<br>sandy                 | med.lgt<br>yellow<br>brown | coarse sand to<br>v.crse sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8304          | TO             | Grit<br>sandy                 | med.lgt<br>yellow<br>brown | coarse sand to<br>v.crse sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8305          | TO             | Grit                          | light<br>grey              | coarse sand to<br>v.crse sand<br>well sorted   | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8306          | TO             | Grit                          | light<br>grey              | coarse sand to<br>v.crse sand<br>well sorted   | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8307          | TO             | Grit                          | light<br>grey              | coarse sand to<br>v.crse sand<br>well sorted   | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8308          | TEH            | Grit                          | light<br>grey              | coarse sand to<br>v.crse sand<br>well sorted   | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 20.0                 | 34.0      | DK 8311          |                | Composite Sample              |                            | Comments: hard ground                          |                                            |                                          |                               | 0.05                                  |

EOH at 34.0 m

000328

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 01-NOV-90

HOLE NUMBER : M150

LOGGED BY : CJB  
TOTAL DEPTH : 42.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 604300 NORTHING: 6750900 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M150

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor           | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-----------------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>calcar.                         | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.poorly sorted   | interm.round.<br>sub-spherical             |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>calcar.                         | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.poorly sorted   | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>clayey                          | medium<br>red<br>brown  | coarse silt to<br>v.fine sand<br>f.poorly sorted | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8330          |                | Composite Sample                        |                         |                                                  |                                            |                                          |                               | 0.40                                  |
| 6.0                  | 8.0       | DK 8312          | Q              | Sand<br>ferrug.<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8313          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.   | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8314          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.   | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8315          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.   | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8316          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.   | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8317          | Q              | Sand<br>silty                           | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8318          | Q              | Sand<br>silty                           | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000329

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                      | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------------------|----------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 6.0                  | 20.0      | DK 8331          |                | Composite Sample                                   |                            |                                              |                                            |                                          |                               | 0.16                                  |
| 20.0                 | 22.0      | DK 8319          | TO             | Sand                                               | medium<br>yellow<br>brown  | medium sand to<br>coarse sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8320          | TO             | Sand                                               | med.lgt<br>yellow<br>brown | coarse sand to<br>v.crse sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8321          | TO             | Sand                                               | med.lgt<br>yellow<br>brown | coarse sand to<br>v.crse sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8322          | TO             | Sand                                               | med.lgt<br>yellow<br>brown | coarse sand to<br>v.crse sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 28.0      | DK 8332          |                | Composite Sample                                   |                            |                                              |                                            |                                          |                               | 0.04                                  |
| 28.0                 | 30.0      | DK 8323          | TEH            | Grit                                               | light<br>grey              | v.crse sand to<br>granule<br>well sorted     | rounded<br>mod.spherical                   |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8324          | TEH            | Grit                                               | light<br>grey              | v.crse sand to<br>granule<br>well sorted     | rounded<br>mod.spherical                   |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8325          | TEH            | Grit                                               | light<br>grey              | v.crse sand to<br>granule<br>well sorted     | rounded<br>mod.spherical                   |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 8326          | TEH            | Grit<br>Sandstone<br>silty                         | light<br>grey              | coarse sand to<br>granule<br>well sorted     | rounded<br>mod.spherical                   |                                          | 0.1                           | 0.12                                  |
| 36.0                 | 38.0      | DK 8327          | TEH            | Grit<br>Sandstone<br>silty                         | light<br>grey              | coarse sand to<br>granule<br>well sorted     | rounded<br>mod.spherical                   |                                          | 0.1                           | 0.25                                  |
| 38.0                 | 40.0      | DK 8328          | TEH            | Grit<br>Sandstone<br>silty                         | light<br>grey              | coarse sand to<br>granule<br>well sorted     | rounded<br>mod.spherical                   |                                          | 0.1                           | 0.29                                  |
| 40.0                 | 42.0      | DK 8329          | TEH            | Sandstone<br>silty<br>Sandstone<br>ferrug.<br>Sand | medium<br>red<br>brown     | fine sand to<br>medium sand<br>f.well sorted | sub-angular<br>mod.spherical               |                                          | 0.1                           | 0.92                                  |

000330



| DEPTH |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES       |                   | COLOUR<br>L/<br>hue | GRAIN SIZE |  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-------|------|------------------|----------------|------------------|-------------------|---------------------|------------|--|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| FROM  | TO   |                  |                | major/<br>minor  | RANGE/<br>SORTING |                     |            |  |                                            |                                          |                               |                                       |
| (m)   | (m)  |                  |                |                  |                   |                     |            |  |                                            |                                          |                               |                                       |
| 28.0  | 42.0 | DK 8333          |                | Composite Sample |                   |                     |            |  |                                            |                                          |                               | 0.28                                  |

EOH at 42.0 m

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WYOLA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 01-NOV-90

HOLE NUMBER : M151  
 LOGGED BY : CJB  
 TOTAL DEPTH : 32.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 603300 NORTHING: 6750800 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M151

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.poorly sorted   | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.poorly sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>clayey                        | medium<br>red<br>brown  | coarse silt to<br>v.fine sand<br>f.poorly sorted | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8347          |                | Composite Sample                      |                         |                                                  |                                            |                                          |                               | 0.29                                  |
| 6.0                  | 8.0       | DK 8334          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | v.fine sand to<br>fine sand<br>mod.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8335          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | v.fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8336          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | v.fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8337          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | v.fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 14.0                 | 16.0      | DK 8338          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | v.fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 6.0                  | 16.0      | DK 8348          |                | Composite Sample                      |                         |                                                  |                                            |                                          |                               | 0.15                                  |
| 16.0                 | 18.0      | DK 8339          | Q              | Sand<br>silty<br>Sandstone            | medium<br>red<br>brown  | medium sand to<br>coarse sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |

000332

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor  | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|--------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8340          | TO             | Sand                           | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8341          | TO             | Sand                           | med.lgt<br>yellow<br>brown | coarse sand to<br>v.crse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8342          | TO             | Grit                           | light<br>grey              | v.crse sand to<br>granule<br>mod.well sorted     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8343          | TEH            | Grit                           | light<br>grey              | v.crse sand to<br>granule<br>mod.well sorted     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8344          | TEH            | Grit                           | light<br>grey              | v.crse sand to<br>granule<br>mod.well sorted     | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8345          | TEH            | Sand<br>silty<br>Grit          | light<br>grey              | v.crse sand to<br>granule<br>mod.well sorted     | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8346          | TEH            | Sand<br>silty<br>Sand<br>silty | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.1                           | 0.20                                  |
| 16.0                 | 32.0      | DK 8349          |                | Composite Sample               |                            |                                                  |                                            |                                          |                               | 0.12                                  |

EOH at 32.0 m

000333

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WYOLA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 01-NOV-90

HOLE NUMBER : M152  
 LOGGED BY : CJB  
 TOTAL DEPTH : 42.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 602300 NORTHING: 6750500 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M152

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Sand<br>clayey                        | medium<br>red<br>brown  | coarse silt to<br>v.fine sand<br>mod.well sorted | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 0.0                  | 8.0       | DK 8367          |                | Composite Sample                      |                         |                                                  |                                            |                                          |                               |                                       |
| 8.0                  | 10.0      | DK 8350          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8351          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8352          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8353          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 8.0                  | 16.0      | DK 8368          | Q              | Composite Sample                      |                         |                                                  |                                            |                                          |                               |                                       |
| 16.0                 | 18.0      | DK 8354          | Q              | Sand<br>silty<br>Sandstone            | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |

000334

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8355          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8356          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown     | medium sand to<br>coarse sand<br>mod.well sorted | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8357          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown     | medium sand to<br>coarse sand<br>f.well sorted   | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8358          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown     | medium sand to<br>coarse sand<br>f.well sorted   | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8359          | TO             | Sand<br>ferrug.               | medium<br>red<br>brown     | medium sand to<br>coarse sand<br>f.well sorted   | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8360          | TO             | Sand<br>gritty                | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8361          | TO             | Sand<br>gritty                | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8362          | TO             | Sand<br>gritty                | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 8363          | TEH            | Grit                          | light<br>grey<br>brown     | coarse sand to<br>v.crse sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 8364          | TEH            | Grit                          | light<br>grey<br>brown     | coarse sand to<br>v.crse sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 38.0                 | 40.0      | DK 8365          | TEH            | Grit                          | light<br>grey<br>brown     | coarse sand to<br>v.crse sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 40.0                 | 42.0      | DK 8366          | TEH            | Grit<br>ferrug.               | medium<br>red<br>brown     | coarse sand to<br>v.crse sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 42.0      | DK 8369          |                | Composite Sample              |                            | Comments: very hard layer                        |                                            |                                          |                               |                                       |

000335

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 01-NOV-90

HOLE NUMBER : M153

LOGGED BY : CJB  
TOTAL DEPTH : 23.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 601900 NORTHING: 6750000 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M153

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>calcar.                       | medium<br>red<br>brown    | fine sand to<br>medium sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Sand<br>ferrug.<br>Sand<br>calcar.    | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 8370          | QB             | Sand<br>calcar.                       | medium<br>red<br>brown    | fine sand to<br>medium sand<br>poorly sorted   | sub-angular<br>sub-spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8380          |                | Composite Sample                      |                           |                                                |                                            |                                          |                               | 0.32                                  |
| 6.0                  | 8.0       | DK 8371          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown    | fine sand to<br>medium sand<br>f.poorly sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8372          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>f.poorly sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8373          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>f.poorly sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8374          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>f.poorly sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8375          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>f.poorly sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 16.0      | DK 8381          |                | Composite Sample                      |                           |                                                |                                            |                                          |                               | 0.26                                  |
| 16.0                 | 18.0      | DK 8376          | TO             | Sand                                  | medium<br>yellow<br>brown | medium sand to<br>coarse sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |

000336

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8377          | TO             | Sand                          | medium<br>yellow<br>brown  | medium sand to<br>coarse sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8378          | TO             | Sand<br>gritty                | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>f.well sorted | rounded<br>mod.spherical                   |                                          | 0.0                           |                                       |
| 22.0                 | 23.0      | DK 8379          | TO             | Sand<br>silty                 | light<br>yellow<br>grey    | fine sand to<br>medium sand<br>f.well sorted   | rounded<br>mod.spherical                   |                                          | 0.0                           | 1.88                                  |
| 16.0                 | 23.0      | DK 8382          | TO             | Composite Sample              |                            | Comments: very hard ground                     |                                            |                                          |                               |                                       |

EOH at 23.0 m

000337

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WYOLA  
 JOB NO : T63

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 601600 NORTHING: 6748900 R.L.: 245.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 01-NOV-90

HOLE NUMBER : M154  
 LOGGED BY : CJB  
 TOTAL DEPTH : 36.0

SHEET 1 OF 2 HOLE NUMBER : M154

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown   | fine sand to<br>medium sand<br>f.poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown   | fine sand to<br>medium sand<br>f.poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>clayey                        | med.lgt<br>red<br>brown   | coarse silt to<br>v.fine sand<br>f.poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 8383          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8384          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 8398          | Q              | Composite Sample                      |                           |                                                  |                                            |                                          |                               | 0.39                                  |
| 10.0                 | 12.0      | DK 8385          | Q              | Sand                                  | medium<br>yellow<br>brown | medium sand to<br>coarse sand<br>f.well sorted   | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8386          | Q              | Sand                                  | light<br>yellow<br>brown  | fine sand to<br>medium sand<br>well sorted       | rounded<br>sub-spherical<br>clear          |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8387          | TO             | Sand                                  | light<br>grey             | fine sand to<br>medium sand<br>well sorted       | rounded<br>sub-spherical<br>clear          |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8388          | TO             | Sand                                  | light<br>grey             | fine sand to<br>medium sand<br>well sorted       | rounded<br>sub-spherical<br>clear          |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8389          | TO             | Sand                                  | light<br>grey             | fine sand to<br>medium sand<br>well sorted       | rounded<br>sub-spherical<br>clear          |                                          | 0.0                           |                                       |

000338



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue           | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                 | 20.0      | DK 8399          | TO             | Composite Sample              |                               |                                                  |                                            |                                          |                               | 0.10                                  |
| 20.0                 | 22.0      | DK 8390          | TO             | Sand<br>gritty                | light<br>grey                 | fine sand to<br>medium sand<br>well sorted       | rounded<br>sub-spherical<br>clear          |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8391          | TO             | Sand<br>gritty                | light<br>grey                 | medium sand<br>v.well sorted                     | v.well round.<br>spherical<br>smooth       |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8392          | TO             | Sand<br>gritty                | light<br>grey                 | medium sand<br>v.well sorted                     | v.well round.<br>spherical<br>smooth       |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8393          | TEH            | Grit                          | light<br>grey                 | coarse sand to<br>v.crse sand<br>v.well sorted   | v.well round.<br>spherical<br>smooth       |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8394          | TEH            | Grit                          | light<br>grey                 | coarse sand to<br>v.crse sand<br>v.well sorted   | v.well round.<br>spherical<br>smooth       |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8395          | TEH            | Grit                          | light<br>grey                 | coarse sand to<br>v.crse sand<br>v.well sorted   | v.well round.<br>spherical<br>smooth       |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8396          | TEH            | Sand<br>gritty                | light<br>grey                 | medium sand to<br>coarse sand<br>f.well sorted   | rounded<br>sub-spherical<br>clear          |                                          | 0.1                           |                                       |
| 34.0                 | 36.0      | DK 8397          | TEH            | Sand                          | medium<br>yellow<br><br>brown | v.fine sand to<br>fine sand<br><br>f.well sorted | interm.round.<br>sub-spherical             | 2.0<br>V.good<br>trace                   | 1.83                          |                                       |
| 20.0                 | 36.0      | DK 8400          |                | Composite Sample              |                               | Comments: running sands rods bogged              |                                            |                                          |                               | 0.27                                  |

EOH at 36.0 m

000339

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WYOLA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 01-NOV-90

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 601400 NORTHING: 6748000 R.L.: 245.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M155  
 LOGGED BY : CJB  
 TOTAL DEPTH : 17.0

SHEET 1 OF 1 HOLE NUMBER : M155

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|---------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>calcar.                        | med.lgt<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>calcar.                        | med.lgt<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>calcar.                        | med.lgt<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Sand<br>clayey                         | medium<br>red<br>brown    | v.fine sand to<br>fine sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 0.0                  | 8.0       | DK 8406          | Q              | Composite Sample                       |                           |                                              |                                            |                                          |                               |                                       |
| 8.0                  | 10.0      | DK 8401          | Q              | Sand<br>silty<br>Sandstone<br>ferrug.  | med.drk<br>red<br>brown   | v.fine sand to<br>fine sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8402          | Q              | Sand                                   | medium<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8403          | TEH            | Sand                                   | medium<br>brown           | fine sand to<br>medium sand<br>well sorted   | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8404          | TEH            | Sand                                   | med.lgt<br>brown          | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 17.0      | DK 8405          | TEH            | Sand                                   | light<br>grey             | fine sand to<br>medium sand<br>well sorted   | rounded<br>mod.spherical                   |                                          | 0.0                           |                                       |
| 8.0                  | 17.0      | DK 8407          |                | Sandstone<br>silty<br>Composite Sample |                           |                                              |                                            |                                          |                               |                                       |

Comments: very hard ground

000340

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 01-NOV-90

HOLE NUMBER : M156

LOGGED BY : CJB

TOTAL DEPTH : 5.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 601100 NORTHING: 6747000 R.L.: 240.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M156

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                      |           |                  |                |                               |                        |                                              |                                            |                                          |                               |                                       |
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>calcar.<br>Calcrete   | medium<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

EOH at 5.0 m

000341

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 01-NOV-90

HOLE NUMBER : M157

LOGGED BY : CJB

TOTAL DEPTH : 6.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 601000 NORTHING: 6746700 R.L.: 235.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M157

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>calcar.               | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>calcar.               | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       |                  | QA             | Sand<br>calcar.<br>Calcrete   | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |

EOH at 6.0 m

000342

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 01-NOV-90

HOLE NUMBER : M158

LOGGED BY : CJB  
TOTAL DEPTH : 6.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 600800 NORTHING: 6745700 R.L.: 230.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M158

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                      |           |                  |                |                               |                        |                                                |                                            |                                          |                               |                                       |
| 0.0                  | 2.0       |                  |                | Sand<br>calcar.<br>Calcrete   | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  |                | Sand<br>calcar.<br>Calcrete   | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  |                | Sand<br>calcar.<br>Calcrete   | medium<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |

EOH at 6.0 m

000343

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 02-NOV-90

HOLE NUMBER : M159

LOGGED BY : CJB  
TOTAL DEPTH : 17.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 600300 NORTHING: 6744600 R.L.: 225.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M159

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>calcar.                       | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>calcar.                       | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>clayey                        | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 8408          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 8.0                  | 10.0      | DK 8409          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>sub-elongate              |                                          | 0.1                           |                                       |
| 10.0                 | 12.0      | DK 8410          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand to<br>coarse sand<br>f.well sorted | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8411          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand to<br>coarse sand<br>f.well sorted | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8412          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand to<br>coarse sand<br>f.well sorted | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 16.0                 | 17.0      | DK 8413          | Q              | Sand<br>silty<br>Calcrete             | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 0.0                  | 17.0      | DK 8414          |                | Composite Sample                      |                         |                                                |                                            |                                          |                               | 0.38                                  |

EOH at 17.0 m

000344

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 02-NOV-90

HOLE NUMBER : M160

LOGGED BY : CJB  
TOTAL DEPTH : 33.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 600100 NORTHING: 6743400 R.L.: 220.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M160

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>calcar.                        | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>calcar.                        | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>clayey                         | medium<br>red<br>brown    | v.fine sand to<br>fine sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8428          | Q              | Composite Sample                       |                           |                                                |                                            |                                          |                               | 0.42                                  |
| 6.0                  | 8.0       |                  | Q              | Sand<br>clayey<br>Sand<br>silty        | medium<br>red<br>brown    | v.fine sand to<br>fine sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 8.0                  | 10.0      | DK 8415          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8416          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8417          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8418          | Q              | Sand<br>clayey<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 6.0                  | 16.0      | DK 8429          |                | Composite Sample                       |                           |                                                |                                            |                                          |                               | 0.36                                  |
| 16.0                 | 18.0      | DK 8419          | TEH            | Sand                                   | medium<br>yellow<br>brown | fine sand to<br>medium sand<br>well sorted     | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |

000345

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                                | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE                 | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|--------------------------------------------------------------|----------------------------|------------------------------------------------|------------------------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8420          | TEH            | Sand                                                         | medium<br>yellow<br>brown  | fine sand to<br>medium sand<br>well sorted     | sub-rounded<br>mod.spherical                               |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8421          | TEH            | Sand                                                         | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>well sorted     | sub-rounded<br>mod.spherical                               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8422          | TEH            | Sandstone<br>silic.<br>Sand<br>gritty<br>Sandstone<br>silic. | light<br>grey              | coarse sand to<br>v.crse sand<br>f.well sorted | Comments: hard silcrete layers<br>rounded<br>mod.spherical |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8423          | TEH            | Sand<br>gritty                                               | light<br>grey              | coarse sand to<br>v.crse sand<br>f.well sorted | rounded<br>mod.spherical                                   |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8424          | TEH            | Sand<br>gritty<br>Sand<br>clayey                             | light<br>grey              | coarse sand to<br>v.crse sand<br>f.well sorted | Comments: clay matrix<br>rounded<br>mod.spherical          |                                          | 0.0                           |                                       |
| 16.0                 | 28.0      | DK 8430          |                | Composite Sample                                             |                            |                                                | Comments: clay matrix                                      |                                          |                               | 0.09                                  |
| 28.0                 | 30.0      | DK 8425          | PAL            | Clay                                                         | med.lgt<br>green<br>grey   | clay<br>fine silt                              | to                                                         |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8426          | PAL            | Siltstone                                                    | medium<br>green<br>grey    | silt<br>coarse silt                            | to                                                         |                                          | 0.0                           |                                       |
| 32.0                 | 33.0      | DK 8427          | PAL            | Siltstone                                                    | medium<br>green            | silt<br>coarse silt                            | to                                                         |                                          |                               |                                       |

EOH at 33.0 m

000346



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 02-NOV-90

HOLE NUMBER : M161

LOGGED BY : CJB

TOTAL DEPTH : 22.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 600000 NORTHING: 6742400 R.L.: 215.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M161

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>calcar.                       | medium<br>red<br>brown     | v.fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>calcar.<br>Sand<br>clayey     | medium<br>red<br>brown     | v.fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>clayey                        | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted     | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8439          |                | Composite Sample                      |                            |                                                  |                                            |                                          |                               | 0.35                                  |
| 6.0                  | 8.0       | DK 8431          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | v.fine sand to<br>fine sand<br>f.well sorted     | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8432          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | v.fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8433          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | v.fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8434          | Q              | Sand<br><br>Sandstone<br>ferrug.      | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted     | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8435          | TEH            | Sand                                  | medium<br>yellow<br>brown  | fine sand to<br>medium sand<br>well sorted       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8436          | TEH            | Sand                                  | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>well sorted       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8437          | TEH            | Sand                                  | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>well sorted       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000347

| DEPTH |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE                                 |  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION         |       | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-------|------|------------------|----------------|-------------------------------|---------------------|--------------------------------------------|--|--------------------------------------------|---------------------|-------|-------------------------------|---------------------------------------|
| FROM  | TO   |                  |                |                               |                     | RANGE/<br>SORTING                          |  |                                            | DEGREE/<br>STRENGTH | TYPE/ |                               |                                       |
| 20.0  | 22.0 | DK 8438          | TEH            | Sand                          | light<br>grey       | fine sand to<br>medium sand<br>well sorted |  | sub-rounded<br>sub-spherical               |                     |       | 0.0                           |                                       |
| 6.0   | 22.0 | DK 8440          |                | Composite Sample              |                     |                                            |  | Comments: hard ground-hole stopped         |                     |       |                               | 0.12                                  |

EOH at 22.0 m

000348

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WYOLA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 02-NOV-90

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 599700 NORTHING: 6741700 R.L.: 210.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M162

LOGGED BY : CJB

TOTAL DEPTH : 24.0

SHEET 1 OF 2 HOLE NUMBER : M162

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>calcar.               | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted   | sub-rounded<br>mod.spherical               |                                          | 0.5<br>trace                  |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>calcar.               | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted   | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>clayey                | medium<br>red<br>brown  | v.fine sand to<br>fine sand<br>f.well sorted   | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8448          |                | Composite Sample              |                         |                                                |                                            |                                          |                               | 0.49                                  |
| 6.0                  | 8.0       |                  | QB             | Sand<br>clayey                | medium<br>red<br>brown  | v.fine sand to<br>fine sand<br>f.well sorted   | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Grit<br>clayey                | med.drk<br>red<br>brown | v.fine sand to<br>coarse sand<br>f.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8441          | Q              | Sand<br>ferrug.<br>Sandstone  | med.drk<br>red<br>brown | v.fine sand to<br>fine sand<br>f.well sorted   | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8442          | Q              | Sand<br>ferrug.<br>Sandstone  | med.drk<br>red<br>brown | v.fine sand to<br>fine sand<br>f.well sorted   | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8443          | Q              | Sand<br>ferrug.<br>Sandstone  | med.drk<br>red<br>brown | v.fine sand to<br>fine sand<br>f.well sorted   | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8444          | Q              | Sand<br>ferrug.<br>Sandstone  | med.drk<br>red<br>brown | v.fine sand to<br>fine sand<br>f.well sorted   | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 18.0      | DK 8449          |                | Composite Sample              |                         |                                                |                                            |                                          |                               | 0.29                                  |

000349

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING            | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8445          | TEH            | Sand                          | medium<br>yellow<br>brown | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8446          | TEH            | Sand                          | medium<br>yellow<br>brown | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8447          | TEH            | Sand<br>Sandstone             | med.lgt<br>grey           | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 24.0      | DK 8450          |                | Composite Sample              |                           |                                            | Comments: hard silcrete layer              |                                          |                               | 0.15                                  |

EOH at 24.0 m

000350

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 02-NOV-90

HOLE NUMBER : M163

LOGGED BY : CJB  
TOTAL DEPTH : 45.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 602200 NORTHING: 6750900 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M163

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor     | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-----------------------------------|----------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>calcar.                   | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Sand<br>calcar.                   | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>calcar.<br>Sand<br>clayey | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8471          |                | Composite Sample                  |                            |                                              |                                            |                                          |                               | 0.31                                  |
| 6.0                  | 8.0       | DK 8451          | Q              | Sand<br>silty<br>Sand<br>ferrug.  | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8452          | Q              | Sand<br>silty<br>Sand<br>ferrug.  | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8453          | Q              | Sand<br>silty<br>Sand<br>ferrug.  | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8454          | Q              | Sand<br>silty<br>Sand<br>ferrug.  | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8455          | Q              | Sand<br>silty<br>Sand<br>ferrug.  | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8456          | TO             | Sand                              | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8457          | TO             | Sand<br>gritty                    | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |

000351

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE              | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|--------------------------------------------------|---------------------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 8458          | TO             | Sand<br>gritty                | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>well sorted     | interm.round.<br>mod.spherical                          |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8459          | TO             | Sand<br>gritty                | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>f.poorly sorted | interm.round.<br>mod.spherical                          |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8460          | TO             | Sand<br>gritty                | light<br>grey              | medium sand to<br>coarse sand<br>f.poorly sorted | interm.round.<br>mod.spherical                          |                                          | 0.0                           |                                       |
| 6.0                  | 26.0      | DK 8472          |                | Composite Sample              |                            |                                                  |                                                         |                                          |                               | 0.16                                  |
| 26.0                 | 28.0      | DK 8461          | TEH            | Grit<br>sandy                 | light<br>grey              | coarse sand to<br>v.crse sand<br>f.poorly sorted | interm.round.<br>mod.spherical                          |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8462          | TEH            | Grit<br>sandy                 | light<br>grey              | coarse sand to<br>granule<br>mod.well sorted     | sub-rounded<br>mod.spherical                            |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8463          | TEH            | Grit<br>sandy                 | light<br>grey              | coarse sand to<br>granule<br>mod.well sorted     | Comments: hard horizons<br>sub-rounded<br>mod.spherical |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8464          | TEH            | Grit<br>sandy                 | light<br>grey              | coarse sand to<br>granule<br>mod.well sorted     | sub-rounded<br>mod.spherical                            |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 8465          | TEH            | Grit<br>sandy                 | light<br>grey              | medium sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>mod.spherical                            |                                          | 0.1                           |                                       |
| 36.0                 | 38.0      | DK 8466          | TEH            | Grit<br>sandy                 | light<br>brown<br>grey     | medium sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>mod.spherical                            |                                          | 0.0                           |                                       |
| 26.0                 | 38.0      | DK 8473          |                | Composite Sample              |                            |                                                  |                                                         |                                          |                               | 0.23                                  |
| 38.0                 | 40.0      | DK 8467          | TEH            | Grit                          | medium<br>brown            | medium sand to<br>v.crse sand<br>f.well sorted   | interm.round.<br>mod.spherical                          |                                          | 0.0                           |                                       |
| 40.0                 | 42.0      | DK 8468          | TEH            | Grit<br>ferrug.               | med.drk<br>brown           | medium sand to<br>coarse sand<br>f.well sorted   | interm.round.<br>mod.spherical                          |                                          | 1.0<br>Good trace             | 19.99                                 |

000352

| DEPTH       |           | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-------------|-----------|------------------|----------------|-------------------------------|-------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| FROM<br>(m) | TO<br>(m) |                  |                |                               |                         |                                 |                                            |                                          |                               |                                      |
| 42.0        | 44.0      | DK 8469          | TEH            | Clay                          | med.drk<br>red<br>brown | clay<br>fine silt               | to                                         |                                          | 0.0                           | 4.48                                 |
| 44.0        | 45.0      | DK 8470          | TEH            | Clay                          | med.drk<br>red<br>brown | clay<br>fine silt               | to                                         |                                          | 0.0                           |                                      |

EOH at 45.0 m

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 03-NOV-90

HOLE NUMBER : M164

LOGGED BY : CJB  
TOTAL DEPTH : 26.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 602500 NORTHING: 6751800 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M164

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor           | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-----------------------------------------|----------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8474          | QA             | Sand<br>calcar.                         | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>mod.spherical             |                                          | 0.5<br>trace                  |                                       |
| 2.0                  | 4.0       | DK 8475          | QA             | Sand<br>calcar.                         | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       | DK 8476          | QB             | Sand<br>clayey<br>Sandstone<br>ferrug.  | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8487          |                | Composite Sample                        |                            |                                                |                                            |                                          |                               | 0.32                                  |
| 6.0                  | 8.0       | DK 8477          | QB             | Sand<br>clayey<br>Sandstone<br>ferrug.  | dark<br>red<br>brown       | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8478          | Q              | Sand<br>ferrug.<br>Sandstone<br>ferrug. | dark<br>red<br>brown       | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8479          | Q              | Sand<br>ferrug.<br>Sandstone<br>ferrug. | dark<br>red<br>brown       | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8480          | Q              | Sand                                    | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8481          | TO             | Sand                                    | medium<br>yellow<br>brown  | fine sand to<br>medium sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 16.0      | DK 8488          |                | Composite Sample                        |                            |                                                |                                            |                                          |                               | 0.15                                  |
| 16.0                 | 18.0      | DK 8482          | TO             | Sand                                    | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000354



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8483          | TO             | Sand                          | med.lgt<br>yellow<br>brown | fine sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8484          | TO             | Grit                          | light<br>grey              | coarse sand to<br>v.crse sand<br>well sorted   | rounded<br>sub-spherical<br>smooth         |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8485          | TO             | Grit                          | light<br>grey              | v.crse sand to<br>granule<br>well sorted       | rounded<br>spherical<br>smooth             |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8486          | TO             | Grit<br>Sandstone             | light<br>grey              | v.crse sand to<br>granule<br>well sorted       | rounded<br>spherical<br>smooth             |                                          | 0.0                           |                                       |
| 16.0                 | 26.0      | DK 8489          |                | Composite Sample              |                            | Comments: hard silcrete layer                  |                                            |                                          |                               | 0.05                                  |

EOH at 26.0 m

000355

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 03-NOV-90

HOLE NUMBER : M165

LOGGED BY : CJB  
TOTAL DEPTH : 40.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 608200 NORTHING: 6752900 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M165

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8490          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted     | interm.round.                              |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       | DK 8491          | QB             | Sand<br>calcar.<br>Calcrete           | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted     | interm.round.                              |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 8492          | QB             | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.                              |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8510          |                | Composite Sample                      |                         |                                                  |                                            |                                          |                               | 0.22                                  |
| 6.0                  | 8.0       | DK 8493          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.                              |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8494          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>coarse sand<br>mod.well sorted   | interm.round.                              |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8495          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>coarse sand<br>mod.well sorted   | interm.round.                              |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8496          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>coarse sand<br>mod.well sorted   | interm.round.                              |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8497          | TO             | Sand                                  | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 6.0                  | 16.0      | DK 8511          |                | Composite Sample                      |                         |                                                  |                                            |                                          |                               | 0.14                                  |
| 16.0                 | 18.0      | DK 8498          | TO             | Sand<br>gritty                        | med.drk<br>red<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000356

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8499          | TO             | Sand<br>gritty                | med.lgt<br>red<br>brown  | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8500          | TO             | Sand<br>gritty                | med.lgt<br>red<br>brown  | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8501          | TEH            | Grit<br>quartz.               | light<br>grey            | v.crse sand to<br>granule<br>f.well sorted       | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8502          | TEH            | Grit<br>quartz.               | light<br>grey            | granule<br>f.well sorted                         | rounded<br>spherical<br>clear              |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8503          | TEH            | Grit<br>quartz.               | light<br>grey            | granule<br>f.well sorted                         | rounded<br>spherical<br>clear              | Siliceous                                | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8504          | TEH            | Grit<br>quartz.               | light<br>grey            | granule to<br>v.sml pebb.<br>f.well sorted       | rounded<br>spherical<br>clear              | Siliceous                                | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8505          | TEH            | Grit<br>quartz.               | light<br>grey            | granule to<br>v.sml pebb.<br>f.well sorted       | rounded<br>spherical<br>clear              |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8506          | TEH            | Grit<br>quartz.               | light<br>grey            | granule to<br>v.sml pebb.<br>f.well sorted       | rounded<br>spherical<br>clear              |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 8507          | TEH            | Grit<br>quartz.               | light<br>grey            | granule to<br>v.sml pebb.<br>well sorted         | rounded<br>spherical<br>clear              |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 8508          | TEH            | Grit<br>quartz.               | light<br>yellow<br>brown | v.crse sand to<br>granule<br>well sorted         | rounded<br>spherical<br>clear              |                                          | 0.0                           |                                       |
| 38.0                 | 40.0      | DK 8509          | TEH            | Grit<br>quartz.               | light<br>yellow<br>brown | v.crse sand to<br>granule<br>well sorted         | rounded<br>spherical<br>clear              |                                          | 0.0                           |                                       |
| 16.0                 | 40.0      | DK 8512          |                | Composite Sample              |                          | Comments: rods bogging                           |                                            |                                          |                               | 0.05                                  |

EOH at 40.0 m

000357

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 03-NOV-90

HOLE NUMBER : M166

LOGGED BY : CJB  
TOTAL DEPTH : 40.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 603200 NORTHING: 6753800 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M166

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 6513          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted   | interm.round.                              |                                          | 0.0                           | 3.54                                  |
| 2.0                  | 4.0       | DK 8514          | QB             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted   | interm.round.                              |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 8515          | QB             | Sand<br>clayey                        | medium<br>red<br>brown  | v.fine silt to<br>silt<br>f.well sorted        | interm.round.                              |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8533          |                | Composite Sample                      |                         |                                                |                                            |                                          |                               | 0.33                                  |
| 6.0                  | 8.0       | DK 8516          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                | Ferruginous                              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8517          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                | Ferruginous                              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8518          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                | Ferruginous                              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8519          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                | Ferruginous                              | 0.0                           |                                       |
| 6.0                  | 14.0      | DK 8534          |                | Composite Sample                      |                         |                                                |                                            |                                          |                               | 0.22                                  |
| 14.0                 | 16.0      | DK 8520          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8521          | TO             | Sand                                  | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000358

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor     | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-----------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8522          | TO             | Sand<br>gritty                    | medium<br>yellow<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8523          | TO             | Sand<br>gritty                    | medium<br>yellow<br>brown | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8524          | TO             | Sand<br>gritty                    | med.lgt<br>brown          | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8525          | TEH            | Grit                              | light<br>grey             | v.crse sand to<br>granule<br>f.well sorted       | rounded<br>spherical<br>clear              |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8526          | TEH            | Grit                              | light<br>grey             | v.crse sand to<br>granule<br>f.well sorted       | rounded<br>spherical<br>clear              | Siliceous                                | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8527          | TEH            | Grit                              | light<br>grey             | v.crse sand to<br>granule<br>f.well sorted       | rounded<br>spherical<br>clear              | Siliceous                                | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8528          | TEH            | Grit                              | light<br>grey<br>brown    | granule<br>f.well sorted                         | rounded<br>spherical<br>clear              |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8529          | TEH            | Grit                              | light<br>grey<br>brown    | granule<br>f.well sorted                         | rounded<br>spherical<br>clear              |                                          | 0.0                           |                                       |
| 14.0                 | 34.0      | DK 8535          |                | Composite Sample                  |                           |                                                  |                                            |                                          |                               | 0.12                                  |
| 34.0                 | 36.0      | DK 8530          | TEH            | Sand<br>silty<br>Sand<br>gritty   | medium<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted     | sub-rounded<br>mod.spherical               |                                          | 1.0<br>Good trace             | 0.63                                  |
| 36.0                 | 38.0      | DK 8531          | TEH            | Sand<br>ferrug.<br>Sand<br>gritty | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              |                                          | 1.0<br>Good trace             | 4.63                                  |
| 38.0                 | 40.0      | DK 8532          | TEH            | Ironstone<br><br>Sand<br>ferrug.  | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              |                                          | 0.2<br>light trace            | 0.45                                  |

EOH at 40.0 m

000359

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WYOLA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 03-NOV-90

HOLE NUMBER : M167  
 LOGGED BY : CJB  
 TOTAL DEPTH : 42.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 603600 NORTHING: 6754700 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M167

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8536          | QA             | Sand<br>calcar.               | medium<br>red<br>brown     | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8537          | QB             | Sand<br>calcar.               | medium<br>red<br>brown     | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       | DK 8538          | Q              | Sand<br>silty<br>Sandstone    | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             | Ferruginous                              | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8557          |                | Composite Sample              |                            |                                                |                                            |                                          |                               | 0.32                                  |
| 6.0                  | 8.0       | DK 8539          | Q              | Sand<br>silty<br>Sandstone    | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             | Ferruginous                              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8540          | Q              | Sand<br>silty<br>Sandstone    | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             | Ferruginous                              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8541          | Q              | Sand<br>silty<br>Sandstone    | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             | Ferruginous                              | 0.0                           |                                       |
| 6.0                  | 12.0      | DK 8558          |                | Composite Sample              |                            |                                                |                                            |                                          |                               | 0.23                                  |
| 12.0                 | 14.0      | DK 8542          | Q              | Sand                          | medium<br>red<br>brown     | fine sand to<br>medium sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8543          | TO             | Sand                          | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>f.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8544          | TO             | Sand                          | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>f.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |

000360

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8545          | TO             | Sand                          | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8546          | TO             | Sand<br>gritty                | med.lgt<br>yellow<br>grey  | fine sand to<br>medium sand<br>f.well sorted     | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8547          | TEH            | Grit                          | light<br>grey              | coarse sand to<br>v.crse sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8548          | TEH            | Grit                          | light<br>grey              | coarse sand to<br>v.crse sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8549          | TEH            | Grit                          | light<br>grey              | coarse sand to<br>v.crse sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8550          | TEH            | Grit                          | light<br>grey              | coarse sand to<br>v.crse sand<br>f.well sorted   | interm.round.<br>sub-spherical             | Siliceous                                | 0.1                           |                                       |
| 30.0                 | 32.0      | DK 8551          | TEH            | Grit                          | light<br>grey<br>brown     | v.crse sand to<br>granule<br>f.well sorted       | interm.round.<br>sub-spherical             | Siliceous                                | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8552          | TEH            | Grit                          | light<br>grey<br>brown     | v.crse sand to<br>granule<br>well sorted         | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 12.0                 | 34.0      | DK 8559          |                | Composite Sample              |                            |                                                  |                                            |                                          |                               | 0.04                                  |
| 34.0                 | 36.0      | DK 8553          | TEH            | Grit                          | light<br>grey<br>brown     | v.crse sand to<br>granule<br>v.well sorted       | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 36.0                 | 38.0      | DK 8554          | TEH            | Sand<br>gritty ferrug.        | medium<br>red<br>brown     | medium sand<br>f.well sorted                     | rounded<br>sub-spherical                   |                                          | 0.5                           | 0.73                                  |
| 38.0                 | 40.0      | DK 8555          | TEH            | Sand<br>gritty ferrug.        | medium<br>red<br>brown     | v.crse sand to<br>v.sml pebb.<br>f.well sorted   | rounded<br>sub-spherical                   |                                          | 0.1                           | 1.44                                  |
| 40.0                 | 42.0      | DK 8556          | PAL            | Siltstone                     | medium<br>red<br>brown     | v.fine sand to<br>fine sand<br>f.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           | 0.76                                  |

000361

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 03-NOV-90

HOLE NUMBER : M168

LOGGED BY : CJB  
TOTAL DEPTH : 34.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 603900 NORTHING: 6755600 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M168

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8560          | QA             | Sand<br>calcar.                       | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       | DK 8561          | QB             | Sand<br>calcar.                       | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       | DK 8562          | QB             | Sand<br>calcar.                       | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8577          |                | Composite Sample                      |                           |                                                |                                            |                                          |                               | 0.32                                  |
| 6.0                  | 8.0       | DK 8563          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>sub-elongate              | Ferruginous                              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8564          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown      | fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>sub-elongate              | Ferruginous                              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8565          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown      | fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>sub-elongate              | Ferruginous                              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8566          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown      | fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>sub-elongate              | Ferruginous                              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8567          | TO             | Sand                                  | medium<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8568          | TO             | Sand                                  | med.lgt<br>yellow         | fine sand to<br>medium sand<br>well sorted     | rounded<br>sub-spherical<br>clear          |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8569          | TO             | Sand                                  | med.lgt<br>yellow         | fine sand to<br>medium sand<br>well sorted     | rounded<br>sub-spherical<br>clear          |                                          | 0.0                           |                                       |

000362



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING            | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|--------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 6.0                  | 20.0      | DK 8578          |                | Composite Sample              |                         |                                            |                                            |                                          |                               | 0.25                                  |
| 20.0                 | 22.0      | DK 8570          | TEH            | Grit                          | light<br>grey           | v.crse sand to<br>granule<br>well sorted   | v.well round.<br>sub-spherical<br>frosted  | Siliceous                                | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8571          | TEH            | Grit                          | light<br>grey           | v.crse sand to<br>granule<br>well sorted   | v.well round.<br>sub-spherical<br>frosted  | Siliceous                                | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8572          | TEH            | Grit                          | light<br>grey           | v.crse sand to<br>granule<br>well sorted   | v.well round.<br>sub-spherical<br>frosted  | Siliceous                                | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8573          | TEH            | Grit                          | light<br>grey<br>brown  | v.crse sand to<br>granule<br>well sorted   | v.well round.<br>sub-spherical<br>frosted  |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8574          | TEH            | Sand                          | light<br>grey<br>brown  | v.fine sand to<br>fine sand<br>well sorted | v.well round.<br>sub-spherical<br>frosted  | Siliceous                                | 0.1                           |                                       |
| 30.0                 | 32.0      | DK 8575          | TEH            | Sand                          | light<br>grey<br>brown  | v.fine sand to<br>fine sand<br>well sorted | v.well round.<br>sub-spherical<br>frosted  | Siliceous                                | 0.1                           | 0.38                                  |
| 20.0                 | 32.0      | DK 8579          |                | Composite Sample              |                         |                                            |                                            |                                          |                               | 0.22                                  |
| 32.0                 | 34.0      | DK 8576          | TEH            | Sand                          | med.drk<br>red<br>brown | v.fine sand to<br>fine sand<br>well sorted | rounded<br>sub-spherical<br>clear          |                                          | 0.2<br>light trace            | 1.37                                  |

EOH at 34.0 m

000363

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 04-NOV-90

HOLE NUMBER : M169

LOGGED BY : CJB  
TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 604200 NORTHING: 6756500 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M169

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8580          | QA             | Sand<br>calcar.               | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.                              |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       | DK 8581          | QB             | Sand<br>calcar.               | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.                              |                                          | 0.5<br>trace                  |                                       |
| 0.0                  | 4.0       | DK 8595          |                | Composite Sample              |                            |                                                  |                                            |                                          |                               | 0.30                                  |
| 4.0                  | 6.0       | DK 8582          | Q              | Sand<br>Sandstone<br>ferrug.  | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>mod.spherical             | Ferruginous                              | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 8583          | Q              | Sand<br>Sandstone<br>ferrug.  | dark<br>red<br>brown       | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>mod.spherical             | Ferruginous                              | 0.0                           |                                       |
| 4.0                  | 8.0       | DK 8596          |                | Composite Sample              |                            |                                                  |                                            |                                          |                               | 0.18                                  |
| 8.0                  | 10.0      | DK 8584          | TO             | Sand<br>gritty                | med.lgt<br>yellow<br>brown | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8585          | TO             | Grit                          | light<br>grey              | v.crse sand to<br>granule<br>well sorted         | rounded<br>spherical<br>smooth             |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8586          | TO             | Grit                          | light<br>grey              | v.crse sand to<br>granule<br>well sorted         | rounded<br>spherical<br>smooth             |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8587          | TO             | Grit                          | light<br>grey              | granule to<br>v.sml pebb.<br>well sorted         | rounded<br>spherical<br>smooth             |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8588          | TO             | Grit                          | light<br>grey              | granule to<br>v.crse sand<br>well sorted         | rounded<br>spherical<br>smooth             |                                          | 0.0                           |                                       |

000364

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8589          | TO             | Grit                          | light<br>grey           | granule to<br>v.crse sand<br>well sorted     | rounded<br>spherical<br>smooth             |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8590          | TO             | Grit                          | light<br>grey<br>brown  | granule to<br>v.crse sand<br>well sorted     | rounded<br>spherical<br>smooth             |                                          | 0.2<br>light trace            |                                       |
| 22.0                 | 24.0      | DK 8591          | TEH            | Grit                          | light<br>grey<br>brown  | granule to<br>v.crse sand<br>well sorted     | rounded<br>spherical<br>smooth             |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 24.0      | DK 8597          |                | Composite Sample              |                         |                                              |                                            |                                          |                               | 0.08                                  |
| 24.0                 | 26.0      | DK 8592          | TEH            | Sand                          | med.lgt<br>red<br>brown | v.fine sand to<br>fine sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 1.0<br>Good trace             | 0.35                                  |
| 26.0                 | 28.0      | DK 8593          | TEH            | Sandstone<br>silic.<br>Sand   | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>spherical                   | Ferruginous                              | 0.5<br>trace                  | 1.66                                  |
| 28.0                 | 30.0      | DK 8594          | TEH            | Spongolite<br>ferrug.         | med.drk<br>red<br>brown | v.fine sand                                  |                                            | Ferruginous                              | 0.0                           | 8.37                                  |
| EOH at 30.0 m        |           |                  |                | Comments: hard layer at base  |                         |                                              |                                            |                                          |                               |                                       |

000365

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 04-NOV-90

HOLE NUMBER : M170

LOGGED BY : CJB  
TOTAL DEPTH : 20.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 604600 NORTHING: 6757300 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M170

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8598          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       | DK 8599          | QB             | Sand<br>calcar.                       | med.lgt<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 8600          | QB             | Sand<br>calcar.                       | med.lgt<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8608          |                | Composite Sample                      |                           |                                                |                                            |                                          |                               | 0.25                                  |
| 6.0                  | 8.0       | DK 8601          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted   | sub-rounded<br>mod.spherical               | Ferruginous                              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8602          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted   | sub-rounded<br>mod.spherical               | Ferruginous                              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8603          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted   | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 12.0      | DK 8609          |                | Composite Sample                      |                           |                                                |                                            |                                          |                               | 0.14                                  |
| 12.0                 | 14.0      | DK 8604          | TO             | Sand                                  | medium<br>yellow<br>brown | medium sand<br>f.well sorted                   | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8605          | TO             | Sand                                  | medium<br>yellow<br>brown | medium sand<br>f.well sorted                   | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8606          | TO             | Grit                                  | light<br>grey<br>brown    | coarse sand to<br>v.crse sand<br>f.well sorted | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |

000366

| DEPTH       |           | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-------------|-----------|------------------|----------------|-------------------------------|------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| FROM<br>(m) | TO<br>(m) |                  |                |                               |                        |                                                  |                                            |                                          |                               |                                       |
| 18.0        | 20.0      | DK 8607          | TO             | Grit<br>silic.                | light<br>grey<br>brown | coarse sand to<br>v.crse sand<br>mod.well sorted | rounded<br>sub-spherical<br>smooth         | Siliceous                                | 0.0                           |                                       |
| 12.0        | 20.0      | DK 8610          |                | Composite Sample              |                        | Comments: silcrete layer                         |                                            |                                          |                               | 0.08                                  |

EOH at 20.0 m

000367

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 04-NOV-90

HOLE NUMBER : M171

LOGGED BY : CJB  
TOTAL DEPTH : 25.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 604800 NORTHING: 6758000 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M171

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8611          | QA             | Sand                          | med.lgt<br>red<br>brown   | fine sand to<br>medium sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       | DK 8612          | QB             | Sand<br>calcar.               | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 8613          | QB             | Sand<br>calcar.               | medium<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 6.0       | DK 8624          |                | Composite Sample              |                           |                                                |                                            |                                          |                               | 0.34                                  |
| 6.0                  | 8.0       | DK 8614          | Q              | Sand                          | med.lgt<br>red<br>brown   | v.fine sand to<br>fine sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 8.0                  | 10.0      | DK 8615          | Q              | Sand                          | med.lgt<br>red<br>brown   | v.fine sand to<br>fine sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8616          | Q              | Sand                          | med.lgt<br>red<br>brown   | v.fine sand to<br>fine sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8617          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8618          | Q              | Sand<br>Sandstone<br>ferrug.  | medium<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 16.0      | DK 8625          |                | Composite Sample              |                           |                                                |                                            |                                          |                               | 0.23                                  |
| 16.0                 | 18.0      | DK 8619          | TO             | Sand                          | medium<br>yellow<br>brown | v.fine sand to<br>fine sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000368

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>l/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                        | 20.0 | DK 8620          | TO             | Sand                          | medium<br>yellow<br>brown | v.fine sand to<br>fine sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                        | 22.0 | DK 8621          | TEH            | Grit<br><br>Sand              | light<br>yellow<br>grey   | medium sand to<br>coarse sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 8622          | TEH            | Grit<br><br>Sand              | light<br>grey             | coarse sand to<br>v.crse sand<br>f.well sorted | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 24.0                        | 25.0 | DK 8623          | TEH            | Grit<br>silic.                | light<br>grey             | coarse sand to<br>v.crse sand<br>f.well sorted | sub-rounded<br>sub-spherical               | Siliceous                                | 0.0                           |                                       |
| 16.0                        | 25.0 | DK 8626          |                | Composite Sample              |                           |                                                | Comments: abandoned hard ground            |                                          |                               | 0.16                                  |

EOH at 25.0 m

000369

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 04-NOV-90

HOLE NUMBER : M172

LOGGED BY : CJB  
TOTAL DEPTH : 42.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 612100 NORTHING: 6753000 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M172

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8627          | QA             | Sand<br>calcar.                       | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted     | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       | DK 8628          | QA             | Sand<br>calcar.                       | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted     | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       | DK 8629          | QB             | Clay<br>sandy                         | med.drk<br>red<br>brown    | coarse silt to<br>v.fine sand<br>mod.well sorted | interm.round.<br>sub-elongate              |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8648          |                | Composite Sample                      |                            |                                                  |                                            |                                          |                               | 0.37                                  |
| 6.0                  | 8.0       | DK 8630          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              | Ferruginous                              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8631          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              | Ferruginous                              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8632          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              | Ferruginous                              | 0.0                           |                                       |
| 6.0                  | 12.0      | DK 8649          | Q              | Composite Sample                      |                            |                                                  |                                            |                                          |                               | 0.22                                  |
| 12.0                 | 14.0      | DK 8633          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted   | interm.round.<br>sub-elongate              | Ferruginous                              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8634          | Q              | Sand                                  | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>well sorted       | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8635          | TO             | Sand                                  | medium<br>red<br>brown     | fine sand to<br>medium sand<br>f.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000370



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8636          | TO             | Sand                          | medium<br>yellow<br>brown  | fine sand to<br>medium sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8637          | TO             | Sand<br>gritty                | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>sub-spherical             |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8638          | TEH            | Grit                          | med.lgt<br>yellow          | coarse sand to<br>v.crse sand<br>well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8639          | TEH            | Grit                          | light<br>grey              | coarse sand to<br>v.crse sand<br>well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8640          | TEH            | Grit                          | light<br>grey              | coarse sand to<br>v.crse sand<br>well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8641          | TEH            | Grit                          | light<br>grey              | coarse sand to<br>v.crse sand<br>well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8642          | TEH            | Grit                          | light<br>grey              | coarse sand to<br>v.crse sand<br>well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 12.0                 | 32.0      | DK 8650          | TEH            | Composite Sample              |                            |                                                |                                            |                                          |                               | 0.07                                  |
| 32.0                 | 34.0      | DK 8643          | TEH            | Grit                          | med.lgt<br>grey<br>brown   | medium sand to<br>coarse sand<br>well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 34.0                 | 36.0      | DK 8644          | TEH            | Sand                          | medium<br>yellow<br>brown  | medium sand to<br>coarse sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 1.0<br>Good trace             | 0.77                                  |
| 36.0                 | 38.0      | DK 8645          | TEH            | Sand<br>silty                 | med.drk<br>red<br>brown    | coarse silt to<br>v.fine sand                  |                                            |                                          | 0.5<br>trace                  | 0.54                                  |
| 38.0                 | 40.0      | DK 8646          | TEH            | Spongolite                    | med.lgt<br>yellow<br>brown | coarse silt to<br>v.fine sand                  |                                            |                                          | 0.5<br>trace                  | 0.25                                  |
| 40.0                 | 42.0      | DK 8647          | TEH            | Spongolite                    | med.lgt<br>yellow<br>brown | coarse silt to<br>v.fine sand                  |                                            |                                          | 0.1                           | 0.46                                  |

000371

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 04-NOV-90

HOLE NUMBER : M173

LOGGED BY : CJB  
TOTAL DEPTH : 42.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 613000 NORTHING: 6753300 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M173

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|----------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8651          | QA             | Sand<br>calcar.                       | medium<br>yellow<br>brown  | fine sand to<br>medium sand<br>f.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8652          | QA             | Sand<br>calcar.                       | medium<br>yellow<br>brown  | fine sand to<br>medium sand<br>f.well sorted | sub-rounded                                |                                          | 0.1                           |                                       |
| 0.0                  | 4.0       | DK 8672          |                | Composite Sample                      |                            |                                              |                                            |                                          |                               | 0.32                                  |
| 4.0                  | 6.0       | DK 8653          | QB             | Clay<br>sandy                         | med.drk<br>red<br>brown    | fine sand to<br>medium sand                  |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 8654          | Q              | Sand                                  | med.drk<br>red<br>brown    | v.fine sand to<br>fine sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8655          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8656          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 4.0                  | 12.0      | DK 8673          |                | Composite Sample                      |                            |                                              |                                            |                                          |                               | 0.29                                  |
| 12.0                 | 14.0      | DK 8657          | TO             | Sand                                  | medium<br>yellow<br>brown  | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8658          | TO             | Sand                                  | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8659          | TO             | Sand                                  | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000372

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8660          | TEH            | Grit                          | light<br>grey              | coarse sand to<br>v.crse sand<br>f.well sorted   | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8661          | TEH            | Grit                          | light<br>grey              | coarse sand to<br>granule<br>f.well sorted       | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8662          | TEH            | Grit                          | light<br>grey              | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 24.0                 | 26.0      | DK 8663          | TEH            | Sand<br>gritty                | med.lgt<br>grey<br>brown   | coarse sand to<br>v.crse sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 26.0                 | 28.0      | DK 8664          | TEH            | Sand<br>gritty                | med.lgt<br>grey<br>brown   | medium sand to<br>coarse sand<br>f.well sorted   | rounded<br>mod.spherical                   |                                          | 0.0                           |                                       |
| 12.0                 | 28.0      | DK 8674          |                | Composite Sample              |                            |                                                  |                                            |                                          |                               | 0.10                                  |
| 28.0                 | 30.0      | DK 8665          | TEH            | Sand                          | med.lgt<br>grey<br>brown   | v.fine sand to<br>fine sand<br>f.well sorted     | sub-rounded<br>sub-spherical               |                                          | 1.0<br>Good trace             | 0.89                                  |
| 30.0                 | 32.0      | DK 8666          | TEH            | Spongolite                    | med.lgt<br>grey<br>brown   | v.fine sand to<br>fine sand                      |                                            |                                          | 0.2<br>light trace            | 0.46                                  |
| 32.0                 | 34.0      | DK 8667          | TEH            | Spongolite<br>Sand            | med.lgt<br>red<br>brown    | v.fine sand to<br>fine sand                      |                                            |                                          | 0.0                           | 0.81                                  |
| 34.0                 | 36.0      | DK 8668          | TEH            | Spongolite                    | medium<br>red<br>brown     | v.fine sand to<br>fine sand                      |                                            |                                          | 0.5<br>trace                  | 1.68                                  |
| 36.0                 | 38.0      | DK 8669          | TEH            | Spongolite<br>Sand<br>ferrug. | med.drk<br>red<br>brown    | v.fine sand to<br>fine sand<br>mod.well sorted   | sub-rounded<br>mod.spherical               |                                          | 0.1                           | 0.56                                  |
| 38.0                 | 40.0      | DK 8670          | TEH            | Spongolite<br>Sand<br>ferrug. | medium<br>yellow<br>brown  | coarse silt to<br>v.fine sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.1                           | 0.20                                  |
| 40.0                 | 42.0      | DK 8671          | TEH            | Spongolite<br>Sand            | med.lgt<br>yellow<br>brown | coarse silt to<br>v.fine sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           | 0.15                                  |

000373

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 04-NOV-90

HOLE NUMBER : M174

LOGGED BY : CJB  
TOTAL DEPTH : 39.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 614000 NORTHING: 6753600 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M174

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8675          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted     | interm.round.<br>mod.spherical             |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8676          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted     | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       | DK 8677          | QB             | Clay<br>sandy                         | medium<br>red<br>brown    | coarse silt to<br>v.fine sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8695          |                | Composite Sample                      |                           |                                                  |                                            |                                          |                               | 0.35                                  |
| 6.0                  | 8.0       | DK 8678          | QB             | Clay<br>sandy                         | medium<br>red<br>brown    | coarse silt to<br>v.fine sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8679          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | medium sand<br>f.well sorted                     | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8680          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | medium sand<br>f.well sorted                     | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8681          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | medium sand<br>f.well sorted                     | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8682          | TO             | Sand                                  | medium<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted     | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 6.0                  | 16.0      | DK 8696          | TO             | Composite Sample                      |                           |                                                  |                                            |                                          |                               | 0.24                                  |
| 16.0                 | 18.0      | DK 8683          | TO             | Sand<br>gritty                        | medium<br>yellow<br>brown | medium sand to<br>coarse sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |

000374

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8684          | TEH            | Grit                          | med.lgt<br>grey           | medium sand to<br>coarse sand<br>well sorted   | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8685          | TEH            | Grit                          | light<br>grey             | coarse sand to<br>v.crse sand<br>f.well sorted | rounded<br>mod.spherical                   |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8686          | TEH            | Grit                          | light<br>grey             | coarse sand to<br>v.crse sand<br>f.well sorted | rounded<br>mod.spherical                   |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8687          | TEH            | Grit                          | light<br>grey             | v.crse sand to<br>granule<br>f.well sorted     | rounded<br>mod.spherical                   |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8688          | TEH            | Grit<br>silic.                | light<br>grey             | v.crse sand to<br>granule<br>f.well sorted     | rounded<br>mod.spherical                   | Siliceous                                | 0.1                           |                                       |
| 28.0                 | 30.0      | DK 8689          | TEH            | Grit<br>silic.                | light<br>grey             | v.crse sand to<br>granule<br>f.well sorted     | rounded<br>mod.spherical                   | Siliceous                                | 0.0                           |                                       |
| 16.0                 | 30.0      | DK 8697          |                | Composite Sample              |                           |                                                |                                            |                                          |                               | 0.05                                  |
| 30.0                 | 32.0      | DK 8690          | TEH            | Sand                          | med.lgt<br>grey<br>brown  | v.fine sand to<br>fine sand<br>f.well sorted   | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.5<br>trace                  | 0.25                                  |
| 32.0                 | 34.0      | DK 8691          | TEH            | Sand                          | medium<br>yellow<br>brown | coarse silt to<br>v.fine sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.5<br>trace                  | 0.37                                  |
| 34.0                 | 36.0      | DK 8692          | TEH            | Spongolite<br>Sand<br>silty   | med.drk<br>red<br>brown   | v.fine sand to<br>fine sand                    |                                            |                                          | 0.2<br>light trace            | 0.75                                  |
| 36.0                 | 38.0      | DK 8693          | TEH            | Spongolite<br>Sand<br>silty   | med.drk<br>red<br>brown   | v.fine sand to<br>fine sand                    |                                            |                                          | 0.0                           | 0.38                                  |
| 38.0                 | 39.0      | DK 8694          | TEH            | Spongolite<br>Sand<br>silty   | med.drk<br>red<br>brown   | v.fine sand to<br>fine sand                    | Comments: hard ground                      |                                          | 0.0                           | 1.08                                  |
| EOH at 39.0 m        |           |                  |                |                               |                           | Comments: hard ground                          |                                            |                                          |                               |                                       |

000375

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 05-NOV-90

HOLE NUMBER : M175

LOGGED BY : CJB  
TOTAL DEPTH : 44.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 615000 NORTHING: 6753800 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M175

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8698          | QA             | Sand<br>calcar.                  | medium<br>red<br>brown  | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8699          | QA             | Sand<br>calcar.<br>Sand          | medium<br>red<br>brown  | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 8700          | QA             | Sand<br>calcar.<br>Sand          | medium<br>red<br>brown  | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8720          |                | Composite Sample                 |                         |                                                |                                            |                                          |                               | 0.36                                  |
| 6.0                  | 8.0       | DK 8701          | QB             | Sand<br>clayey                   | med.drk<br>red<br>brown | v.fine sand to<br>fine sand<br>mod.well sorted | sub-rounded<br>sub-elongate                | Ferruginous                              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8702          | Q              | Sand<br>silty                    | dark<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                | Ferruginous                              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8703          | Q              | Sand<br>silty<br>Grit<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                | Ferruginous                              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8704          | Q              | Sand<br>silty<br>Grit<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                | Ferruginous                              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8705          | Q              | Sand<br>silty                    | med.drk<br>brown        | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                | Ferruginous                              | 0.0                           |                                       |
| 6.0                  | 16.0      | DK 8721          |                | Composite Sample                 |                         |                                                |                                            |                                          |                               | 0.25                                  |
| 16.0                 | 18.0      | DK 8706          | Q              | Sand<br>silty                    | med.drk<br>brown        | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                | Ferruginous                              | 0.0                           |                                       |

000376

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8707          | TO             | Sand                          | medium<br>yellow<br>brown | medium sand<br>mod.well sorted               | sub-rounded<br>sub-spherical<br>clear      |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8708          | TO             | Sand                          | medium<br>yellow<br>grey  | medium sand<br>mod.well sorted               | sub-rounded<br>sub-spherical<br>clear      |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8709          | TO             | Sand<br>gritty                | light<br>yellow<br>brown  | coarse sand to<br>v.crse sand<br>well sorted | sub-rounded<br>sub-spherical<br>frosted    |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8710          | TEH            | Grit                          | light<br>grey             | v.crse sand to<br>granule<br>well sorted     | sub-rounded<br>sub-spherical<br>frosted    |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8711          | TEH            | Grit                          | light<br>grey             | v.crse sand to<br>granule<br>well sorted     | sub-rounded<br>sub-spherical<br>frosted    |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8712          | TEH            | Grit                          | light<br>grey             | v.crse sand to<br>granule<br>ext.well sorted | sub-rounded<br>sub-spherical<br>frosted    |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8713          | TEH            | Grit                          | light<br>grey<br>brown    | v.crse sand to<br>granule<br>ext.well sorted | sub-rounded<br>sub-spherical<br>clear      | Siliceous                                | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8714          | TEH            | Grit                          | medium<br>grey<br>brown   | v.crse sand to<br>granule<br>ext.well sorted | sub-rounded<br>sub-spherical<br>clear      | Siliceous                                | 0.0                           |                                       |
| 16.0                 | 34.0      | DK 8722          |                | Composite Sample              |                           |                                              |                                            |                                          |                               | 0.13                                  |
| 34.0                 | 36.0      | DK 8715          | TEH            | Sand                          | light<br>red<br><br>brown | fine sand<br><br>well sorted                 | sub-rounded<br>sub-spherical<br>clear      |                                          | 2.0<br>V.good<br>trace        | 1.49                                  |
| 34.0                 | 36.0      | DK 8723          | TEH            | Sand                          | light<br>red<br><br>brown | fine sand<br><br>well sorted                 | sub-rounded<br>sub-spherical<br>clear      |                                          | 2.0<br>V.good<br>trace        | 1.39                                  |
| 36.0                 | 38.0      | DK 8716          | TEH            | Spongolite<br><br>Sand        | medium<br>red<br>brown    | fine sand<br><br>well sorted                 | sub-rounded<br>sub-spherical               |                                          | 1.0<br>Good trace             | 1.84                                  |
| 38.0                 | 40.0      | DK 8717          | TEH            | Spongolite                    | light                     |                                              |                                            |                                          | 0.0                           | 1.03                                  |

000377

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-----------------------------|------|------------------|----------------|-------------------------------|------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 40.0                        | 42.0 | DK 8718          | TEH            | Spongolite                    | light<br>red<br>brown  |                                 |                                            |                                          | 0.0                           | 1.56                                 |
| 42.0                        | 44.0 | DK 8719          | TEH            | Sand<br>silty                 | medium<br>red<br>brown | fine sand<br><br>well sorted    | sub-rounded                                |                                          | 0.0                           | 0.57                                 |

EOH at 44.0 m



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WYOLA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 06-NOV-90

HOLE NUMBER : M176

LOGGED BY : CJB  
 TOTAL DEPTH : 35.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 601200 NORTHING: 6750400 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M176

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING            | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|--------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8789          | QA             | Sand<br>calcar.               | medium<br>red<br>brown | medium sand<br>mod.well sorted             | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8790          | QA             | Sand<br>calcar.               | medium<br>red<br>brown | medium sand<br>mod.well sorted             | sub-rounded                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 8791          | QB             | Sand                          | medium<br>red<br>brown | medium sand<br>well sorted                 | sub-rounded                                |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 8807          |                | Composite Sample              |                        |                                            |                                            |                                          |                               | 0.42                                  |
| 6.0                  | 8.0       | DK 8792          | Q              | Sand<br>ferrug.<br>Sandstone  | medium<br>red<br>brown | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               | Ferruginous                              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8793          | Q              | Sand<br>ferrug.<br>Sandstone  | medium<br>red<br>brown | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               | Ferruginous                              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8794          | Q              | Sand<br>ferrug.<br>Sandstone  | medium<br>red<br>brown | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               | Ferruginous                              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8795          | Q              | Sand<br>ferrug.<br>Sandstone  | medium<br>red<br>brown | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               | Ferruginous                              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8796          | Q              | Sand<br>ferrug.               | medium<br>red<br>brown | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8797          | Q              | Sand<br>ferrug.               | medium<br>red<br>brown | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8798          | Q              | Sand                          | dark<br>red<br>brown   | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000379

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 6.0                  | 20.0      | DK 8808          |                | Composite Sample              |                           |                                                |                                            |                                          |                               | 0.31                                  |
| 20.0                 | 22.0      | DK 8799          | TO             | Sand                          | medium<br>yellow<br>brown | fine sand to<br>medium sand<br>well sorted     | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8800          | TO             | Sand                          | medium<br>yellow<br>brown | fine sand to<br>medium sand<br>well sorted     | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8801          | TO             | Sand                          | light<br>yellow<br>brown  | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8802          | TO             | Sand                          | light<br>yellow<br>brown  | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8803          | TEH            | Grit<br>silic.                | light<br>yellow<br>grey   | v.crse sand to<br>coarse sand<br>well sorted   | sub-rounded<br>sub-spherical<br>clear      | weak<br>cons                             | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8804          | TEH            | Sandstone<br>silic.<br>Sand   | light<br>grey             | medium sand to<br>v.crse sand<br>well sorted   | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.2<br>light trace            | 0.08                                  |
| 32.0                 | 34.0      | DK 8805          | TEH            | Sand<br>silic.                | light<br>grey             | medium sand to<br>granule<br>mod.well sorted   | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.2<br>light trace            | 0.03                                  |
| 34.0                 | 35.0      | DK 8806          | TEH            |                               |                           |                                                |                                            |                                          |                               | 0.06                                  |
| 20.0                 | 35.0      | DK 8809          |                | Composite Sample              |                           |                                                |                                            |                                          |                               | 0.16                                  |

EOH at 35.0 m

000380

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 06-NOV-90

HOLE NUMBER : M177

LOGGED BY : CJB  
TOTAL DEPTH : 20.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 600300 NORTHING: 6750000 R.L.: 245.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M177

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING            | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8810          | QA             | Sand                          | medium<br>red<br>brown    | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8811          | QB             | Sand<br>calcar.               | medium<br>red<br>brown    | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 8812          | QB             | Sand<br>calcar.               | medium<br>red<br>brown    | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 6.0       | DK 8820          |                | Composite Sample              |                           |                                            |                                            |                                          |                               | 0.39                                  |
| 6.0                  | 8.0       | DK 8813          | Q              | Sand<br>ferrug.               | dark<br>red<br>brown      | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8814          | Q              | Sand<br>ferrug.               | dark<br>red<br>brown      | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8815          | Q              | Sand<br>ferrug.               | dark<br>red<br>brown      | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8816          | Q              | Sand<br>ferrug.               | dark<br>red<br>brown      | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 14.0      | DK 8821          |                | Composite Sample              |                           |                                            |                                            |                                          |                               | 0.33                                  |
| 14.0                 | 16.0      | DK 8817          | TO             | Sand                          | medium<br>yellow<br>brown | medium sand to<br>fine sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8818          | TO             | Sand                          | light<br>yellow<br>grey   | fine sand to<br>medium sand<br>well sorted | rounded<br>sub-spherical<br>clear          |                                          | 0.0                           |                                       |

000381

| DEPTH       |           | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-------------|-----------|------------------|----------------|-------------------------------|---------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| FROM<br>(m) | TO<br>(m) |                  |                |                               |                     |                                 |                                            |                                          |                               |                                       |
| 18.0        | 20.0      | DK 8819          | TO             | Sandstone<br>silic.           |                     | medium sand<br><br>well sorted  | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0        | 20.0      | DK 8822          |                | Composite Sample              |                     |                                 |                                            |                                          |                               | 0.16                                  |

EOH at 20.0 m

000382

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 06-NOV-90

HOLE NUMBER : M178

LOGGED BY : CJB  
TOTAL DEPTH : 38.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 599400 NORTHING: 6749800 R.L.: 245.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M178

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING            | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|--------------------------|--------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8823          | QA             | Sand                                  | medium<br>red<br>brown   | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8824          | QB             | Sand<br>calcar.                       | medium<br>red<br>brown   | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       | DK 8825          | QB             | Sand<br>calcar.                       | medium<br>red<br>brown   | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 0.0                  | 6.0       | DK 8839          |                | Composite Sample                      |                          |                                            |                                            |                                          |                               | 0.49                                  |
| 6.0                  | 8.0       |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 12.0      | DK 8840          |                | Composite Sample                      |                          |                                            |                                            |                                          |                               | 0.34                                  |
| 12.0                 | 14.0      | DK 8826          | Q              | Sand                                  | light<br>red<br>brown    | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8827          | TO             | Sand                                  | light<br>yellow<br>brown | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8828          | TO             | Sand                                  | light<br>yellow<br>grey  | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |

000383

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8829          | TO             | Sand                          | light<br>yellow<br>grey | v.fine sand to<br>fine sand<br>well sorted       | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8830          | TO             | Sand                          | pale<br>grey<br>grey    | v.fine sand to<br>fine sand<br>well sorted       | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 12.0                 | 22.0      | DK 8841          |                | Composite Sample              |                         |                                                  |                                            |                                          |                               | 0.11                                  |
| 22.0                 | 24.0      | DK 8831          | TEH            | Grit<br>Sand                  | pale<br>grey            | coarse sand to<br>v.crse sand<br>ext.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8832          | TEH            | Grit                          | pale<br>grey            | coarse sand to<br>v.crse sand<br>ext.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8833          | TEH            | Grit                          | pale<br>grey            | coarse sand to<br>v.crse sand<br>ext.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8834          | TEH            | Grit                          | pale<br>grey            | coarse sand to<br>v.crse sand<br>ext.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8835          | TEH            | Grit                          | pale<br>grey            | coarse sand to<br>v.crse sand<br>ext.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8836          | TEH            | Grit                          | light<br>yellow<br>grey | coarse sand to<br>v.crse sand<br>ext.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           | 0.05                                  |
| 22.0                 | 34.0      | DK 8842          | TEH            | Composite Sample              |                         |                                                  |                                            |                                          |                               | 0.03                                  |
| 34.0                 | 36.0      | DK 8843          | TEH            | Sand                          | light<br>grey           | fine sand                                        | sub-rounded<br>sub-spherical               |                                          | 2.0                           | 0.99                                  |
|                      |           |                  |                |                               | brown                   | well sorted                                      |                                            |                                          | V.good<br>trace               |                                       |
| 34.0                 | 36.0      | DK 8837          | TEH            | Sand                          | light<br>grey           | fine sand                                        | sub-rounded<br>sub-spherical               |                                          | 2.0                           | 1.01                                  |
|                      |           |                  |                |                               | brown                   | well sorted                                      |                                            |                                          | V.good<br>trace               |                                       |

000384

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 36.0                 | 38.0      | DK 8844          | TEH            | Sand                          | medium<br>yellow<br>brown | fine sand<br>well sorted        | sub-rounded                                |                                          | 5.0                           | 4.41                                  |
| 36.0                 | 38.0      | DK 8838          | TEH            | Sand                          | medium<br>yellow<br>brown | fine sand<br>well sorted        | sub-rounded                                |                                          | 5.0                           | 4.70                                  |

EOH at 38.0 m

000385

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 06-NOV-90

HOLE NUMBER : M179

LOGGED BY : CJB  
TOTAL DEPTH : 34.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 598400 NORTHING: 6749400 R.L.: 240.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M179

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor           | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING            | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-----------------------------------------|-------------------------|--------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8845          | QA             | Sand                                    | medium<br>red<br>brown  | medium sand<br>well sorted                 |                                            |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8846          | QB             | Sand<br>calcar.                         | medium<br>red<br>brown  | medium sand<br>well sorted                 |                                            |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 4.0       | DK 8860          |                | Composite Sample                        |                         |                                            |                                            |                                          |                               | 0.49                                  |
| 4.0                  | 6.0       | DK 8847          | Q              | Sand<br>ferrug.                         | dark<br>red<br>brown    | fine sand<br>well sorted                   | sub-rounded                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | Q              | Sand<br>ferrug.                         | dark<br>red<br>brown    | fine sand<br>well sorted                   | sub-rounded                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br>ferrug.<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand<br>well sorted                   | sub-rounded                                | Ferruginous                              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8848          | Q              | Sand<br>ferrug.<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand<br>well sorted                   | sub-rounded                                | Ferruginous                              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8849          | Q              | Sand<br>ferrug.<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand<br>well sorted                   | sub-rounded                                | Ferruginous                              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8850          | Q              | Sand<br>ferrug.<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand<br>well sorted                   | sub-rounded                                | Ferruginous                              | 0.0                           |                                       |
| 4.0                  | 16.0      | DK 8861          |                | Composite Sample                        |                         |                                            |                                            |                                          |                               | 0.52                                  |
| 16.0                 | 18.0      | DK 8851          | TO             | Sand                                    | light<br>yellow<br>grey | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |

000386



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8852          | TO             | Sand                          | light<br>grey<br>grey   | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8853          | TO             | Sand                          | light<br>yellow<br>grey | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8854          | TO             | Sand<br>gritty<br>gritty      | light<br>grey           | coarse sand to<br>v.crse sand<br>well sorted | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8855          | TO             | Sand<br>Sand                  | light<br>grey           | fine sand<br>ext.well sorted                 | rounded<br>sub-spherical<br>clear          |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8856          | TEH            | Grit                          | light<br>grey           | coarse sand to<br>granule<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8857          | TEH            | Grit                          | light<br>grey           | coarse sand to<br>granule<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8858          | TEH            | Grit                          | light<br>grey           | granule to<br>granule<br>mod.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 32.0                 | 34.0      | DK 8859          | TEH            | Grit<br>Sand<br>silic.        | light<br>grey           | granule to<br>granule<br>mod.well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 34.0      | DK 8862          |                | Composite Sample              |                         |                                              |                                            |                                          |                               | 0.14                                  |

EOH at 34.0 m

000387

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 06-NOV-90

HOLE NUMBER : M180

LOGGED BY : CJB  
TOTAL DEPTH : 23.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 597600 NORTHING: 6749000 R.L.: 240.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M180

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8863          | QA             | Sand                          | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8864          | QB             | Sand                          | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 8865          | QB             | Sand                          | medium<br>red<br>brown     | medium sand<br>well sorted                   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 6.0       | DK 8870          |                | Composite Sample              |                            |                                              |                                            |                                          |                               | 0.67                                  |
| 6.0                  | 8.0       |                  | Q              | Sand                          | medium<br>red<br>brown     | fine sand<br>well sorted                     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand                          | med.drk<br>red<br>brown    | fine sand<br>well sorted                     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | Q              | Sand                          | dark<br>red<br>brown       | fine sand<br>well sorted                     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      |                  | Q              | Sand                          | dark<br>red<br>brown       | fine sand<br>well sorted                     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      |                  | Q              | Sand<br>Sandstone             | medium<br>yellow<br>brown  | fine sand to<br>medium sand<br>well sorted   | rounded<br>sub-spherical                   | ceme<br>Siliceous                        | 0.0                           |                                       |
| 6.0                  | 16.0      | DK 8871          |                | Composite Sample              |                            |                                              |                                            |                                          |                               | 0.65                                  |
| 16.0                 | 18.0      | DK 8866          | TO             | Sand<br>Sandstone             | medium<br>yellow<br>brown  | fine sand to<br>medium sand<br>well sorted   | rounded<br>sub-spherical                   | ceme<br>Siliceous                        | 0.0                           |                                       |

000388

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8867          | TO             | Sand<br>gritty<br>Sandstone   | medium<br>yellow<br>brown  | medium sand<br>well sorted                   | rounded<br>sub-spherical                   | ceme<br>Siliceous                        | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8868          | TO             | Sand<br>gritty<br>Sandstone   | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>well sorted | rounded<br>sub-spherical                   | ceme<br>Siliceous                        | 0.0                           |                                       |
| 22.0                 | 23.0      | DK 8869          | TEH            | Grit<br>silic.                | med.lgt<br>grey            | medium sand to<br>coarse sand<br>well sorted | rounded<br>sub-spherical                   | ceme<br>Siliceous                        | 0.0                           |                                       |
| 16.0                 | 23.0      | DK 8872          |                | Composite Sample              |                            |                                              | Comments: hard ground                      |                                          |                               | 0.33                                  |

EOH at 23.0 m

000389

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 596400 NORTHING: 6748700 R.L.: 235.0 AZIM.: 0.0 INCL.: -90.0

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 07-NOV-90

HOLE NUMBER : M181  
 LOGGED BY : CJB  
 TOTAL DEPTH : 13.0

SHEET 1 OF 1 HOLE NUMBER : M181

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor       | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING            | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------------|-------------------------|--------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8873          | QA             | Sand                                | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       | DK 8874          | QB             | Sand<br>calcar.                     | medium<br>red<br>brown  | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       | DK 8875          | QB             | Sand<br>calcar.                     | medium<br>red<br>brown  | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 0.0                  | 6.0       | DK 8880          |                | Composite Sample                    |                         |                                            |                                            |                                          |                               | 0.75                                  |
| 6.0                  | 8.0       | DK 8876          | Q              | Sand<br>silty                       | med.drk<br>red<br>brown | fine sand<br>well sorted                   | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 8.0                  | 10.0      | DK 8877          | Q              | Sand<br>silty                       | med.drk<br>red<br>brown | fine sand<br>well sorted                   | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 10.0                 | 12.0      | DK 8878          | Q              | Sand<br>silty                       | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 12.0                 | 13.0      | DK 8879          | TEH            | Sand<br>silty<br>Sandstone<br>silty | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 13.0      | DK 8881          |                | Composite Sample                    |                         | Comments: hard ground                      |                                            |                                          |                               | 0.99                                  |

EOH at 13.0 m

000390

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 595500 NORTHING: 6748400 R.L.: 235.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M182

LOGGED BY : CJB

TOTAL DEPTH : 15.0

SHEET 1 OF 1 HOLE NUMBER : M182

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8882          | QA             | Sand                          | medium<br>red<br>brown     | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       | DK 8883          | QB             | Sand<br>calcar.               | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       | DK 8884          | QB             | Sand<br>calcar.               | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 0.0                  | 6.0       | DK 8890          |                | Composite Sample              |                            |                                              |                                            |                                          |                               | 0.65                                  |
| 6.0                  | 8.0       | DK 8885          | Q              | Sand<br>calcar.               | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.1                           |                                       |
| 8.0                  | 10.0      | DK 8886          | Q              | Sand<br>ferrug.               | med.drk<br>red<br>brown    | fine sand<br>f.well sorted                   | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 12.0      | DK 8887          | Q              | Sand<br>ferrug.               | med.drk<br>red<br>brown    | fine sand<br>f.well sorted                   | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 12.0                 | 14.0      | DK 8888          | TEH            | Sand<br>Sandstone             | medium<br>yellow<br>brown  | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            | 0.89                                  |
| 14.0                 | 15.0      | DK 8889          | TEH            | Sand<br>Sandstone<br>ferrug.  | medium<br>yellow<br>brown  | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>mod.spherical               |                                          | 0.1                           | 1.90                                  |
| 6.0                  | 15.0      | DK 8891          |                | Composite Sample              |                            | Comments: hard ground                        |                                            |                                          |                               | 0.92                                  |

EOH at 15.0 m

000391

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : coldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 07-NOV-90

HOLE NUMBER : M183  
 LOGGED BY : CJB  
 TOTAL DEPTH : 17.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 594400 NORTHING: 6748300 R.L.: 230.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M183

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE            | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|----------------------------------------------|-------------------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8892          | QA             | Sand                          | medium<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical                          |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       | DK 8893          | QB             | Sand<br>calcar.               | med.lgt<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical                          |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       | DK 8894          | QB             | Sand<br>calcar.               | med.lgt<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical                          |                                          | 0.1                           |                                       |
| 0.0                  | 6.0       | DK 8901          |                | Composite Sample              |                           |                                              |                                                       |                                          |                               | 0.57                                  |
| 6.0                  | 8.0       | DK 8895          | Q              | Sand<br>ferrug.               | med.drk<br>red<br>brown   | medium sand<br>well sorted                   | sub-rounded<br>sub-spherical                          |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8896          | Q              | Sand<br>ferrug.               | med.drk<br>red<br>brown   | fine sand<br>well sorted                     | sub-rounded<br>sub-spherical                          |                                          | 0.1                           |                                       |
| 10.0                 | 12.0      | DK 8897          | Q              | Sand<br>ferrug.<br>Sandstone  | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical                          |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8898          | TEH            | Sand<br>Sandstone             | medium<br>yellow<br>brown | medium sand<br>f.well sorted                 | Comments: hard ground<br>sub-rounded<br>sub-spherical |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8899          | TEH            | Sand<br>Sandstone             | medium<br>yellow<br>brown | medium sand<br>f.well sorted                 | Comments: hard ground<br>sub-rounded<br>sub-spherical |                                          | 0.0                           |                                       |
| 16.0                 | 17.0      | DK 8900          | TEH            | Sandstone<br>Sandstone        | medium<br>brown<br>yellow | fine sand to<br>medium sand<br>f.well sorted | Comments: hard ground<br>sub-rounded<br>sub-spherical |                                          | 0.0                           |                                       |
| 6.0                  | 17.0      | DK 8902          |                | Composite Sample              |                           |                                              |                                                       |                                          |                               | 0.49                                  |

000392

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WARRANGA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 07-NOV-90

HOLE NUMBER : M184

LOGGED BY : CJB

TOTAL DEPTH : 8.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 593500 NORTHING: 6747900 R.L.: 230.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M184

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING            | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE            | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|--------------------------------------------|-------------------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8903          | QA             | Sand                          | medium<br>red<br>brown  | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical                          |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8904          | QA             | Sand                          | medium<br>red<br>brown  | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical                          |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 8905          | QB             | Sandstone<br>ferrug.<br>Sand  | med.drk<br>red<br>brown | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical                          |                                          | 0.1                           |                                       |
| 6.0                  | 8.0       | DK 8906          | Q              | Sandstone<br><br>Sand         | med.drk<br>red<br>brown | medium sand<br>well sorted                 | Comments: hard ground<br>sub-rounded<br>sub-spherical |                                          | 0.0                           |                                       |
| 8.0                  | 9.0       | DK 8907          | Q              | Sandstone<br><br>Sand         | med.drk<br>red<br>brown | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical                          |                                          | 0.0                           |                                       |
| 0.0                  | 9.0       | DK 8908          |                | Composite Sample              |                         |                                            |                                                       |                                          |                               |                                       |

EOH at 8.0 m

000393

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63  
 GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 592400 NORTHING: 6747600 R.L.: 230.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M185

LOGGED BY : CJB

TOTAL DEPTH : 21.0

SHEET 1 OF 1 HOLE NUMBER : M185

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor   | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------|---------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8909          | QA             | Sand<br>calcar.                 | medium<br>red<br>brown    | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8910          | QA             | Sand<br>calcar.                 | medium<br>red<br>brown    | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 8911          | QB             | Sand                            | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 8912          | Q              | Sand                            | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 8913          | Q              | Sand                            | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 10.0                 | 12.0      | DK 8914          | Q              | Sand<br>ferrug.                 | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8915          | Q              | Sand<br>ferrug.<br>Sandstone    | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8916          | Q              | Sand<br>ferrug.<br>Sandstone    | med.drk<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8917          | Q              | Sand<br>ferrug.<br>Sandstone    | dark<br>red<br>brown      | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8918          | TEH            | Sand<br><br>Sandstone<br>silic. | dark<br>red<br>brown      | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | Siliceous                                | 0.0                           |                                       |
| 20.0                 | 21.0      | DK 8919          | TEH            | Sand<br><br>Sandstone           | medium<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | Comments: hard ground<br>Siliceous       | 0.0                           |                                       |

000394



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 07-NOV-90

HOLE NUMBER : M186

LOGGED BY : CJB  
 TOTAL DEPTH : 23.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 591400 NORTHING: 6747300 R.L.: 230.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M186

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|---------------------------------------|-------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |      |                  |                |                                       |                         |                                              |                                            |                                          |                               |                                       |
| 0.0                         | 2.0  | DK 8922          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.5<br>trace                  |                                       |
| 2.0                         | 4.0  | DK 8923          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 4.0                         | 6.0  | DK 8924          | QB             | Sand<br>silty                         | medium<br>red<br>brown  | fine sand<br>f.well sorted                   | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 0.0                         | 6.0  | DK 8920          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.51                                  |
| 0.0                         | 6.0  | DK 8934          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.56                                  |
| 6.0                         | 8.0  | DK 8925          | Q              | Sand<br>silty                         | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.5<br>trace                  |                                       |
| 8.0                         | 10.0 | DK 8926          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 10.0                        | 12.0 | DK 8927          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 12.0                        | 14.0 | DK 8928          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 14.0                        | 16.0 | DK 8929          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 16.0                        | 18.0 | DK 8930          | Q              | Sand<br>silty<br>Sandstone            | dark<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |

000395

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|---------------------------------------|------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 18.0                 | 20.0      | DK 8931          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown   | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                      |
| 6.0                  | 20.0      | DK 8935          |                | Composite Sample                      |                        |                                              |                                            |                                          |                               | 0.31                                 |
| 6.0                  | 21.0      | DK 8921          |                | Composite Sample                      |                        |                                              |                                            |                                          |                               | 0.51                                 |
| 20.0                 | 22.0      | DK 8932          | TEH            | Sand<br><br>Sandstone                 | medium<br>red<br>brown | fine sand to<br>medium sand<br>well sorted   | rounded<br>sub-spherical                   |                                          | 0.0                           |                                      |
| 22.0                 | 24.0      | DK 8933          |                |                                       |                        | Comments: hard ground                        |                                            |                                          |                               |                                      |

EOH at 23.0 m

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 07-NOV-90

HOLE NUMBER : M187  
 LOGGED BY : CJB  
 TOTAL DEPTH : 25.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 590500 NORTHING: 6747000 R.L.: 230.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M187

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8936          | QA             | Sand                          | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>well sorted   | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8937          | QB             | Sand<br>calcar.               | medium<br>red<br>brown  | fine sand to<br>medium sand<br>well sorted   | rounded<br>sub-spherical                   |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       | DK 8938          | QB             | Sand<br>calcar.               | medium<br>red<br>brown  | fine sand to<br>medium sand<br>well sorted   | rounded<br>sub-spherical                   |                                          | 0.1                           |                                       |
| 0.0                  | 6.0       | DK 8949          |                | Composite Sample              |                         |                                              |                                            |                                          |                               | 0.47                                  |
| 6.0                  | 8.0       | DK 8939          | Q              | Sand                          | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>well sorted   | rounded<br>sub-spherical                   |                                          | 0.1                           |                                       |
| 8.0                  | 10.0      | DK 8940          | Q              | Sand<br>ferrug.<br>Sandstone  | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   | Ferruginous                              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8941          | Q              | Sand<br>ferrug.<br>Sandstone  | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   | Ferruginous                              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8942          | Q              | Sand<br>ferrug.<br>Sandstone  | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   | Ferruginous                              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8943          | Q              | Sand<br>ferrug.<br>Sandstone  | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   | Ferruginous                              | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8944          | Q              | Sand<br>ferrug.<br>Sandstone  | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   | Ferruginous                              | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8945          | Q              | Sand<br>ferrug.<br>Sandstone  | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   | Ferruginous                              | 0.0                           |                                       |

000397

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 20.0                 | 22.0      | DK 8946          | Q              | Sand<br>ferrug.<br>Sandstone  | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted   | rounded<br>sub-spherical                   | Ferruginous                              | 0.0                           |                                      |
| 22.0                 | 24.0      | DK 8947          | Q              | Sand<br>ferrug.<br>Sandstone  | dark<br>red<br>brown    | medium sand to<br>coarse sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                      |
| 6.0                  | 24.0      | DK 8950          |                | Composite Sample              |                         |                                                |                                            |                                          |                               | 0.32                                 |
| 24.0                 | 25.0      | DK 8948          | TEH            | Sandstone                     | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted   | rounded<br>sub-spherical                   |                                          | 0.0                           |                                      |
| EOH at 25.0 m        |           |                  |                |                               |                         | Comments: hard ground                          |                                            |                                          |                               |                                      |

000398

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WARRANGA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 07-NOV-90

HOLE NUMBER : M188

LOGGED BY : CJB  
TOTAL DEPTH : 27.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 589600 NORTHING: 6746800 R.L.: 225.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M188

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor            | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8951          | QA             | Sand                                     | medium<br>red<br>brown  | medium sand<br>mod.well sorted                   | sub-rounded<br>mod.spherical<br>frosted    |                                          | 0.5<br>trace                  |                                       |
| 2.0                  | 4.0       | DK 8952          | QA             | Sand                                     | medium<br>red<br>brown  | medium sand<br>mod.well sorted                   | sub-rounded<br>mod.spherical<br>frosted    |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 8953          | Q              | Sand                                     | med.drk<br>red<br>brown | medium sand to<br>coarse sand<br>f.poorly sorted | sub-rounded<br>mod.spherical<br>frosted    | weak<br>cons                             | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 8954          | Q              | Sand                                     | med.drk<br>red<br>brown | medium sand to<br>coarse sand<br>f.poorly sorted | sub-rounded<br>mod.spherical<br>frosted    | weak<br>cons                             | 0.1                           |                                       |
| 0.0                  | 8.0       | DK 8964          |                | Sandstone<br>ferrug.<br>Composite Sample |                         |                                                  |                                            |                                          |                               | 0.56                                  |
| 8.0                  | 10.0      | DK 8955          | Q              | Sand                                     | med.drk<br>red<br>brown | v.fine sand to<br>medium sand<br>f.poorly sorted | sub-rounded<br>mod.spherical<br>frosted    | weak<br>cons                             | 0.1                           |                                       |
| 10.0                 | 12.0      | DK 8956          | Q              | Sand                                     | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>mod.spherical<br>frosted    |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8957          | Q              | Sand                                     | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>mod.spherical<br>clear      | weak<br>cons                             | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8958          | Q              | Sand                                     | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>mod.spherical<br>clear      | weak<br>cons                             | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8959          | TEH            | Sand                                     | med.drk<br>red          | medium sand                                      | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |

000399

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor     | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-----------------------------------|----------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8960          | TEH            | Sand                              | med.drk                    | medium sand                     | sub-rounded                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | Sandstone<br>ferrug.              | red<br>brown               | mod.well sorted                 | mod.spherical<br>clear                     |                                          |                               |                                       |
| 20.0                 | 22.0      | DK 8961          | TEH            | Sand                              | med.drk                    | medium sand                     | sub-rounded                                |                                          | 0.0                           |                                       |
|                      |           |                  |                | Sandstone<br>ferrug.              | red                        | f.well sorted                   | sub-spherical<br>clear                     |                                          |                               |                                       |
| 22.0                 | 24.0      | DK 8962          | TEH            | Sand                              | med.drk                    | medium sand                     | sub-rounded                                |                                          | 0.0                           |                                       |
|                      |           |                  |                | Sandstone<br>ferrug.              | red                        | f.well sorted                   | sub-spherical<br>clear                     |                                          |                               |                                       |
| 24.0                 | 26.0      | DK 8963          | TEH            | Sandstone<br>ferrug.<br>Sandstone | med.lgt<br>red<br>brown    | medium sand<br>v.well sorted    | rounded<br>spherical<br>clear              | ceme<br>Siliceous                        | 0.0                           |                                       |
| 26.0                 | 27.0      |                  | TEH            | Sandstone                         | med.lgt<br>yellow<br>brown | medium sand<br>v.well sorted    | Comments: rounded<br>spherical<br>clear    | ceme<br>Siliceous                        | 0.0                           |                                       |
| 8.0                  | 27.0      | DK 8965          |                | Composite Sample                  |                            | Comments: very hard ground      |                                            |                                          |                               | 1.29                                  |

EOH at 27.0 m

000400

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WARRANGA  
JOB NO : T63  
GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 588400 NORTHING: 6746700 R.L.: 220.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M189

LOGGED BY : CJB

TOTAL DEPTH : 33.0

SHEET 1 OF 2 HOLE NUMBER : M189

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING            | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|------------------------|--------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8966          | QA             | Sand                                  | medium<br>red<br>brown | fine sand to<br>medium sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8967          | QB             | Sand<br>calcar.                       | medium<br>red<br>brown | fine sand<br>well sorted                   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 8968          | QB             | Sand<br>calcar.                       | medium<br>red<br>brown | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical<br>clear      | weak<br>cons<br>Calcareous               | 0.2<br>light trace            |                                       |
| 0.0                  | 6.0       | DK 8983          |                | Composite Sample                      |                        |                                            |                                            |                                          |                               | 0.42                                  |
| 6.0                  | 8.0       | DK 8969          | Q              | Sand<br>calcar.                       | medium<br>red<br>brown | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical<br>clear      | weak<br>cons<br>Calcareous               | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 8970          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown   | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical<br>clear      | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8971          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown   | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical<br>clear      | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8972          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown   | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical<br>clear      | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8973          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown   | medium sand<br>well sorted                 | sub-rounded<br>sub-spherical<br>clear      | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |

000401

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 16.0                 | 18.0      | DK 8974          | Q              | Sand                          | dark                       | medium sand                                  | sub-rounded                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | silty<br>Sandstone<br>ferrug. | red<br>brown               | f.well sorted                                | sub-spherical<br>clear                     | Ferruginous                              |                               |                                       |
| 18.0                 | 20.0      | DK 8975          | Q              | Sand                          | dark                       | medium sand                                  | sub-rounded                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | silty<br>Sandstone<br>ferrug. | red<br>brown               | mod.well sorted                              | sub-spherical<br>clear                     | Ferruginous                              |                               |                                       |
| 6.0                  | 20.0      | DK 8984          |                | Composite Sample              |                            |                                              |                                            |                                          |                               | 0.31                                  |
| 20.0                 | 22.0      | DK 8976          | Q              | Sand                          | dark                       | medium sand                                  | sub-rounded                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | silty<br>Sandstone<br>ferrug. | red<br>brown               | mod.well sorted                              | sub-spherical<br>clear                     | Ferruginous                              |                               |                                       |
| 22.0                 | 24.0      | DK 8977          | TEH            | Sand                          | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical<br>clear      |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8978          | TEH            | Sand                          | medium<br>yellow<br>brown  | medium sand<br>v.well sorted                 | rounded<br>spherical<br>clear              |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8979          | TEH            | Sand                          | med.lgt<br>yellow<br>brown | medium sand<br>v.well sorted                 | rounded<br>spherical<br>clear              |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8980          | TEH            | Sand                          | med.lgt<br>yellow<br>brown | medium sand<br>v.well sorted                 | rounded<br>spherical<br>clear              |                                          | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8981          | TEH            | Sand                          | medium                     | fine sand                                    | sub-rounded                                | poor<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | Sandstone                     | red<br>brown               | well sorted                                  | sub-spherical<br>smooth                    |                                          |                               |                                       |
| 32.0                 | 33.0      | DK 8982          | TEH            | Sandstone                     | medium<br>red<br>brown     | fine sand<br>f.well sorted                   | rounded<br>sub-spherical<br>smooth         | ceme<br>Siliceous                        | 0.0                           |                                       |
| 20.0                 | 33.0      | DK 8985          |                | Composite Sample              |                            |                                              |                                            |                                          |                               | 0.20                                  |

EOH at 33.0 m

000402



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 08-NOV-90

HOLE NUMBER : M190  
 LOGGED BY : CJB  
 TOTAL DEPTH : 28.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 587400 NORTHING: 6746400 R.L.: 215.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M190

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8986          | QA             | Sand                                  | med.lgt<br>red<br>brown | fine sand<br>f.well sorted      | interm.round.<br>mod.spherical<br>frosted  |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8987          | QB             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>f.well sorted      | interm.round.<br>mod.spherical             |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 8988          | QB             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>f.well sorted      | interm.round.<br>mod.spherical             |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 6.0       | DK 9000          |                | Composite Sample                      |                         |                                 |                                            |                                          |                               | 0.55                                  |
| 6.0                  | 8.0       | DK 8989          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown  | fine sand<br>f.well sorted      | interm.round.<br>mod.spherical             | Ferruginous                              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8990          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown  | fine sand<br>f.well sorted      | interm.round.<br>mod.spherical             | Ferruginous                              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8991          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown  | fine sand<br>f.well sorted      | interm.round.<br>mod.spherical             | Ferruginous                              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8992          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown  | fine sand<br>f.well sorted      | interm.round.<br>mod.spherical             | Ferruginous                              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 8993          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown  | fine sand<br>f.well sorted      | interm.round.<br>mod.spherical             | Ferruginous                              | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8994          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown  | fine sand<br>f.well sorted      | interm.round.<br>mod.spherical             | Ferruginous                              | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 8995          | Q              | Sand<br>silty<br>Sandstone            | medium<br>red<br>brown  | fine sand<br>f.well sorted      | interm.round.<br>mod.spherical             | Ferruginous                              | 0.0                           |                                       |

000403

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 6.0                  | 20.0      | DK 9001          |                | Composite Sample              |                            |                                 |                                            |                                          |                               | 0.33                                  |
| 20.0                 | 22.0      | DK 8996          | TEH            | Sand                          | med.lgt<br>brown           | medium sand<br>well sorted      | interm.round.<br>mod.spherical<br>clear    |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8997          | TEH            | Sand                          | med.lgt<br>yellow<br>brown | medium sand<br>v.well sorted    | sub-rounded<br>sub-spherical<br>clear      |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8998          | TEH            | Sand                          | med.lgt<br>yellow<br>brown | medium sand<br>v.well sorted    | sub-rounded<br>sub-spherical<br>clear      |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8999          | TEH            | Sandstone                     | med.lgt<br>yellow<br>brown | medium sand<br>well sorted      | sub-rounded<br>sub-spherical<br>clear      | ceme<br>Siliceous                        | 0.0                           |                                       |
| 20.0                 | 28.0      | DK 9002          |                | Composite Sample              |                            |                                 |                                            |                                          |                               | 0.25                                  |

EOH at 28.0 m

000404

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 08-NOV-90

HOLE NUMBER : M191  
 LOGGED BY : CJB  
 TOTAL DEPTH : 27.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 586600 NORTHING: 6746100 R.L.: 210.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M191

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9003          | QA             | Sand                                  | med.lgt<br>red<br>brown | medium sand<br>well sorted                   | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 9004          | QA             | Sand                                  | med.lgt<br>red<br>brown | medium sand<br>well sorted                   | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 9005          | QB             | Sand<br>calcar.                       | medium<br>red<br>brown  | medium sand<br>f.well sorted                 | sub-rounded<br>sub-spherical<br>smooth     |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 9006          |                | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br>well sorted                   | rounded<br>sub-spherical<br>smooth         | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 0.0                  | 8.0       | DK 9014          | Q              | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.41                                  |
| 8.0                  | 10.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br>well sorted                   | rounded<br>sub-spherical<br>smooth         | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br>well sorted                   | rounded<br>sub-spherical<br>smooth         | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 12.0                 | 14.0      |                  | Q              | Sand<br>Sandstone<br>ferrug.          | med.drk<br>red<br>brown | medium sand to<br>coarse sand<br>well sorted | rounded<br>sub-spherical<br>smooth         | v.we<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 9007          | Q              | Sand<br>Sandstone<br>ferrug.          | med.drk<br>red<br>brown | medium sand to<br>coarse sand<br>well sorted | rounded<br>sub-spherical<br>smooth         | v.we<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 16.0      | DK 9015          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.39                                  |

000405

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 16.0                 | 18.0      | DK 9008          | Q              | Sand<br>silty                 | med.drk<br>red<br>brown   | medium sand<br>f.well sorted    | rounded<br>sub-spherical<br>smooth         |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 9009          | Q              | Sand<br>silty                 | med.drk<br>red<br>brown   | medium sand<br>f.well sorted    | rounded<br>sub-spherical<br>smooth         |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 9010          | TEH            | Sand                          | medium<br>yellow<br>brown | medium sand<br>v.well sorted    | v.well round.<br>spherical<br>smooth       |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 9011          | TEH            | Sand                          | medium<br>yellow<br>brown | medium sand<br>v.well sorted    | v.well round.<br>spherical<br>smooth       |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 9012          | TEH            | Sand                          | medium<br>yellow<br>brown | medium sand<br>v.well sorted    | v.well round.<br>spherical<br>smooth       |                                          | 0.0                           |                                       |
| 26.0                 | 27.0      | DK 9013          | TEH            | Sandstone<br>silic.           | med.lgt<br>yellow<br>grey | medium sand<br>v.well sorted    | v.well round.<br>spherical<br>smooth       | ceme<br>Siliceous                        | 0.0                           |                                       |
| 16.0                 | 27.0      | DK 9016          |                | Composite Sample              |                           | Comments: hard ground           |                                            |                                          |                               | 0.25                                  |

EOH at 27.0 m

000406

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 09-NOV-90

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 586000 NORTHING: 6745900 R.L.: 205.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M192  
 LOGGED BY : CJB  
 TOTAL DEPTH : 25.0

SHEET 1 OF 2 HOLE NUMBER : M192

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9017          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>mod.well sorted                 | interm.round.<br>mod.spherical             |                                          | 0.5<br>trace                  |                                       |
| 2.0                  | 4.0       | DK 9018          | QB             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>mod.well sorted                 | interm.round.<br>mod.spherical             |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 9019          | QB             | Sand<br>calcar.                       | medium<br>red<br>brown  | fine sand<br>f.well sorted                   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 9025          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.56                                  |
| 6.0                  | 8.0       |                  | Q              | Sand<br>silty<br>Clay                 | med.drk<br>red<br>brown | v.fine sand to<br>fine sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand<br>f.well sorted                   | interm.round.<br>mod.spherical             | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand<br>f.well sorted                   | sub-rounded<br>mod.spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 12.0                 | 14.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand<br>f.well sorted                   | sub-rounded<br>mod.spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 9020          | Q              | Sand<br>Sandstone<br>ferrug.          | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 6.0                  | 16.0      | DK 9026          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.34                                  |

000407

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 16.0                 | 18.0      | DK 9021          | Q              | Sand                          | medium                    | fine sand to                                 | rounded                                    | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | Sandstone<br>ferrug.          | red<br>brown              | medium sand<br>f.well sorted                 | sub-spherical                              | Ferruginous                              |                               |                                       |
| 18.0                 | 20.0      | DK 9022          | TEH            | Sand                          | medium<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 9023          | TEH            | Sand                          | medium<br>yellow<br>brown | fine sand to<br>medium sand<br>well sorted   | rounded<br>sub-spherical<br>clear          |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 9024          | TEH            | Sand                          | med.lgt<br>grey           | medium sand<br>v.well sorted                 | rounded<br>sub-spherical<br>clear          |                                          | 0.0                           |                                       |
| 24.0                 | 25.0      |                  | TEH            | Sandstone<br>silic.           | med.lgt<br>grey           | medium sand<br>v.well sorted                 | rounded<br>sub-spherical<br>clear          | ceme                                     | 0.0                           |                                       |
| 16.0                 | 25.0      | DK 9027          |                | Composite Sample              |                           | Comments: hard ground(silcrete)              |                                            |                                          |                               | 0.17                                  |

EOH at 25.0 m

000408

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 09-NOV-90

HOLE NUMBER : M193  
 LOGGED BY : CJB  
 TOTAL DEPTH : 25.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 584800 NORTHING: 6745600 R.L.: 205.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M193

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9028          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 9029          | QB             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>f.well sorted                   | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 9030          | QB             | Sand<br>calcar.                       | medium<br>red<br>brown  | fine sand<br>f.well sorted                   | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 9036          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.63                                  |
| 6.0                  | 9.0       | DK 9031          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br>f.well sorted                 | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 9.0                  | 11.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br>f.well sorted                 | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 11.0                 | 13.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br>f.well sorted                 | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 13.0                 | 15.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br>f.well sorted                 | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 15.0                 | 17.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br>f.well sorted                 | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 6.0                  | 17.0      | DK 9037          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.41                                  |

000409

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 17.0                 | 19.0      | DK 9032          | TEH            | Sand                          | medium<br>red<br>brown     | medium sand<br>well sorted      | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 19.0                 | 21.0      | DK 9033          | TEH            | Sand                          | med.lgt<br>yellow<br>brown | medium sand<br>v.well sorted    | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 21.0                 | 22.0      | DK 9034          | TEH            | Sand                          | med.lgt<br>yellow<br>brown | medium sand<br>v.well sorted    | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 9035          | TEH            | Sand                          | light<br>yellow<br>brown   | medium sand<br>v.well sorted    | rounded<br>sub-spherical<br>clear          |                                          | 0.0                           |                                       |
| 24.0                 | 25.0      |                  | TEH            | Sandstone<br>silic.           | light<br>grey<br>brown     | medium sand<br>v.well sorted    | rounded<br>sub-spherical<br>clear          | ceme<br>Siliceous                        | 0.0                           |                                       |
| 17.0                 | 25.0      | DK 9038          |                | Composite Sample              |                            | Comments: hard ground           |                                            |                                          |                               | 0.20                                  |

EOH at 25.0 m

000410



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 09-NOV-90

HOLE NUMBER : M194  
 LOGGED BY : CJB  
 TOTAL DEPTH : 19.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 583400 NORTHING: 6745300 R.L.: 200.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M194

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING            | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|--------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9039          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>f.well sorted                 | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 9040          | QB             | Sand<br>calcar.                       | medium<br>red<br>brown  | fine sand<br>f.well sorted                 | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 9041          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>well sorted | rounded<br>spherical                       | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 9043          |                | Composite Sample                      |                         |                                            |                                            |                                          |                               | 0.71                                  |
| 6.0                  | 8.0       |                  | Q              | Sand<br>Sandstone<br>ferrug.          | med.drk<br>red<br>brown | medium sand<br>well sorted                 | rounded<br>spherical                       | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br>Sandstone<br>ferrug.          | med.drk<br>red<br>brown | medium sand<br>well sorted                 | rounded<br>spherical                       | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | Q              | Sand<br>Sandstone<br>ferrug.          | med.drk<br>red<br>brown | medium sand<br>well sorted                 | rounded<br>spherical                       | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 12.0                 | 14.0      |                  | Q              | Sand<br>Sandstone<br>ferrug.          | med.drk<br>red<br>brown | medium sand<br>well sorted                 | rounded<br>spherical                       | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 14.0                 | 16.0      |                  | Q              | Sand<br>Sandstone<br>ferrug.          | med.drk<br>red<br>brown | medium sand<br>well sorted                 | rounded<br>spherical                       | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |

000411

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING           | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE           | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|-----------------------------|------|------------------|----------------|-------------------------------|------------------------|-------------------------------------------|------------------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 16.0                        | 18.0 | DK 9042          | TEH            | Sandstone                     | medium<br>red<br>brown | medium sand<br>f.well sorted              | sub-rounded<br>sub-spherical<br>clear                | ceme                                     | 0.0                           |                                      |
| 18.0                        | 19.0 |                  |                |                               | med.lgt<br>grey        | medium sand<br>f.well sorted<br>Comments: | hard ground<br>sub-rounded<br>sub-spherical<br>clear | ceme                                     | 0.0                           |                                      |
| 6.0                         | 19.0 | DK 9044          |                | Composite Sample              |                        |                                           |                                                      |                                          |                               | 0.42                                 |

EOH at 19.0 m

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WARRANGA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 09-NOV-90

HOLE NUMBER : M195

LOGGED BY : CJB  
TOTAL DEPTH : 10.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 581500 NORTHING: 6744800 R.L.: 200.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M195

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9045          | QA             | Sand                          | med.lgt                 | medium sand                     | sub-rounded                                | v.we<br>cons                             | 0.5                           |                                       |
|                      |           |                  |                | calcar.                       | red<br>brown            | mod.well sorted                 | sub-spherical<br>smooth                    |                                          | trace                         |                                       |
| 2.0                  | 4.0       | DK 9046          | QB             | Sand                          | medium                  | medium sand                     | sub-rounded                                | v.we<br>cons                             | 0.2                           |                                       |
|                      |           |                  |                | calcar.                       | red<br>brown            | mod.well sorted                 | sub-spherical<br>smooth                    |                                          | light trace                   |                                       |
| 4.0                  | 6.0       | DK 9047          | Q              | Sand                          | med.drk                 | medium sand                     | sub-rounded                                | v.we<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | silty                         | red<br>brown            | mod.well sorted                 | sub-spherical<br>smooth                    |                                          |                               |                                       |
| 6.0                  | 8.0       |                  | Q              | Sandstone                     | med.drk<br>red<br>brown | medium sand<br>f.well sorted    | rounded<br>sub-spherical<br>clear          | ceme                                     | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 9048          | Q              | Sandstone<br>ferrug.          | med.drk<br>red<br>brown | medium sand<br>well sorted      | sub-rounded<br>sub-spherical<br>clear      | ceme                                     | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 9049          |                | Composite Sample              |                         |                                 |                                            |                                          |                               | 0.79                                  |

EOH at 10.0 m

000413

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WARRANGA  
JOB NO : T63  
GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 579600 NORTHING: 6744300 R.L.: 195.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M196

LOGGED BY : CJB

TOTAL DEPTH : 4.0

SHEET 1 OF 1 HOLE NUMBER : M196

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | Q              | Calcrete                      | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | ceme<br>Calcareous                       | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | Q              | Calcrete                      | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | ceme<br>Calcareous                       | 0.0                           |                                       |

EOH at 4.0 m

Comments: hard ground

000414

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 09-NOV-90

HOLE NUMBER : M197  
 LOGGED BY : CJB  
 TOTAL DEPTH : 27.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 586300 NORTHING: 6747100 R.L.: 210.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M197

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9050          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>f.well sorted                   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 9051          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>f.well sorted                   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 9052          | QB             | Calcrete                              | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | cons<br>Calcareous                       | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 9064          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.42                                  |
| 6.0                  | 8.0       | DK 9053          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand<br>f.well sorted                   | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 9054          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand<br>f.well sorted                   | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 9055          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand<br>f.well sorted                   | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 6.0                  | 12.0      | DK 9065          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.35                                  |
| 12.0                 | 14.0      | DK 9056          | Q              | Sand<br>ferrug.                       | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 9057          | TEH            | Sand<br>ferrug.                       | med.drk<br>red<br>brown | medium sand<br>f.well sorted                 | rounded<br>spherical                       |                                          | 0.0                           |                                       |

000415

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor          | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------------|----------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 16.0                 | 18.0      | DK 9058          | TEH            | Sand                                   | medium<br>red<br>brown     | medium sand<br>v.well sorted    | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 9059          | TEH            | Sand                                   | medium<br>red<br>brown     | medium sand<br>v.well sorted    | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 9060          | TEH            | Sand                                   | med.lgt<br>yellow<br>brown | medium sand<br>v.well sorted    | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 9061          | TEH            | Sand                                   | med.lgt<br>yellow<br>brown | medium sand<br>v.well sorted    | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 9062          | TEH            | Sand                                   | med.lgt<br>yellow<br>brown | medium sand<br>v.well sorted    | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 26.0                 | 27.0      | DK 9063          | TEH            | Sand                                   | medium<br>red<br>brown     | medium sand<br>v.well sorted    | rounded<br>spherical                       | ceme                                     | 0.0                           |                                       |
| 12.0                 | 27.0      | DK 9066          |                | Sandstone<br>silty<br>Composite Sample |                            |                                 |                                            |                                          |                               | 0.23                                  |

EOH at 27.0 m

000416

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 09-NOV-90

HOLE NUMBER : M198  
 LOGGED BY : CJB  
 TOTAL DEPTH : 22.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 586400 NORTHING: 6748100 R.L.: 215.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M198

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9067          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>f.well sorted      | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 9068          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>f.well sorted      | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 9069          | QB             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>f.well sorted      | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 9070          | QB             | Sand<br>calcar.                       | medium<br>red<br>brown  | fine sand<br>f.well sorted      | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 8.0       | DK 9074          |                | Composite Sample                      |                         |                                 |                                            |                                          |                               | 0.51                                  |
| 8.0                  | 10.0      | DK 9071          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br>f.well sorted    | rounded<br>sub-spherical                   | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br>f.well sorted    | rounded<br>sub-spherical                   | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 12.0                 | 14.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br>f.well sorted    | rounded<br>sub-spherical                   | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 14.0                 | 16.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | medium sand<br>f.well sorted    | rounded<br>sub-spherical                   | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |

000417

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 16.0                 | 18.0      |                  | Q              | Sand                          | dark                | medium sand                     | rounded                                    | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | silty<br>Sandstone<br>ferrug. | red<br>brown        | f.well sorted                   | sub-spherical                              | Ferruginous                              |                               |                                       |
| 18.0                 | 20.0      | DK 9072          | TEH            | Sand                          | dark                | medium sand                     | rounded                                    | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | Sandstone<br>ferrug.          | red<br>brown        | f.well sorted                   | sub-spherical                              | Ferruginous                              |                               |                                       |
| 20.0                 | 22.0      | DK 9073          | TEH            | Sandstone<br>silty            | medium<br>grey      | medium sand<br>f.well sorted    | rounded<br>sub-spherical                   | ceme<br>Siliceous                        | 0.0                           |                                       |
| 8.0                  | 22.0      | DK 9075          |                | Composite Sample              |                     |                                 |                                            |                                          |                               | 0.32                                  |

EOH at 22.0 m

000418



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 09-NOV-90

HOLE NUMBER : M199  
 LOGGED BY : CJB  
 TOTAL DEPTH : 19.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 586400 NORTHING: 6749100 R.L.: 220.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M199

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9076          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>f.well sorted                   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 9077          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>f.well sorted                   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 9078          | QA             | Sand<br>calcar.                       | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | Q              | Sand<br>ferrug.                       | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 8.0       | DK 9082          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.64                                  |
| 8.0                  | 10.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 12.0                 | 14.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 9079          | Q              | Sand<br>Sandstone<br>ferrug.          | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |

000419

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 16.0                 | 18.0      | DK 9080          | TEH            | Sandstone<br>ferrug. laterit  | medium<br>brown           | medium sand<br>f.poorly sorted  | interm.round.<br>mod.spherical             | cons<br>Ferruginous                      | 0.0                           |                                       |
| 18.0                 | 19.0      | DK 9081          | TEH            | Sandstone<br>silic.           | med.lgt<br>yellow<br>grey | medium sand<br>mod.well sorted  | interm.round.<br>mod.spherical             | cons<br>Siliceous                        | 0.0                           |                                       |
| 8.0                  | 19.0      | DK 9083          |                | Composite Sample              |                           |                                 |                                            |                                          |                               | 0.43                                  |

EOH at 19.0 m

000420

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WARRANGA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 10-NOV-90

HOLE NUMBER : M200

LOGGED BY : CJB  
TOTAL DEPTH : 17.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 586500 NORTHING: 6750200 R.L.: 230.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M200

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9084          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>f.well sorted                   | interm.round.<br>mod.spherical             |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 9085          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>calcar.<br>Clay               | medium<br>red<br>brown  | v.fine sand to<br>fine sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 9088          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.52                                  |
| 6.0                  | 8.0       |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | weak<br>cons                             | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | weak<br>cons                             | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | weak<br>cons                             | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 9086          | TEH            | Sand<br>ferrug.                       | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 9087          | TEH            | Sand<br>ferrug.                       | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 17.0      |                  | TEH            | Sandstone<br>silic.                   | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | ceme                                     | 0.0                           |                                       |

Comments: hard ground

000421

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WARRANGA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 10-NOV-90

HOLE NUMBER : M201

LOGGED BY : CJB  
TOTAL DEPTH : 17.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 586600 NORTHING: 6751200 R.L.: 240.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M201

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9090          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>f.well sorted      | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 9091          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand<br>f.well sorted      | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>clayey                        | medium<br>red<br>brown  | coarse silt<br>mod.well sorted  | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 9097          |                | Composite Sample                      |                         |                                 |                                            |                                          |                               | 0.42                                  |
| 6.0                  | 8.0       | DK 9092          | Q              | Sand                                  | med.drk<br>red<br>brown | fine sand<br>well sorted        | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 9093          | Q              | Sand                                  | med.drk<br>red<br>brown | medium sand<br>well sorted      | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 9094          | Q              | Sand                                  | med.drk<br>red<br>brown | medium sand<br>well sorted      | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 9095          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br>f.well sorted    | sub-rounded<br>mod.spherical               | weak<br>cons                             | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 9096          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br>f.well sorted    | sub-rounded<br>mod.spherical               | weak<br>cons                             | 0.0                           |                                       |
| 16.0                 | 17.0      |                  | TEH            | Sandstone<br>silic.                   | medium<br>red<br>brown  | medium sand<br>f.well sorted    | sub-rounded<br>mod.spherical               | ceme                                     | 0.0                           |                                       |
| 6.0                  | 17.0      | DK 9098          |                | Composite Sample                      |                         |                                 |                                            |                                          |                               | 0.20                                  |

000422

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WARRANGA  
JOB NO : T63  
GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 586600 NORTHING: 6752800 R.L.: 245.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M202

LOGGED BY : CJB

TOTAL DEPTH : 16.0

SHEET 1 OF 1 HOLE NUMBER : M202

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9099          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | medium sand<br>f.well sorted                 | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 9100          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | medium sand<br>f.well sorted                 | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>clayey                        | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 9105          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.54                                  |
| 6.0                  | 8.0       | DK 9101          | Q              | Sand<br>ferrug.                       | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 9102          | Q              | Sand                                  | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 12.0      | DK 9103          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>sub-spherical             | weak<br>cons                             | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 9104          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | interm.round.<br>sub-spherical             | weak<br>cons                             | 0.0                           |                                       |
| 14.0                 | 16.0      |                  | TEH            | Sandstone<br>silic.                   | medium<br>grey<br>brown | medium sand<br>well sorted                   | sub-rounded<br>sub-spherical               | ceme                                     | 0.0                           |                                       |
| 6.0                  | 16.0      | DK 9106          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.45                                  |

EOH at 16.0 m

000423

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 10-NOV-90

HOLE NUMBER : M203

LOGGED BY : CJB  
 TOTAL DEPTH : 12.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 586700 NORTHING: 6754200 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M203

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9107          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown   | fine sand<br>f.well sorted      | sub-rounded<br>mod.spherical               |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       | DK 9108          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown   | medium sand<br>f.well sorted    | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 9109          | QA             | Sand<br>calcar.<br>Sand               | medium<br>red<br>brown    | medium sand<br>f.well sorted    | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 6.0       | DK 9110          |                | Composite Sample                      |                           |                                 |                                            |                                          |                               | 0.55                                  |
| 6.0                  | 8.0       |                  | Q              | Sandstone<br>ferrug.<br>Sand<br>silty | med.drk<br>red<br>brown   | medium sand<br>f.well sorted    | sub-rounded<br>sub-spherical               | weak<br>cons                             | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown   | medium sand<br>f.well sorted    | sub-rounded<br>sub-spherical               | weak<br>cons                             | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | Q              | Sandstone<br>silic.                   | medium<br>yellow<br>brown | medium sand<br>f.well sorted    | sub-rounded<br>sub-spherical               | ceme                                     | 0.0                           |                                       |
| 6.0                  | 12.0      | DK 9111          |                | Composite Sample                      |                           | Comments: hard ground           |                                            |                                          |                               | 0.27                                  |

EOH at 12.0 m

000424

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WARRANGA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 10-NOV-90

HOLE NUMBER : M204

LOGGED BY : CJB  
TOTAL DEPTH : 28.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 586800 NORTHING: 6755800 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M204

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9112          | QA             | Calcrete                      | med.lgt                | medium sand                                  | sub-rounded                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | Sand<br>calcar.               | red<br>brown           | f.well sorted                                | sub-spherical                              |                                          |                               |                                       |
| 2.0                  | 4.0       | DK 9113          | QA             | Calcrete                      | med.lgt                | medium sand                                  | sub-rounded                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | Sand<br>calcar.               | red<br>brown           | f.well sorted                                | sub-spherical                              |                                          |                               |                                       |
| 4.0                  | 6.0       | DK 9114          | Q              | Sand                          | medium                 | fine sand to                                 | sub-rounded                                | poor<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                | silty<br>Sandstone<br>ferrug. | red<br>brown           | medium sand<br>f.well sorted                 | mod.spherical                              |                                          |                               |                                       |
| 0.0                  | 6.0       | DK 9122          |                | Composite Sample              |                        |                                              |                                            |                                          |                               | 0.31                                  |
| 6.0                  | 8.0       |                  | Q              | Sandstone<br>ferrug.          | medium<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               | ceme                                     | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sandstone<br>ferrug.          | medium<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               | ceme                                     | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | Q              | Sandstone<br>ferrug.          | medium<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               | poor<br>cons                             | 0.0                           |                                       |
| 12.0                 | 14.0      |                  | Q              | Sandstone<br>ferrug.          | medium<br>red<br>brown | fine sand<br>f.well sorted                   | sub-rounded<br>sub-spherical               | weak<br>cons                             | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 9115          | TO             | Sand                          | medium                 | medium sand                                  | sub-rounded                                | weak<br>cons                             | 0.0                           |                                       |
|                      |           |                  |                |                               | red<br>brown           | well sorted                                  | sub-spherical                              |                                          |                               |                                       |

000425

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 16.0                 | 18.0      | DK 9116          | TO             | Sand                          | medium<br>red<br>brown  | medium sand<br>well sorted      | sub-rounded<br>sub-spherical               | weak<br>cons                             | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 9117          | TO             | Sand                          | med.lgt<br>red<br>brown | medium sand<br>f.well sorted    | sub-rounded<br>sub-spherical               | weak<br>cons                             | 0.2<br>light trace            |                                       |
| 6.0                  | 20.0      | DK 9123          |                | Composite Sample              |                         |                                 |                                            |                                          |                               | 0.20                                  |
| 20.0                 | 22.0      | DK 9118          | TEH            | Spongolite<br>Sand            | med.lgt<br>red<br>brown | medium sand<br>f.well sorted    | sub-rounded<br>sub-spherical               |                                          | 3.0                           |                                       |
| 20.0                 | 22.0      | DK 9124          | TEH            | Spongolite<br>Sand            | med.lgt<br>red<br>brown | medium sand<br>f.well sorted    | sub-rounded<br>sub-spherical               |                                          | 3.0                           | 1.48                                  |
| 22.0                 | 24.0      | DK 9119          | TEH            | Sandstone<br>Spongolite       | med.lgt<br>red<br>brown | medium sand<br>f.well sorted    | sub-rounded<br>sub-spherical               | poor<br>cons                             | 0.5<br>trace                  | 0.35                                  |
| 24.0                 | 26.0      | DK 9120          | PAL            | Igneous (gen)<br>weath.       | medium<br>green         | medium sand                     |                                            |                                          | 0.0                           | 0.59                                  |
| 26.0                 | 28.0      | DK 9121          | PAL            | Igneous (gen)<br>weath.       | medium<br>green         | medium sand                     |                                            |                                          | 0.0                           | 1.40                                  |

EOH at 28.0 m

000426



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 10-NOV-90

HOLE NUMBER : M205  
 LOGGED BY : CJB  
 TOTAL DEPTH : 26.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 586800 NORTHING: 6757300 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M205

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor      | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------------------|-------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9125          | QA             | Sand<br>calcar.                    | med.lgt<br>red<br>brown | fine sand<br>f.well sorted      | sub-rounded<br>spherical                   |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 9126          | QA             | Sand<br>calcar.                    | med.lgt<br>red<br>brown | fine sand<br>f.well sorted      | sub-rounded<br>spherical                   |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 9127          | QB             | Sand<br>calcar.<br>Sand<br>ferrug. | medium<br>red<br>brown  | medium sand<br>f.well sorted    | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 9134          |                | Composite Sample                   |                         |                                 |                                            |                                          |                               | 0.37                                  |
| 6.0                  | 8.0       | DK 9128          | Q              | Sand<br>silty<br>Sand<br>ferrug.   | medium<br>red<br>brown  | medium sand<br>f.well sorted    | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br>silty<br>Sand<br>ferrug.   | medium<br>red<br>brown  | medium sand<br>f.well sorted    | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | Q              | Sand<br>silty<br>Sand<br>ferrug.   | med.drk<br>red<br>brown | medium sand<br>f.well sorted    | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 12.0                 | 14.0      |                  | Q              | Sand<br>silty<br>Sand<br>ferrug.   | med.drk<br>red<br>brown | medium sand<br>f.well sorted    | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 14.0                 | 16.0      |                  | Q              | Sand<br>silty<br>Sand<br>ferrug.   | med.drk<br>red<br>brown | medium sand<br>f.well sorted    | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 6.0                  | 16.0      | DK 9135          |                | Composite Sample                   |                         |                                 |                                            |                                          |                               | 0.13                                  |

000427

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|----------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 16.0                        | 18.0 | DK 9129          | TO             | Sand                          | med.lgt<br>brown           | fine sand to<br>medium sand<br>well sorted   | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 18.0                        | 20.0 | DK 9130          | TO             | Sand                          | med.lgt<br>yellow<br>brown | medium sand<br>well sorted                   | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 20.0                        | 22.0 | DK 9131          | TO             | Sand                          | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>well sorted | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 9132          | TO             | Sand<br>gritty                | med.lgt<br>yellow<br>brown | coarse sand<br>f.well sorted                 | sub-rounded<br>spherical                   |                                          | 0.0                           |                                       |
| 24.0                        | 26.0 | DK 9133          | TEH            | Grit<br>silic.                | light<br>grey              | v.crse sand<br>f.well sorted                 | rounded<br>spherical                       | ceme                                     | 0.0                           |                                       |
| 16.0                        | 26.0 | DK 9136          |                | Composite Sample              |                            | Comments: too hard to drill                  |                                            |                                          |                               | 0.01                                  |

EOH at 26.0 m

000428

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WARRANGA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 10-NOV-90

HOLE NUMBER : M206  
 LOGGED BY : CJB  
 TOTAL DEPTH : 25.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 586900 NORTHING: 6758700 R.L.: 260.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M206

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9137          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 9138          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 9139          | QB             | Sand<br>calcar.                       | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 6.0       | DK 9146          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               |                                       |
| 6.0                  | 8.0       |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               | weak<br>cons                             | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               | weak<br>cons                             | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               | weak<br>cons                             | 0.0                           |                                       |
| 12.0                 | 14.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               | weak<br>cons                             | 0.0                           |                                       |
| 6.0                  | 14.0      | DK 9147          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               |                                       |
| 14.0                 | 16.0      | DK 9140          | TO             | Sand                                  | medium<br>red<br>brown  | medium sand                                  | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |

000429

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|----------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |      |                  |                |                               |                            |                                              |                                            |                                          |                               |                                       |
| 16.0                        | 18.0 | DK 9141          | TO             | Sand                          | med.lgt<br>yellow<br>brown | medium sand<br>well sorted                   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                        | 20.0 | DK 9142          | TO             | Sand<br>gritty                | light<br>yellow<br>brown   | medium sand to<br>coarse sand<br>well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                        | 22.0 | DK 9143          | TO             | Sand<br>gritty                | light<br>yellow<br>brown   | coarse sand<br>well sorted                   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 22.0                        | 24.0 | DK 9144          | TEH            | Grit                          | light<br>yellow<br>grey    | coarse sand<br>f.well sorted                 | v.well round.<br>spherical                 |                                          | 0.0                           |                                       |
| 24.0                        | 25.0 | DK 9145          | TEH            | Grit<br>silic.                | light<br>yellow<br>grey    | coarse sand<br>f.well sorted                 | v.well round.<br>spherical                 |                                          | 0.0                           |                                       |
| 14.0                        | 25.0 | DK 9148          |                | Composite Sample              |                            | Comments: too hard to drill                  |                                            |                                          |                               |                                       |

EOH at 25.0 m

000430

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WARRANGA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 10-NOV-90

HOLE NUMBER : M207

LOGGED BY : CJB  
TOTAL DEPTH : 25.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 587000 NORTHING: 6760400 R.L.: 260.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M207

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|----------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9149          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 9150          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 9151          | QB             | Sand<br>clayey<br>Sand<br>calcar.     | med.lgt<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 9155          |                | Composite Sample                      |                            |                                              |                                            |                                          |                               | 0.33                                  |
| 6.0                  | 8.0       |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown     | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | weak<br>cons                             | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown     | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | weak<br>cons                             | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown     | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | weak<br>cons                             | 0.0                           |                                       |
| 12.0                 | 14.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown     | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | weak<br>cons                             | 0.0                           |                                       |
| 14.0                 | 16.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown     | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | weak<br>cons                             | 0.0                           |                                       |
| 16.0                 | 18.0      |                  | Q              | Sand                                  | medium                     | fine sand to                                 | sub-rounded                                | weak<br>cons                             | 0.0                           |                                       |

000431

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>l/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 18.0                 | 20.0      | DK 9152          | TEH            | Sand                          | med.lgt<br>yellow<br>brown | medium sand<br>well sorted      | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                      |
| 20.0                 | 22.0      | DK 9153          | TEH            | Sand                          | med.lgt<br>yellow<br>brown | medium sand<br>well sorted      | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                      |
| 22.0                 | 24.0      | DK 9154          | TEH            | Pebbly sandstone              | light<br>grey              | v.sml pebb.<br>mod.well sorted  | rounded<br>spherical                       | v.we<br>cons                             | 0.0                           |                                      |
| 24.0                 | 25.0      |                  | TEH            | Sandstone<br>silic.           | light<br>grey              | medium sand<br>f.well sorted    | rounded<br>spherical                       | ceme                                     | 0.0                           |                                      |
| 18.0                 | 25.0      | DK 9157          |                | Composite Sample              |                            | Comments: too hard to drill     |                                            |                                          |                               | 0.37                                 |

EOH at 25.0 m

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WARRANGA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 10-NOV-90

HOLE NUMBER : M208

LOGGED BY : CJB  
TOTAL DEPTH : 15.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 587100 NORTHING: 6761800 R.L.: 260.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M208

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9158          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | medium sand<br>f.well sorted                   | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 9159          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | medium sand<br>f.well sorted                   | sub-rounded<br>mod.spherical               |                                          | 0.1                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Sand<br>clayey                        | medium<br>red<br>brown  | v.fine sand<br>mod.well sorted                 | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 9163          |                | Composite Sample                      |                         |                                                |                                            |                                          |                               | 0.27                                  |
| 6.0                  | 8.0       |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>mod.spherical             | weak<br>cons                             | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>mod.spherical             | weak<br>cons                             | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 9160          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | dark<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>mod.spherical             | weak<br>cons                             | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 9161          | TEH            | Grit                                  | light<br>grey           | v.crse sand to<br>granule<br>well sorted       | v.well round.<br>spherical                 |                                          | 0.0                           |                                       |
| 14.0                 | 15.0      | DK 9162          | TEH            | Grit<br>silic.                        | light<br>grey           | v.crse sand to<br>granule<br>well sorted       | v.well round.<br>spherical                 |                                          | 0.0                           |                                       |
| 6.0                  | 16.0      | DK 9164          |                | Composite Sample                      |                         |                                                |                                            |                                          |                               | 0.06                                  |

EOH at 15.0 m

000433

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
 LOCALITY: EL 1653  
 SHEET : YADINA  
 JOB NO : T62

CONTRACTOR : Wallis Drilling  
 RIG TYPE : Mantis 75  
 DATE DRILLED: 17-OCT-90

HOLE NUMBER : M901  
 LOGGED BY : PRD  
 TOTAL DEPTH : 27.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 715060 NORTHING: 6689950 R.L.: 225.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M901

| DEPTH<br>FROM TO<br>(m) (m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor      | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------------------|----------------|------------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0 2.0                     | DK 6728          | QA             | Sand<br>silty clayey               | light<br>red<br>brown    | v.fine sand to<br>coarse sand<br>poorly sorted   | sub-angular<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0 4.0                     | DK 6729          | QB             | Clay<br>sandy<br>Calcrete<br>sandy | light<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 4.0 5.0                     | DK 6730          | QB             | Clay<br>sandy<br>Calcrete<br>sandy | light<br>red<br>brown    | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 5.0 6.0                     | DK 6731          | Q              | Sand                               | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded                                |                                          | 0.0                           |                                       |
| 6.0 8.0                     | DK 6732          | Q              | Sand                               | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.0                           |                                       |
| 8.0 10.0                    | DK 6733          | Q              | Sand<br>Sandstone                  | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 0.0 10.0                    | DK 6743          |                | Composite Sample                   |                          |                                                  |                                            |                                          |                               | 0.21                                  |
| 10.0 12.0                   | DK 6734          | Q              | Sand<br>Sandstone                  | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 12.0 14.0                   | DK 6735          | Q              | Sand<br>Sandstone                  | medium<br>red<br>brown   | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>mod.spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 14.0 16.0                   | DK 6736          | TO             | Sand                               | light<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 16.0 18.0                   | DK 6737          | TO             | Sand                               | light<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |

000434



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 18.0                 | 20.0      | DK 6738          | TO             | Sand                          | light<br>orange<br>grey | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.2<br>light trace            |                                      |
| 20.0                 | 22.0      | DK 6739          | TO             | Sand<br>quartz.               | light<br>grey           | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>spherical                   |                                          | 0.0                           |                                      |
| 22.0                 | 24.0      | DK 6740          | TO             | Sand<br>quartz.               | light<br>grey           | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-rounded<br>spherical                   |                                          | 0.0                           |                                      |
| 24.0                 | 26.0      | DK 6741          | TO             | Sand<br>quartz.               | light<br>grey           | medium sand<br>well sorted                       | sub-rounded<br>spherical                   |                                          | 0.0                           |                                      |
| 26.0                 | 27.0      | DK 6742          | TO             | Sand<br>quartz.               | light<br>grey           | medium sand<br>well sorted                       | sub-rounded<br>spherical                   |                                          | 0.0                           |                                      |
| 10.0                 | 27.0      | DK 6744          |                | Composite Sample              |                         |                                                  |                                            |                                          |                               | 0.08                                 |

EOH at 27.0 m

000435

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 17-OCT-90

HOLE NUMBER : M902

LOGGED BY : PRD  
TOTAL DEPTH : 20.5

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 718000 NORTHING: 6690300 R.L.: 220.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M902

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>clayey silty          | light<br>red<br>brown     | silt to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown    | clay to<br>fine sand<br>poorly sorted            | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand         | medium<br>red<br>brown    | clay to<br>fine sand<br>poorly sorted            | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 6745          | Q              | Sand<br>Sandstone             | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 6746          | Q              | Sand<br>Sandstone             | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | interm.round.<br>mod.spherical             | cons<br>Ferruginous                      | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 6747          | Q              | Sand<br>Sandstone             | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | angular<br>sub-elongate                    | cons<br>Ferruginous                      | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 6748          | Q              | Sand<br>Sandstone             | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-angular<br>mod.spherical               | cons<br>Ferruginous                      | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 6749          | TO             | Sand                          | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 6750          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 6751          | TO             | Sand                          | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 20.0      | DK 6752          |                | Composite Sample              |                           | Comments: Bimodal medium - very coarse grn       |                                            |                                          |                               |                                       |

0.12

000436

| DEPTH |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-------|------|------------------|----------------|-------------------------------|---------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| FROM  | TO   |                  |                |                               |                     |                                                |                                            |                                          |                               |                                       |
| (m)   | (m)  |                  |                |                               |                     |                                                |                                            |                                          |                               |                                       |
| 20.0  | 20.5 |                  | TEH            | Sandstone                     | pale<br>tan         | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                | ceme<br>Siliceous                        | 0.0                           |                                       |

EOH at 20.5 m

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 19-OCT-90

HOLE NUMBER : M903

LOGGED BY : PRD  
TOTAL DEPTH : 24.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 702250 NORTHING: 6702100 R.L.: 262.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M903

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor   | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                   | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>f.poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7019          | Q              | Sand<br>clayey<br>Clay<br>sandy | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>v.poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7020          | Q              | Sand<br>clayey<br>Clay<br>sandy | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>v.poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7021          | Q              | Sand<br>clayey<br>Clay<br>sandy | medium<br>red<br>brown    | fine sand to<br>coarse sand<br>v.poorly sorted   | sub-angular                                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7022          | Q              | Sand<br>clayey                  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7023          | Q              | Sand<br>clayey                  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7024          | Q              | Sand<br>clayey                  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7025          | Q              | Sand<br>clayey ferrug.          | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 7026          | Q              | Sand<br>clayey ferrug.          | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000438

| DEPTH |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-------|------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| FROM  | TO   |                  |                |                               |                           |                                                  |                                            |                                          |                               |                                       |
| (m)   | (m)  |                  |                |                               |                           |                                                  |                                            |                                          |                               |                                       |
| 22.0  | 24.0 | DK 7027          | Q              | Sand<br>clayey ferrug.        | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0   | 24.0 | DK 7028          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.10                                  |

EOH at 24.0 m

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 19-OCT-90

HOLE NUMBER : M904

LOGGED BY : PRD  
TOTAL DEPTH : 24.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 703450 NORTHING: 6703000 R.L.: 254.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M904

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                  | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                                  | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>v.poorly sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey                | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey                | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7029          | Q              | Sand<br>clayey ferrug.<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | v.fine sand to<br>medium sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7030          | Q              | Sand<br>clayey ferrug.                         | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7031          | Q              | Sand<br>clayey ferrug.                         | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7032          | Q              | Sand<br>clayey ferrug.<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7033          | Q              | Sand<br>clayey ferrug.                         | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7034          | Q              | Sand<br>clayey ferrug.                         | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7035          | Q              | Sand<br>clayey ferrug.                         | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 7036          | Q              | Sand<br>clayey ferrug.                         | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |

000440

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES             |  | COLOUR<br>L/<br>hue       | GRAIN SIZE                                       |  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------|--|---------------------------|--------------------------------------------------|--|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                      |           |                  |                | major/<br>minor        |  |                           | RANGE/<br>SORTING                                |  |                                            |                                          |                               |                                       |
| 22.0                 | 24.0      | DK 7037          | Q              | Sand<br>clayey ferrug. |  | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted |  | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 24.0      | DK 7038          |                | Composite Sample       |  |                           |                                                  |  |                                            |                                          |                               | 0.05                                  |

EOH at 24.0 m

000441

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 20-OCT-90

HOLE NUMBER : M905

LOGGED BY : PRD  
TOTAL DEPTH : 24.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 699500 NORTHING: 6712400 R.L.: 220.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M905

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/<br>TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|---------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>v.poorly sorted | sub-angular                                |                                             | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty clayey                  | light<br>red<br>brown     | clay to<br>coarse sand<br>v.poorly sorted        | sub-angular                                |                                             | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        | sub-angular                                |                                             | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7039          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                             | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7040          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                             | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7041          | Q              | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                             | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7042          | Q              | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                             | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7043          | Q              | Sand<br>silty ferrug.                 | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                             | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7044          | TEH            | Sand                                  | light<br>orange<br>brown  | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                             | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7045          | TEH            | Sand                                  | light<br>yellow<br>grey   | fine sand to<br>v.crse sand<br>poorly sorted     | angular<br>sub-elongate                    |                                             | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 7046          | TEH            | Sand<br>Sandstone                     | light<br>brown<br>grey    | fine sand to<br>v.crse sand<br>poorly sorted     | angular<br>sub-elongate                    |                                             | 0.2<br>light trace            |                                       |

000442



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|-------------------------------|------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 22.0                 | 24.0      | DK 7047          | TEH            | Sandstone<br>massive<br>Sand  | light<br>brown<br>grey | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>sub-elongate                | cons<br>Siliceous                        | 0.2<br>light trace            |                                      |
| 6.0                  | 24.0      | DK 7048          |                | Composite Sample              |                        |                                                |                                            |                                          |                               | 0.51                                 |

EOH at 24.0 m

000443

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 20-OCT-90

HOLE NUMBER : M906

LOGGED BY : PRD  
TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 696850 NORTHING: 6711000 R.L.: 220.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M906

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>l/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                    | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>v.poorly sorted | angular<br>elongate                        |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                    | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>v.poorly sorted | angular<br>elongate                        |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey  | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7049          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 8.0                  | 10.0      | DK 7050          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 10.0                 | 12.0      | DK 7051          | Q              | Sand<br>silty ferrug.            | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7052          | Q              | Sand<br>silty ferrug.            | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7053          | Q              | Sand<br>silty ferrug.            | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | angular<br>sub-elongate                    |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7054          | Q              | Sand<br>silty                    | light<br>orange<br>brown  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7055          | TEH            | Grit<br>sandy                    | light<br>orange<br>grey   | coarse sand to<br>granule<br>poorly sorted       | sub-angular<br>elongate                    |                                          | 0.2<br>light trace            | 0.09                                  |
| 6.0                  | 20.0      | DK 7061          |                | Composite Sample                 |                           |                                                  |                                            |                                          |                               | 0.21                                  |

000444

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor            | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                    | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------------------------|----------------------------|----------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7056          | TEH            | Sand<br>gritty                           | light<br>grey              | medium sand to<br>v.crse sand<br>f.poorly sorted   | sub-angular<br>elongate                    |                                          | 0.2<br>light trace            | 0.10                                  |
| 22.0                 | 24.0      | DK 7057          | TEH            | Sand                                     | light<br>brown<br><br>grey | fine sand to<br>medium sand<br><br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 2.0<br>V.good<br>trace        | 1.54                                  |
| 24.0                 | 26.0      | DK 7058          | TEH            | Sand                                     | light<br>brown<br>grey     | fine sand<br><br>well sorted                       | rounded<br>spherical                       |                                          | 0.5<br>trace                  | 0.48                                  |
| 26.0                 | 28.0      | DK 7059          | TEH            | Sand                                     | medium<br>brown<br>grey    | fine sand<br><br>well sorted                       | rounded<br>spherical                       |                                          | 0.2<br>light trace            | 0.21                                  |
| 28.0                 | 30.0      | DK 7060          | TEH            | Sand<br><br>Sandstone<br>ferrug. laterit | medium<br>red<br>brown     | fine sand to<br>medium sand<br>mod.well sorted     | sub-rounded<br>spherical                   |                                          | 0.2<br>light trace            | 0.54                                  |
| EOH at 30.0 m        |           |                  |                |                                          |                            |                                                    |                                            |                                          |                               |                                       |

000445

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : YADINA  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 20-OCT-90

HOLE NUMBER : M907

LOGGED BY : PRD  
TOTAL DEPTH : 30.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 694210 NORTHING: 6709600 R.L.: 223.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M907

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>v.poorly sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                         | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>v.poorly sorted | sub-angular                                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey       | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7062          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7063          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7064          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7065          | Q              | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | angular<br>elongate                        |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7066          | Q              | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | angular<br>elongate                        |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7067          | Q              | Sand<br>ferrug.                       | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | angular<br>elongate                        |                                          | 0.0                           | 0.12                                  |
| 8.0                  | 20.0      | DK 7073          |                | Composite Sample                      |                           |                                                  |                                            |                                          |                               | 0.11                                  |

000446

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|--------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                 | 22.0      | DK 7068          | TEH            | Grit<br>sandy quartz.         | medium<br>orange<br>grey | v.crse sand to<br>granule<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            | 0.10                                  |
| 22.0                 | 24.0      | DK 7069          | TEH            | Grit<br>sandy quartz.         | medium<br>orange<br>grey | v.crse sand to<br>granule<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            | 0.08                                  |
| 24.0                 | 26.0      | DK 7070          | TEH            | Grit<br>quartz.<br>Sandstone  | medium<br>orange<br>grey | medium sand to<br>granule<br>poorly sorted   | sub-rounded<br>sub-elongate                |                                          | 0.2<br>light trace            | 0.10                                  |
| 26.0                 | 28.0      | DK 7071          | TEH            | Grit<br>quartz.<br>Sand       | medium<br>orange<br>grey | coarse sand to<br>granule<br>poorly sorted   | sub-rounded<br>sub-elongate                |                                          | 0.0                           | 0.14                                  |
| 28.0                 | 30.0      | DK 7072          | TEH            | Grit<br>quartz.<br>Sand       | medium<br>orange<br>grey | coarse sand to<br>granule<br>poorly sorted   | sub-rounded<br>sub-elongate                |                                          | 0.0                           | 0.22                                  |

EOH at 30.0 m

000447

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1653  
SHEET : HAMBIDGE  
JOB NO : T62

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 20-OCT-90

HOLE NUMBER : M908

LOGGED BY : PRD  
TOTAL DEPTH : 24.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 691570 NORTHING: 6708150 R.L.: 235.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M908

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                    | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>v.poorly sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                    | light<br>red<br>brown     | v.fine sand to<br>coarse sand<br>v.poorly sorted | sub-angular                                |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey  | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey  | medium<br>red<br>brown    | clay to<br>medium sand<br>v.poorly sorted        | sub-angular                                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7074          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 7075          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7076          | Q              | Sand<br>silty ferrug.            | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7077          | Q              | Sand<br>silty ferrug.            | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7078          | Q              | Sand<br>silty ferrug.            | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7079          | Q              | Sand<br>silty ferrug.            | medium<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 20.0      | DK 7082          |                | Composite Sample                 |                           |                                                  |                                            |                                          |                               |                                       |

0.06

000448

| DEPTH<br>FROM TO<br>(m) (m) |      | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------|------------------|----------------|-------------------------------|--------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 20.0                        | 22.0 | DK 7080          | Q              | Sand                          | light<br>orange<br>brown | fine sand to<br>medium sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           | 0.01                                  |
| 22.0                        | 24.0 | DK 7081          | TEH            | Sand<br>quartz.               | light<br>orange<br>grey  | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           | 0.02                                  |

EOH at 24.0 m

000449

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1655  
SHEET : MAURICE  
JOB NO : T64

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 23-OCT-90

HOLE NUMBER : M909

LOGGED BY : PRD  
TOTAL DEPTH : 32.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 648611 NORTHING: 6747499 R.L.: 220.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M909

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor   | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty<br>Silt           | light<br>red<br>brown     | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty<br>Silt           | light<br>red<br>brown     | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          | sub-angular                                |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 7293          | Q              | Sand<br>silty<br>Sandstone      | medium<br>orange<br>brown | v.fine sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7294          | Q              | Sand<br>silty<br>Sandstone      | medium<br>orange<br>brown | v.fine sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7306          |                | Composite Sample                |                           |                                                  |                                            |                                          |                               | 0.25                                  |
| 10.0                 | 12.0      | DK 7295          | Q              | Sand<br>silty<br>Sandstone      | medium<br>orange<br>brown | v.fine sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7296          | Q              | Sand<br>silty<br>Sandstone      | medium<br>orange<br>brown | v.fine sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7297          | Q              | Sand<br>silty<br>Sandstone      | medium<br>orange<br>brown | v.fine sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7298          | TO             | Sand                            | light<br>orange<br>brown  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7299          | TO             | Sand                            | light<br>orange           | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.5<br>trace                  |                                       |

000450



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue         | GRAIN SIZE<br>RANGE/<br>SORTING                    | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-----------------------------|----------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                 | 20.0      | DK 7307          |                | Composite Sample              |                             |                                                    |                                            |                                          |                               | 0.32                                  |
| 20.0                 | 22.0      | DK 7300          | TO             | Sand                          | light<br>orange<br>yellow   | medium sand to<br>coarse sand<br>mod.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            | 0.25                                  |
| 22.0                 | 24.0      | DK 7301          | TO             | Sand                          | light<br>orange<br>yellow   | medium sand to<br>v.crse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            | 0.23                                  |
| 24.0                 | 26.0      | DK 7302          | TEH            | Grit<br>quartz.               | light<br>yellow<br>grey     | coarse sand to<br>granule<br>poorly sorted         | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            | 0.23                                  |
| 26.0                 | 28.0      | DK 7303          | TEH            | Sand<br>gritty quartz.        | light<br>yellow<br>grey     | coarse sand to<br>granule<br>poorly sorted         | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            | 0.21                                  |
| 28.0                 | 30.0      | DK 7304          | TEH            | Sand<br><br>Sandstone         | light<br>orange<br><br>grey | fine sand to<br>medium sand<br><br>mod.well sorted | sub-rounded<br>sub-spherical               | cons<br>Siliceous                        | 2.0<br>V.good<br>trace        | 1.15                                  |
| 30.0                 | 32.0      | DK 7305          | TEH            | Sandstone<br>gritty           | light<br>orange<br>grey     | medium sand to<br>granule<br>poorly sorted         | angular<br>elongate                        |                                          | 0.2<br>light trace            | 0.18                                  |

EOH at 32.0 m

000451

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1655  
SHEET : MAURICE  
JOB NO : T64

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 23-OCT-90

HOLE NUMBER : M910

LOGGED BY : PRD

TOTAL DEPTH : 36.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 647481 NORTHING: 6745827 R.L.: 222.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M910

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                    | light<br>red<br>brown     | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>elongate                    |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                    | light<br>red<br>brown     | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>elongate                    |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand<br>clayey  | medium<br>red<br>brown    | clay to<br>coarse sand<br>v.poorly sorted        |                                            |                                          | 0.2<br>light trace            |                                       |
| 6.0                  | 8.0       | DK 7308          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7309          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7323          |                | Composite Sample                 |                           |                                                  |                                            |                                          |                               | 0.29                                  |
| 10.0                 | 12.0      | DK 7310          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7311          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7312          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7313          | TO             | Sand                             | light<br>orange<br>brown  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7314          | TO             | Sand<br>gritty                   | light<br>orange<br>brown  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |

000452

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 10.0                 | 20.0      | DK 7324          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               | 0.22                                  |
| 20.0                 | 22.0      | DK 7315          | TO             | Sand<br>gritty                | light<br>orange<br>brown  | medium sand to<br>v.crse sand<br>poorly sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            | 0.11                                  |
| 22.0                 | 24.0      | DK 7316          | TEH            | Grit<br>quartz. sandy<br>Sand | light<br>orange<br>yellow | coarse sand to<br>granule<br>poorly sorted       | sub-rounded<br>sub-elongate                |                                          | 0.2<br>light trace            | 0.11                                  |
| 24.0                 | 26.0      | DK 7317          | TEH            | Grit<br>quartz. sandy         | light<br>grey             | coarse sand to<br>granule<br>poorly sorted       | sub-angular<br>sub-elongate                |                                          | 0.0                           | 0.03                                  |
| 26.0                 | 28.0      | DK 7318          | TEH            | Grit<br>quartz. sandy         | light<br>grey             | coarse sand to<br>granule<br>poorly sorted       | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            | 0.04                                  |
| 28.0                 | 30.0      | DK 7319          | TEH            | Sand                          | light<br>orange<br>brown  | coarse sand<br>f.well sorted                     | sub-rounded<br>sub-spherical               |                                          | 1.0<br>Good trace             | 0.22                                  |
| 30.0                 | 32.0      | DK 7320          | TEH            | Sand                          | light<br>red<br>brown     | coarse sand to<br>granule<br>poorly sorted       | sub-angular<br>sub-elongate                |                                          | 1.0<br>Good trace             | 0.82                                  |
| 32.0                 | 34.0      | DK 7321          | TEH            | Sand                          | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.2<br>light trace            | 0.40                                  |
| 34.0                 | 36.0      | DK 7322          | TEH            | Sand                          | medium<br>red<br>brown    | medium sand to<br>coarse sand<br>mod.well sorted | sub-rounded<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 20.0                 | 36.0      | DK 7325          |                | Composite Sample              |                           |                                                  |                                            |                                          |                               |                                       |

EOH at 36.0 m

000453

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1655  
SHEET : MAURICE  
JOB NO : T64

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 23-OCT-90

HOLE NUMBER : M911

LOGGED BY : PRD  
TOTAL DEPTH : 24.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 645555 NORTHING: 6742951 R.L.: 224.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 2 HOLE NUMBER : M911

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING                  | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|---------------------------|--------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty                    | light<br>red<br>brown     | silt to<br>v.crse sand<br>v.poorly sorted        | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       |                  | QA             | Sand<br>silty                    | light<br>red<br>brown     | silt to<br>v.crse sand<br>v.poorly sorted        | sub-angular<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       |                  | QB             | Clay<br>sandy<br>Sand            | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       |                  | QB             | Clay<br>sandy<br>Sand            | medium<br>red<br>brown    | clay to<br>medium sand<br>poorly sorted          |                                            |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 7326          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 0.0                  | 10.0      | DK 7334          |                | Composite Sample                 |                           |                                                  |                                            |                                          |                               | 0.24                                  |
| 10.0                 | 12.0      | DK 7327          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | fine sand to<br>coarse sand<br>poorly sorted     | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 7328          | Q              | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 14.0                 | 16.0      | DK 7329          | TO             | Sand<br><br>Sandstone<br>ferrug. | medium<br>orange<br>brown | medium sand to<br>v.crse sand<br>poorly sorted   | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 7330          | TO             | Sand                             | light<br>orange<br>brown  | coarse sand to<br>v.crse sand<br>mod.well sorted | sub-angular<br>sub-elongate                |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 7331          | TEH            | Grit<br>quartz.<br>Sandstone     | light<br>orange<br>yellow | coarse sand to<br>granule<br>poorly sorted       | sub-rounded<br>sub-elongate                |                                          | 0.2<br>light trace            |                                       |

000454

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 20.0                 | 22.0      | DK 7332          | TEH            | Grit<br>quartz.               | light<br>yellow<br>grey | coarse sand to<br>granule<br>poorly sorted   | sub-rounded<br>sub-elongate                |                                          | 0.0                           |                                      |
| 22.0                 | 24.0      | DK 7333          | TEH            | Sand<br><br>Sandstone         | light<br>yellow<br>grey | fine sand to<br>coarse sand<br>poorly sorted | sub-rounded<br>sub-elongate                | cons<br>Siliceous                        | 0.0                           |                                      |
| 10.0                 | 24.0      | DK 7335          |                | Composite Sample              |                         |                                              |                                            |                                          |                               | 0.19                                 |

EOH at 24.0 m

000455

TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1655  
SHEET : WYOLA  
JOB NO : T64

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 25-OCT-90

HOLE NUMBER : M912

LOGGED BY : PRD  
TOTAL DEPTH : 1.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 634013 NORTHING: 6750155 R.L.: 220.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M912

| DEPTH |     | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES      |  | COLOUR<br>L/<br>hue   | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION               |  | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-------|-----|------------------|----------------|-----------------|--|-----------------------|------------------------------------------------|--------------------------------------------|---------------------------|--|-------------------------------|---------------------------------------|
| FROM  | TO  |                  |                | major/<br>minor |  |                       |                                                |                                            | DEGREE/ TYPE/<br>STRENGTH |  |                               |                                       |
| 0.0   | 1.0 |                  | QA             | Calcrete        |  | light<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted |                                            |                           |  | 0.0                           |                                       |

EOH at 1.0 m

000456

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : OOLDEA  
LOCALITY: EL 1655  
SHEET : WYOLA  
JOB NO : T64

CONTRACTOR : Wallis Drilling  
RIG TYPE : Mantis 75  
DATE DRILLED: 25-OCT-90

HOLE NUMBER : M913

LOGGED BY : PRD  
TOTAL DEPTH : 7.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 633448 NORTHING: 6747828 R.L.: 225.0 AZIM.: 0.0 INCL.: -90.0

SHEET 1 OF 1 HOLE NUMBER : M913

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue   | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|-----------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                      |           |                  |                |                               |                       |                                                |                                            |                                          |                               |                                       |
| 0.0                  | 2.0       |                  | QA             | Sand<br>silty<br>Calcrete     | light<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted |                                            |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Calcrete                      | light<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       |                  | QA             | Calcrete                      | light<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted |                                            |                                          | 0.0                           |                                       |
| 6.0                  | 7.0       |                  | QA             | Calcrete                      | light<br>red<br>brown | v.fine sand to<br>medium sand<br>poorly sorted |                                            |                                          | 0.0                           |                                       |

EOH at 7.0 m

000457

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 05-NOV-90

HOLE NUMBER : M914

LOGGED BY : CJB  
TOTAL DEPTH : 44.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 616600 NORTHING: 6756200 R.L.: 255.0 AZIM.: 0.0 INCL.: -90.0  
Comments: OUTSIDE OF TITLE

SHEET 1 OF 2 HOLE NUMBER : M914

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|-------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8724          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.1                           |                                       |
| 2.0                  | 4.0       | DK 8725          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 8726          | QB             | Sand<br>calcar.                       | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>mod.spherical               |                                          | 0.2<br>light trace            |                                       |
| 0.0                  | 6.0       | DK 8745          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.35                                  |
| 6.0                  | 8.0       | DK 8727          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | Ferruginous                              | 0.1                           |                                       |
| 8.0                  | 10.0      | DK 8728          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | Ferruginous                              | 0.1                           |                                       |
| 10.0                 | 12.0      | DK 8729          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | Ferruginous                              | 0.1                           |                                       |
| 12.0                 | 14.0      | DK 8730          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | Ferruginous                              | 0.1                           |                                       |
| 14.0                 | 16.0      | DK 8731          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | Ferruginous                              | 0.1                           |                                       |
| 16.0                 | 18.0      | DK 8732          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | sub-rounded<br>sub-spherical               | Ferruginous                              | 0.1                           |                                       |
| 6.0                  | 18.0      | DK 8746          |                | Composite Sample                      |                         |                                              |                                            |                                          |                               | 0.25                                  |

000458



| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8733          | TO             | Sand                          | medium<br>yellow<br>brown  | fine sand to<br>medium sand<br>well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8734          | TO             | Sand                          | med.lgt<br>yellow<br>brown | fine sand<br>well sorted                     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8735          | TO             | Sand                          | med.lgt<br>yellow<br>brown | fine sand<br>well sorted                     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8736          | TO             | Sand                          | med.lgt<br>yellow<br>brown | fine sand<br>well sorted                     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8737          | TEH            | Grit                          | light<br>grey              | fine sand<br>well sorted                     | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8738          | TEH            | Grit                          | light<br>grey              | fine sand<br>well sorted                     | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 18.0                 | 32.0      | DK 8747          |                | Composite Sample              |                            |                                              |                                            |                                          |                               | 0.10                                  |
| 30.0                 | 33.0      | DK 8739          | TEH            | Sand<br>gritty                | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.2<br>light trace            |                                       |
| 33.0                 | 34.0      | DK 8740          | TEH            | Sand                          | med.lgt<br>red<br>brown    | v.fine sand to<br>fine sand<br>f.well sorted | sub-rounded<br>sub-spherical               | Comments: mistake with sample interval   | 1.0<br>Good trace             | 0.63                                  |
| 33.0                 | 34.0      | DK 8748          | TEH            | Sand                          | med.lgt<br>red<br>brown    | v.fine sand to<br>fine sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 1.0<br>Good trace             | 0.47                                  |
| 34.0                 | 36.0      | DK 8741          | TEH            | Sand                          | med.lgt<br>red<br>brown    | v.fine sand to<br>fine sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 1.0<br>Good trace             | 0.93                                  |
| 34.0                 | 36.0      | DK 8749          | TEH            | Sand                          | med.lgt<br>red<br>brown    | v.fine sand to<br>fine sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 1.0<br>Good trace             | 0.82                                  |
| 36.0                 | 38.0      | DK 8742          | TEH            | Spongolite<br>Sandstone       | medium<br>red<br>brown     | fine sand<br>f.well sorted                   | rounded<br>sub-spherical                   |                                          | 0.0                           | 0.76                                  |

000459

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor                                   | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING              | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|-----------------------------------------------------------------|------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 38.0                 | 40.0      | DK 8743          | TEH            | Spongolite                                                      | medium<br>red<br>brown | fine sand<br>f.well sorted                   | rounded<br>sub-spherical                   |                                          | 0.0                           | 0.46                                 |
| 40.0                 | 42.0      | DK 8744          | TEH            | Sandstone<br>ferrug.<br>Sand<br>ferrug.<br>Sandstone<br>ferrug. | medium<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted | rounded<br>sub-spherical                   | Ferruginous                              | 0.0                           | 0.51                                 |
| EOH at 44.0 m        |           |                  |                |                                                                 |                        |                                              |                                            |                                          |                               |                                      |

000460

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 05-NOV-90

HOLE NUMBER : M915

LOGGED BY : CJB  
TOTAL DEPTH : 32.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 617400 NORTHING: 6760200 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0  
Comments: OUTSIDE OF TITLE

SHEET 1 OF 2 HOLE NUMBER : M915

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|----------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8751          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8752          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown    | fine sand to<br>medium sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.1                           |                                       |
| 0.0                  | 4.0       | DK 8767          |                | Composite Sample                      |                            |                                                |                                            |                                          |                               | 0.31                                  |
| 4.0                  | 6.0       | DK 8753          | QB             | Clay<br>sandy                         | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 8754          | QB             | Clay<br>sandy<br>Sand                 | med.drk<br>red<br>brown    | v.fine sand to<br>fine sand<br>mod.well sorted | sub-angular<br>mod.spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8755          | Q              | silty<br>Sand<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8756          | Q              | silty<br>Sandstone<br>ferrug.         | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8757          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 4.0                  | 14.0      | DK 8768          |                | Composite Sample                      |                            |                                                |                                            |                                          |                               | 0.27                                  |
| 14.0                 | 16.0      | DK 8758          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | fine sand to<br>medium sand<br>mod.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                       |
| 16.0                 | 18.0      | DK 8759          | TO             | Sand                                  | med.drk<br>yellow<br>brown | fine sand to<br>medium sand<br>f.well sorted   | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |

000461

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|----------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 18.0                 | 20.0      | DK 8760          | TO             | Sand                          | med.drk<br>yellow<br>brown | fine sand to<br>medium sand<br>well sorted     | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 8761          | TO             | Sand                          | medium<br>yellow<br>brown  | fine sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 8762          | TEH            | Sand                          | medium<br>yellow<br>brown  | fine sand<br>well sorted                       | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 24.0                 | 26.0      | DK 8763          | TEH            | Sand<br>gritty                | med.lgt<br>yellow<br>grey  | v.fine sand to<br>sml boulder<br>well sorted   | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 26.0                 | 28.0      | DK 8764          | TEH            | Grit<br>sandy                 | light<br>yellow<br>grey    | coarse sand to<br>v.crse sand<br>f.well sorted | rounded<br>spherical                       |                                          | 0.0                           |                                       |
| 28.0                 | 30.0      | DK 8765          | TEH            | Grit<br>silic.                | light<br>yellow<br>grey    | coarse sand to<br>v.crse sand<br>f.well sorted | rounded<br>spherical                       | Siliceous                                | 0.0                           |                                       |
| 30.0                 | 32.0      | DK 8766          | TEH            | Grit<br>ferrug.<br>Sand       | med.lgt<br>red<br>brown    | medium sand to<br>coarse sand<br>f.well sorted | rounded<br>spherical                       | Siliceous                                | 0.0                           |                                       |
| 14.0                 | 32.0      | DK 8769          |                | Composite Sample              |                            |                                                |                                            |                                          |                               | 0.20                                  |

EOH at 32.0 m

000462

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 05-NOV-90

HOLE NUMBER : M916

LOGGED BY : CJB  
TOTAL DEPTH : 10.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 618000 NORTHING: 6764100 R.L.: 245.0 AZIM.: 0.0 INCL.: -90.0  
Comments: OUTSIDE OF TITLE

SHEET 1 OF 1 HOLE NUMBER : M916

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor      | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|------------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                      |           |                  |                |                                    |                         |                                                |                                            |                                          |                               |                                       |
| 0.0                  | 2.0       | DK 8770          | QA             | Sand<br>calcar.                    | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 8771          | QA             | Sand<br>calcar.                    | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 8772          | QA             | Sand<br>calcar.<br>Sand<br>ferrug. | med.drk<br>red<br>brown | v.fine sand to<br>fine sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 8773          | QB             | Clay<br>sandy                      | med.drk<br>red<br>brown | coarse silt to<br>v.fine sand<br>f.well sorted | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8774          | Q              | Sand<br>silic.                     | medium<br>red<br>brown  | fine sand to<br>medium sand                    |                                            |                                          | 0.0                           |                                       |

EOH at 10.0 m

Comments: hole abandoned-hard ground

000463

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 05-NOV-90

HOLE NUMBER : M917

LOGGED BY : CJB  
TOTAL DEPTH : 18.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 618300 NORTHING: 6766000 R.L.: 240.0 AZIM.: 0.0 INCL.: -90.0  
Comments: OUTSIDE OF TITLE

SHEET 1 OF 1 HOLE NUMBER : M917

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor         | COLOUR<br>L/<br>hue      | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|---------------------------------------|--------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 8775          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown  | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            | 0.41                                  |
| 2.0                  | 4.0       | DK 8776          | QA             | Sand<br>calcar.                       | med.lgt<br>red<br>brown  | fine sand to<br>medium sand<br>mod.well sorted | sub-rounded                                |                                          | 0.2<br>light trace            | 0.34                                  |
| 4.0                  | 6.0       | DK 8777          | QB             | Sand<br>calcar.<br>Sand               | med.lgt<br>yellow<br>red | fine sand to<br>medium sand<br>mod.well sorted | interm.round.                              |                                          | 0.0                           |                                       |
| 6.0                  | 8.0       | DK 8778          | Q              | Sand<br>silty<br>Sandstone<br>ferrug. | medium<br>red<br>brown   | fine sand to<br>medium sand<br>mod.well sorted | interm.round.                              |                                          | 0.0                           |                                       |
| 8.0                  | 10.0      | DK 8779          | Q              | Ferruginous zone<br>Sand              | medium<br>red<br>brown   | v.fine sand to<br>fine sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 10.0                 | 12.0      | DK 8780          | Q              | Sand<br>ferrug.                       | medium<br>red<br>brown   | fine sand<br>f.well sorted                     | rounded<br>sub-spherical                   | Ferruginous                              | 0.0                           |                                       |
| 12.0                 | 14.0      | DK 8781          | Q              | Sand<br>ferrug.                       | medium<br>red<br>brown   | fine sand<br>f.well sorted                     | rounded<br>sub-spherical                   | Ferruginous                              | 0.0                           | 0.14                                  |
| 14.0                 | 16.0      | DK 8782          | Q              | Sand<br>ferrug.<br>Spongolite         | pale<br>red<br>brown     | fine sand<br>f.well sorted                     | rounded<br>sub-spherical                   | Ferruginous trace                        | 0.5                           | 1.86                                  |
| 16.0                 | 18.0      | DK 8783          | TEH            | Sandstone                             | med.lgt<br>grey<br>brown | fine sand to<br>medium sand<br>well sorted     | sub-rounded<br>sub-spherical               |                                          | 0.0                           | 0.24                                  |
| EOH at 18.0 m        |           |                  |                |                                       | Comments: hard ground    |                                                |                                            |                                          |                               |                                       |

000464

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 05-NOV-90

HOLE NUMBER : M918

LOGGED BY : CJB

TOTAL DEPTH : 7.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 618600 NORTHING: 6768200 R.L.: 240.0 AZIM.: 0.0 INCL.: -90.0  
Comments: OUTSIDE OF TITLE

SHEET 1 OF 1 HOLE NUMBER : M918

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separtion) |
|----------------------|-----------|------------------|----------------|-------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|--------------------------------------|
| 0.0                  | 2.0       | DK 8784          | QA             | Sand<br>calcar.               | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted   | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                      |
| 2.0                  | 4.0       | DK 8785          | QB             | Clay<br>sandy                 | medium<br>red<br>brown  | coarse silt to<br>v.fine sand<br>f.well sorted | interm.round.<br>mod.spherical             |                                          | 0.0                           |                                      |
| 4.0                  | 6.0       | DK 8786          | QB             | Calcrete                      | medium<br>red<br>brown  | fine sand to<br>medium sand                    |                                            |                                          | 0.0                           |                                      |
| 6.0                  | 7.0       | DK 8787          | QB             | Calcrete                      | medium<br>red<br>brown  | fine sand to<br>medium sand                    |                                            |                                          | 0.0                           |                                      |

EOH at 7.0 m

Comments: abandoned hard ground

000465

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 05-NOV-90

HOLE NUMBER : M919

LOGGED BY : CJB  
TOTAL DEPTH : 2.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 619200 NORTHING: 6772000 R.L.: 240.0 AZIM.: 0.0 INCL.: -90.0  
Comments: OUTSIDE OF TITLE

SHEET 1 OF 1 HOLE NUMBER : M919

| DEPTH<br>FROM TO<br>(m) (m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue    | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|-----------------------------|------------------|----------------|-------------------------------|------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
|                             |                  |                |                               |                        |                                 |                                            |                                          |                               |                                       |
| 0.0 2.0                     |                  | QA             | Calcrete                      | medium<br>red<br>brown | fine sand to<br>medium sand     |                                            |                                          | 0.0                           |                                       |

EOH at 2.0 m

Comments: abandoned hard ground

000466



## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
LOCALITY: EL1654  
SHEET : WYOLA  
JOB NO : T63

CONTRACTOR : wallis  
RIG TYPE : mantis t75  
DATE DRILLED: 05-NOV-90

HOLE NUMBER : M920

LOGGED BY : CJB  
TOTAL DEPTH : 6.0

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 619900 NORTHING: 6776300 R.L.: 230.0 AZIM.: 0.0 INCL.: -90.0  
Comments: OUTSIDE OF TITLE

SHEET 1 OF 1 HOLE NUMBER : M920

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor | COLOUR<br>L/<br>hue       | GRAIN SIZE<br>RANGE/<br>SORTING | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------|---------------------------|---------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       |                  | QA             | Calcrete                      | medium<br>red<br>brown    | fine sand to<br>medium sand     |                                            |                                          | 0.0                           |                                       |
| 2.0                  | 4.0       |                  | QA             | Calcrete                      | medium<br>red<br>brown    | fine sand to<br>medium sand     |                                            |                                          | 0.0                           |                                       |
| 4.0                  | 6.0       | DK 8788          | QA             | Calcrete<br>Sandstone         | medium<br>yellow<br>brown | fine sand to<br>medium sand     |                                            |                                          | 0.0                           |                                       |

EOH at 6.0 m

Comments: abandoned hard ground

000467

## TITANIUM MINERAL SANDS LOGSHEET

PROJECT : ooldea  
 LOCALITY: EL1654  
 SHEET : WYOLA  
 JOB NO : T63

CONTRACTOR : wallis  
 RIG TYPE : mantis t75  
 DATE DRILLED: 11-NOV-90

GRID: AMG ZONE: 52 RELIABILITY: TOPO EASTING: 617000 NORTHING: 6758250 R.L.: 250.0 AZIM.: 0.0 INCL.: -90.0

HOLE NUMBER : M921  
 LOGGED BY : CJB  
 TOTAL DEPTH : 26.0

SHEET 1 OF 2 HOLE NUMBER : M921

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor             | COLOUR<br>L/<br>hue     | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|-------------------------------------------|-------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 0.0                  | 2.0       | DK 9165          | QA             | Sand<br>calcar.                           | med.lgt<br>red<br>brown | fine sand to<br>medium sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 2.0                  | 4.0       | DK 9166          | QA             | Sand<br>calcar.                           | medium<br>red<br>brown  | fine sand to<br>medium sand<br>f.well sorted   | sub-rounded<br>sub-spherical               |                                          | 0.2<br>light trace            |                                       |
| 4.0                  | 6.0       | DK 9167          | QB             | Sand<br>clayey<br>Clay                    | medium<br>red<br>brown  | v.fine sand to<br>fine sand<br>mod.well sorted | interm.round.                              |                                          | 0.0                           |                                       |
| 0.0                  | 6.0       | DK 9174          |                | Composite Sample                          |                         |                                                |                                            |                                          |                               | 0.27                                  |
| 6.0                  | 8.0       |                  | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br><br>f.well sorted               | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 8.0                  | 10.0      |                  | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br><br>f.well sorted               | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 10.0                 | 12.0      |                  | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br><br>f.well sorted               | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 12.0                 | 14.0      |                  | Q              | Sand<br><br>silty<br>Sandstone<br>ferrug. | med.drk<br>red<br>brown | medium sand<br><br>f.well sorted               | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |
| 6.0                  | 14.0      | DK 9175          |                | Composite Sample                          |                         |                                                |                                            |                                          |                               | 0.20                                  |
| 14.0                 | 16.0      | DK 9168          | TO             | Sand                                      | med.drk<br>red          | medium sand                                    | sub-rounded<br>sub-spherical               | weak<br>cons<br>Ferruginous              | 0.0                           |                                       |

000468

| DEPTH<br>FROM<br>(m) | TO<br>(m) | SAMPLE<br>NUMBER | STRAT.<br>CODE | ROCK TYPES<br>major/<br>minor    | COLOUR<br>L/<br>hue        | GRAIN SIZE<br>RANGE/<br>SORTING                | ROUNDNESS/<br>SPHERICITY/<br>GRAIN SURFACE | CEMENTATION<br>DEGREE/ TYPE/<br>STRENGTH | HEAVY<br>MINERALS<br>(visual) | HEAVY<br>MINERALS<br>(TBE Separation) |
|----------------------|-----------|------------------|----------------|----------------------------------|----------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------------|---------------------------------------|
| 16.0                 | 18.0      | DK 9169          | TO             | Sand<br><br>Sandstone<br>ferrug. | med.drk<br>red<br>brown    | medium sand<br><br>f.well sorted               | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 18.0                 | 20.0      | DK 9170          | TO             | Sand                             | medium<br>yellow<br>brown  | medium sand<br><br>well sorted                 | sub-rounded<br>sub-spherical               |                                          | 0.0                           |                                       |
| 20.0                 | 22.0      | DK 9171          | TO             | Sand<br>gritty                   | med.lgt<br>yellow<br>brown | medium sand to<br>coarse sand<br>f.well sorted | rounded<br>sub-spherical                   |                                          | 0.0                           |                                       |
| 22.0                 | 24.0      | DK 9172          | TEH            | Grit                             | light<br><br>grey          | coarse sand<br><br>f.well sorted               | v.well round.<br>sub-spherical             | weak<br>cons                             | 0.0                           |                                       |
| 24.0                 | 25.0      | DK 9173          | TEH            | Grit<br>silic.                   | light<br>grey              | granule<br><br>f.well sorted                   | v.well round.<br>sub-spherical             | ceme                                     | 0.0                           |                                       |
| 14.0                 | 25.0      | DK 9176          |                | Composite Sample                 |                            |                                                |                                            |                                          |                               | 0.07                                  |

EOH at 26.0 m

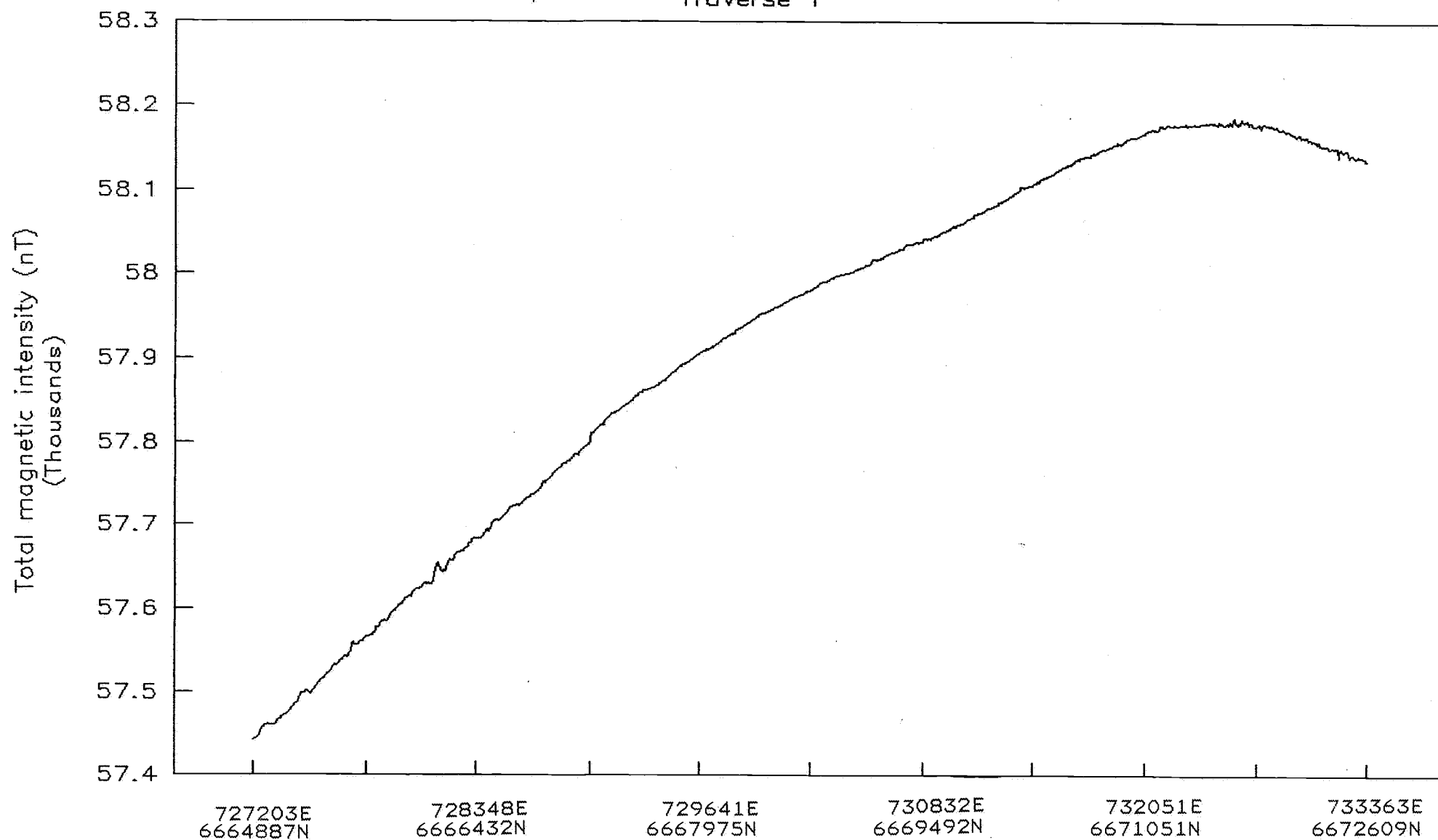
000469

APPENDIX 3

Gamma ray logs of M1 - M8 and M11 - M14  
and  
ground magnetic traverses

# OOLDEA RANGE

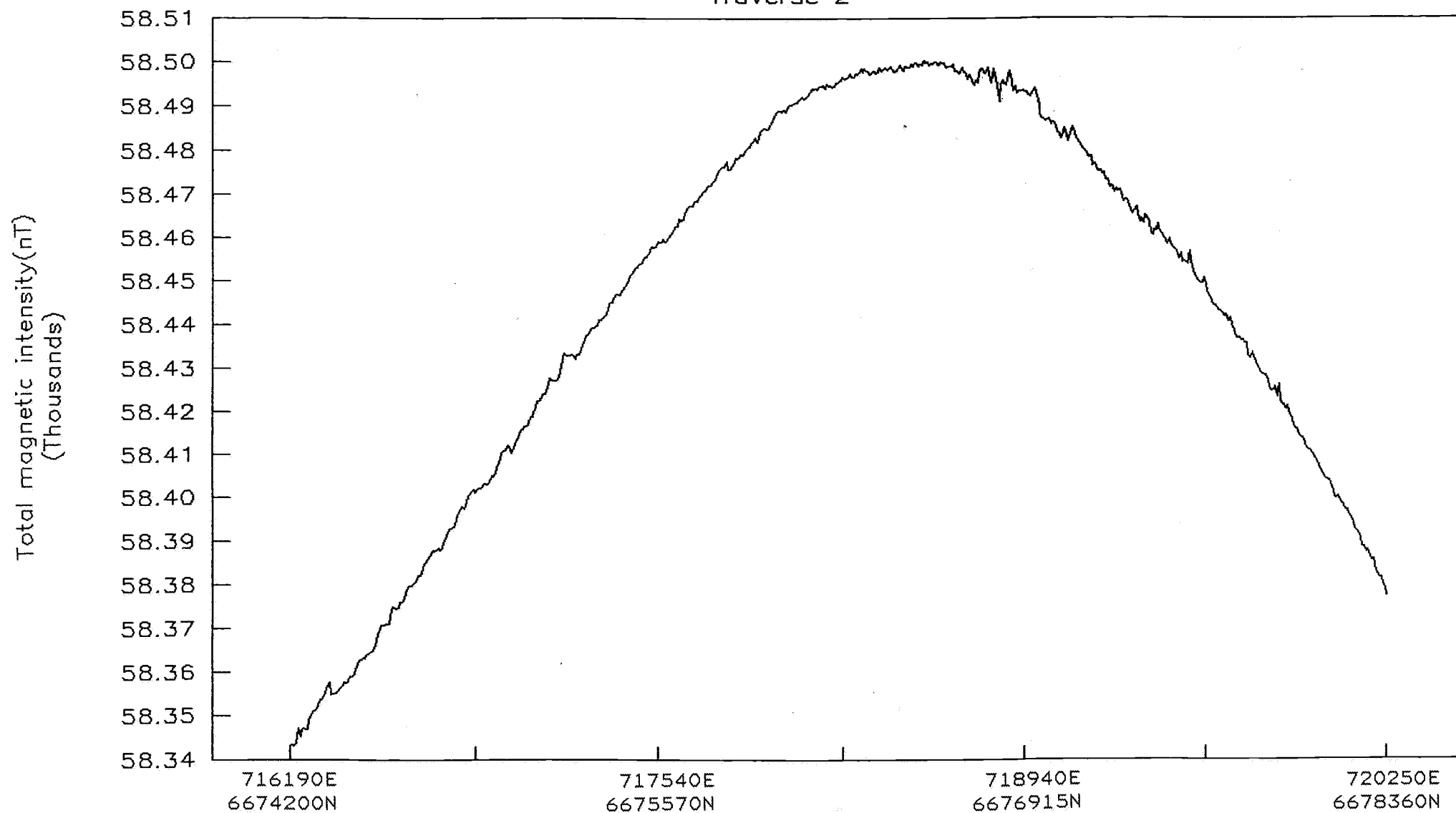
Traverse 1



000471

# OOLDEA RANGE

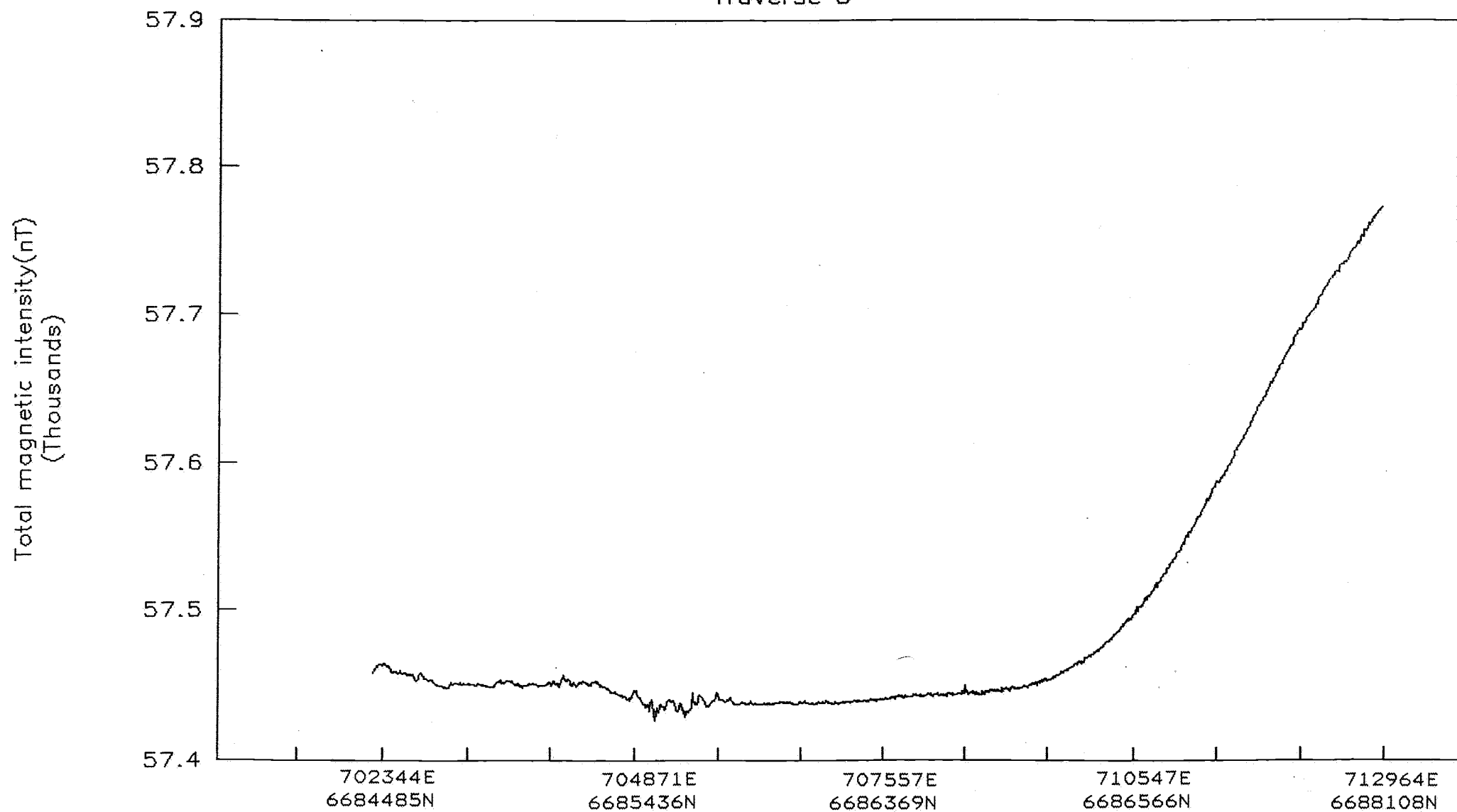
Traverse 2



000472

# OOLDEA RANGE

Traverse 3



000473

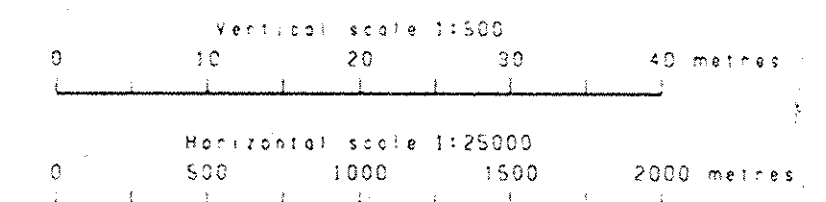
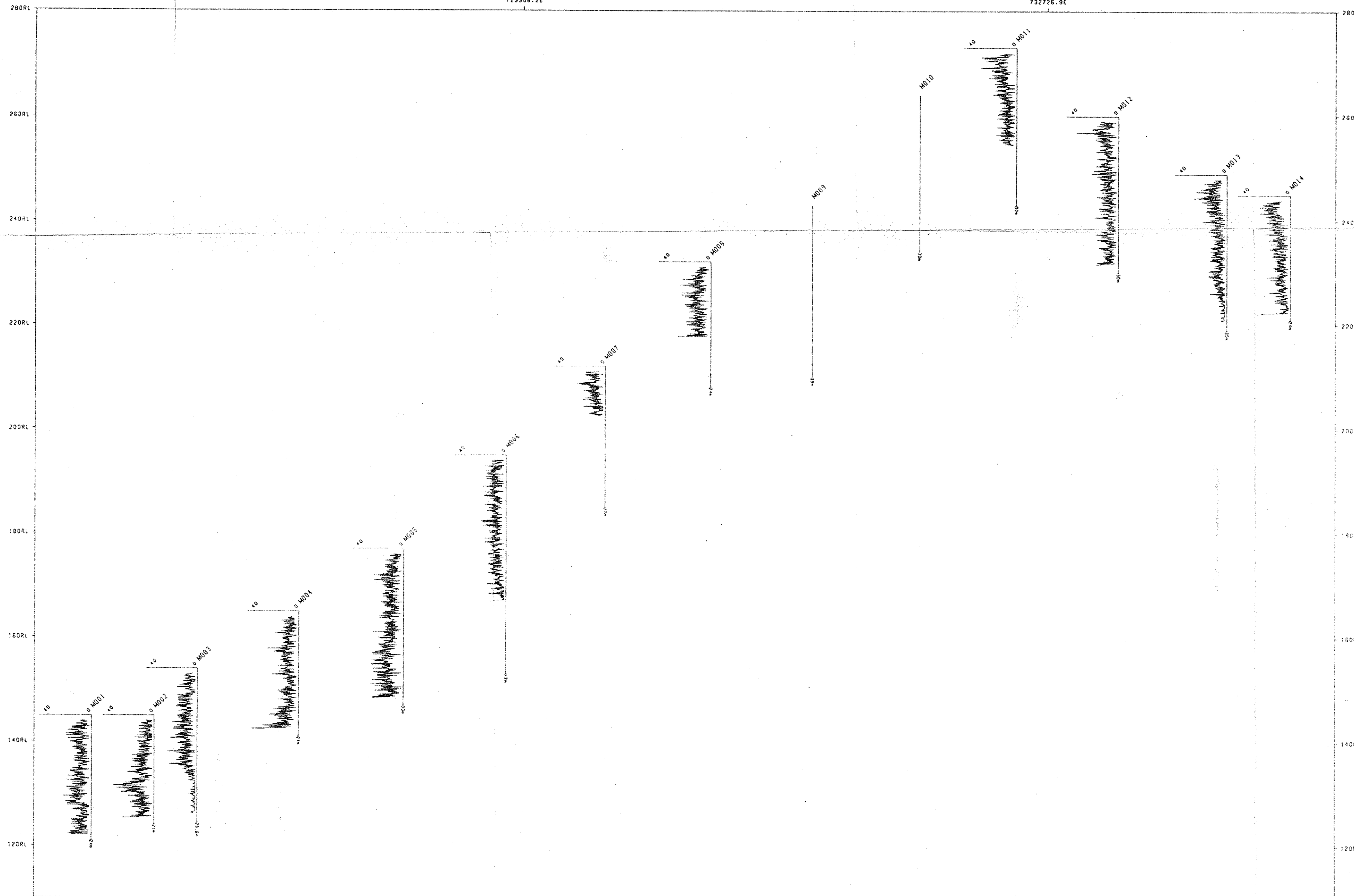
# Ooldea - Mineral Sands - SECTION TRAV 1

6667569.9N  
729506.2E

6671394.5N  
732726.9E

WIRELINE RESULTS:

CPS M+D histogram to the left  
scale 0 40+



|                                 |                    |                                                 |
|---------------------------------|--------------------|-------------------------------------------------|
| BHP-UTAH Minerals International |                    |                                                 |
| Ooldea - Mineral Sands          |                    |                                                 |
| OOLDEA REGION                   |                    |                                                 |
| EL 1653                         |                    |                                                 |
| TRAVERSE 1                      |                    |                                                 |
| DATE: 17-JAN-91                 | Compiled by<br>KLB | BHP-UTAH MINERALS INTERNATIONAL                 |
| X SCALE: 1:25000                | Y SCALE: 1:500     | ASIA PACIFIC DIVISION<br>EXPLORATION DEPARTMENT |

8302-1



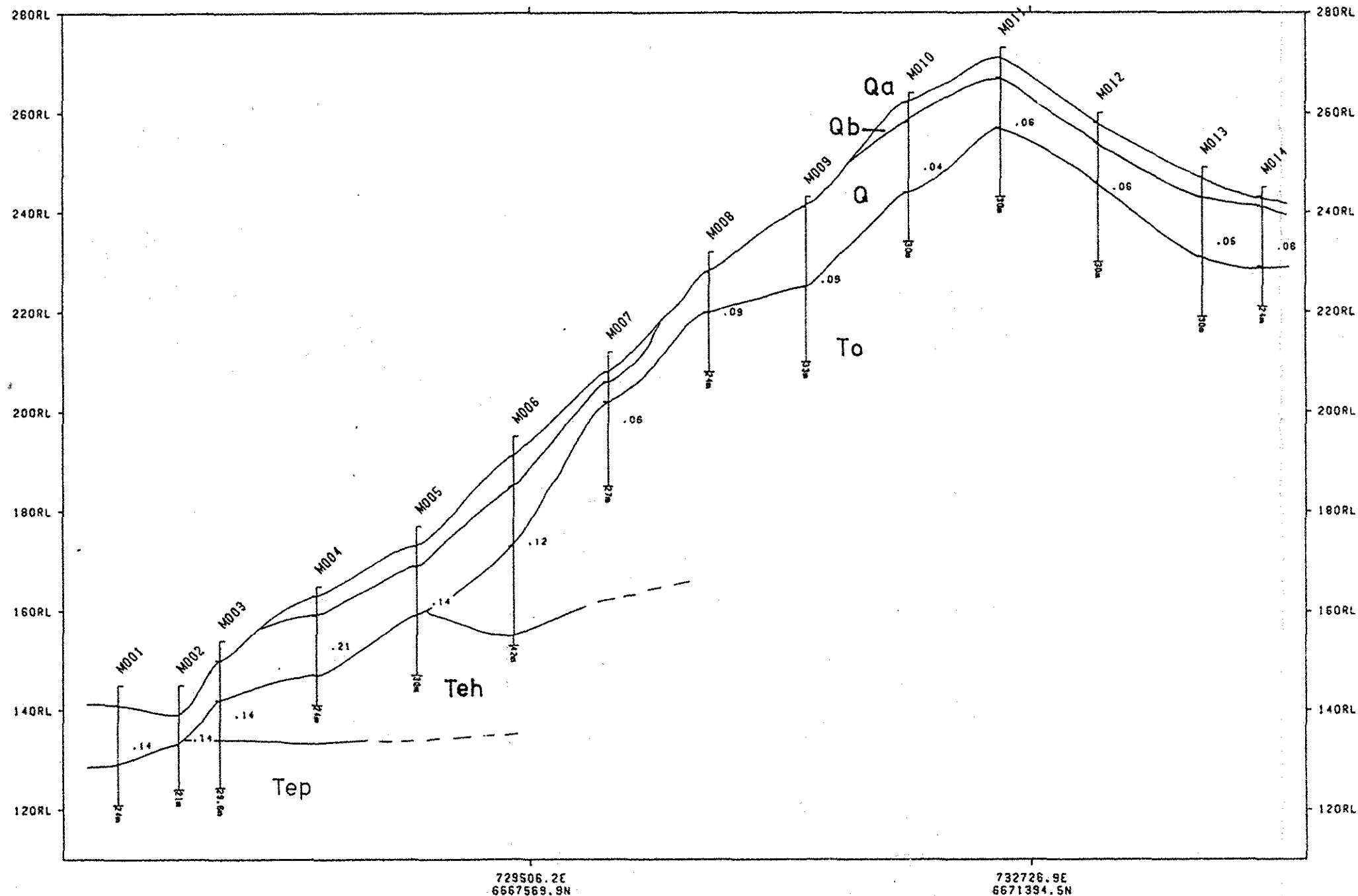
APPENDIX 4

Interpretive geological  
cross sections  
with heavy mineral assays

# Ooldea - Mineral Sands - SECTION TRAVER 1

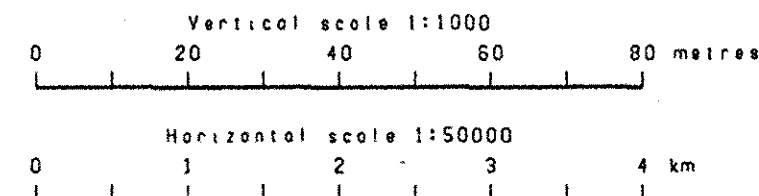
6667569.9N  
729506.2E

6671394.5N  
732726.9E



## SAMPLE BASED RESULTS:

HMWTPCT pct value annotation to the right, offset by 2mm.  
ranges (0-4+)



BHP-UTAH Minerals International  
Ooldea - Mineral Sands

OOLDEA REGION  
EL 1653  
TRAVERSE 1

DATE: 4-JAN-91

Compiled by  
KLB

BHP-UTAH MINERALS INTERNATIONAL

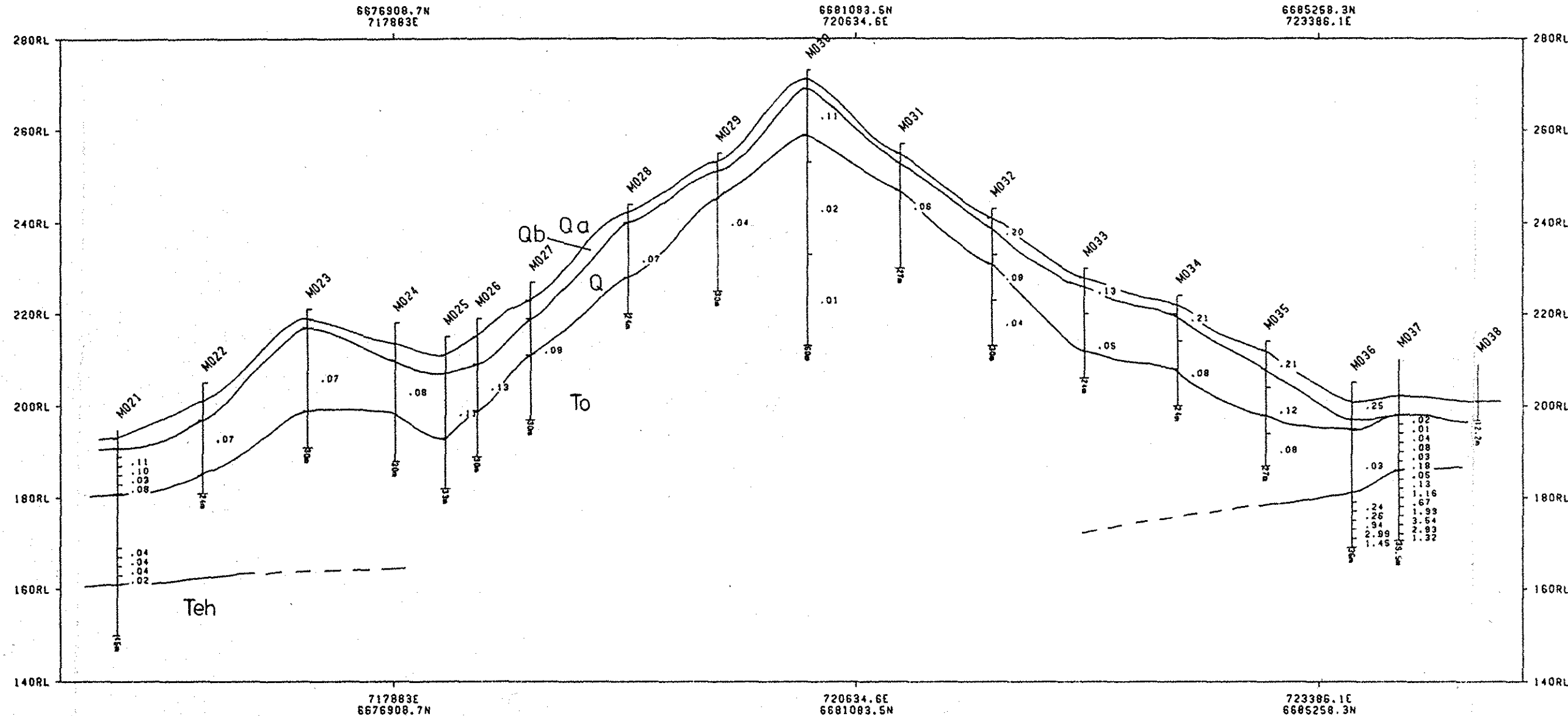
ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

X SCALE: 1:50000

Y SCALE: 1:1000

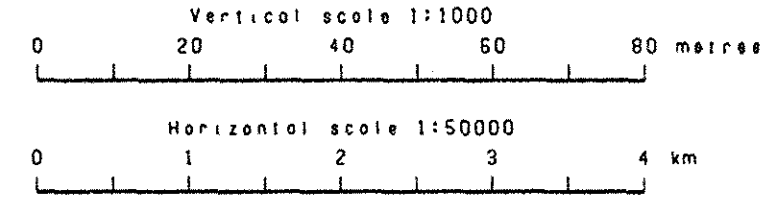
8302-2

# Ooldea - Mineral Sands - SECTION TRAV2



## SAMPLE BASED RESULTS:

HMWTPCT pct value annotation to the right, offset by 2mm.  
ranges (0-4+)



|                                 |                    |                                                 |
|---------------------------------|--------------------|-------------------------------------------------|
| BHP-UTAH Minerals International |                    |                                                 |
| Ooldea - Mineral Sands          |                    |                                                 |
| OOLDEA REGION                   |                    |                                                 |
| EL 1653                         |                    |                                                 |
| TRAVERSE 2                      |                    |                                                 |
| DATE: 4-JAN-91                  | Compiled by<br>KLB | BHP-UTAH MINERALS INTERNATIONAL                 |
| X SCALE: 1:50000                | Y SCALE: 1:1000    | ASIA PACIFIC DIVISION<br>EXPLORATION DEPARTMENT |

8302-3

# Ooldea - Mineral Sands - SECTION TRAV3

6684580.2N  
703092.4E

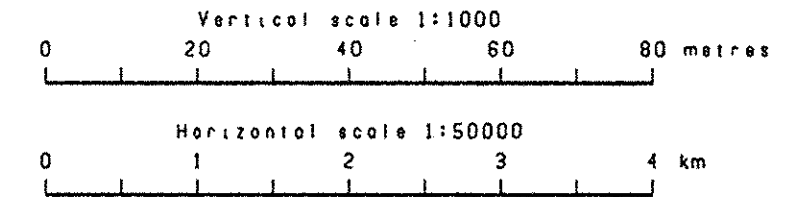
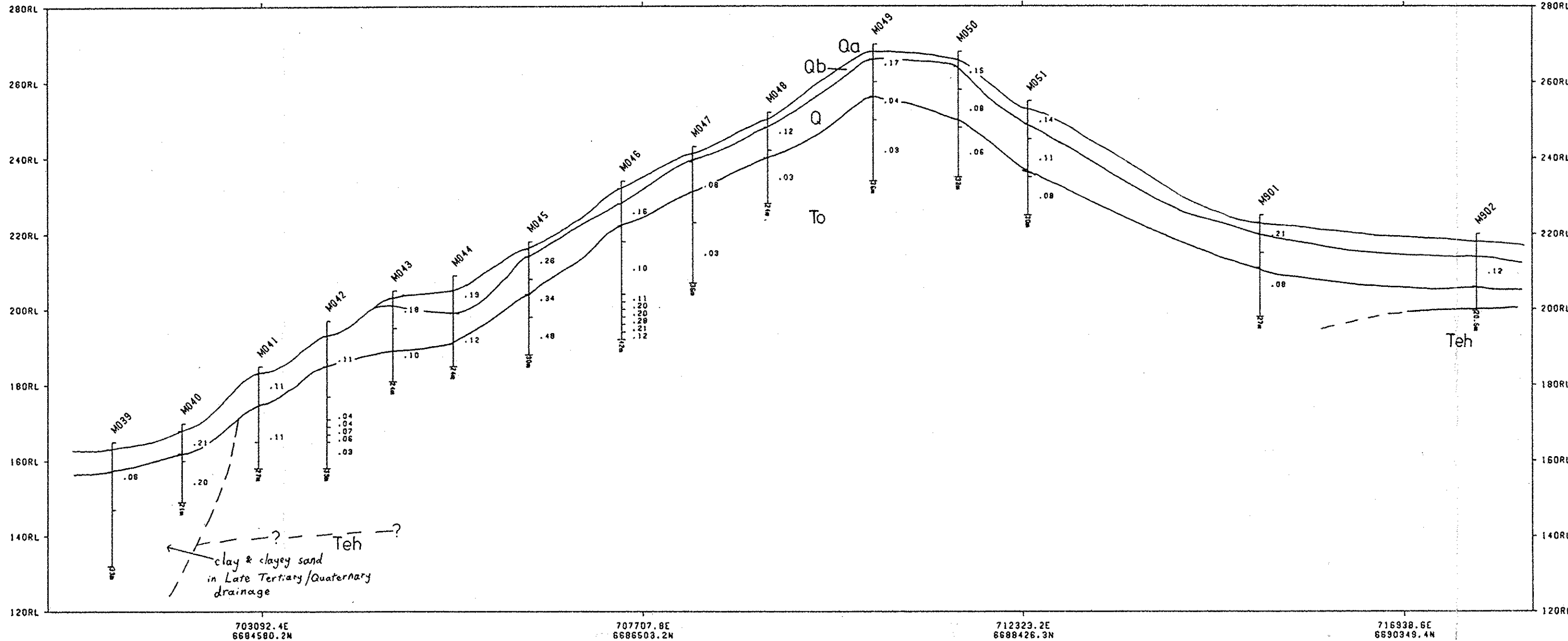
6686503.2N  
707707.8E

6688426.3N  
712323.2E

6690349.4N  
716938.6E

SAMPLE BASED RESULTS:

HMWTPCT pct value annotation to the right, offset by 2mm.  
ranges (0-4+)



BHP-UTAH Minerals International  
Ooldea - Mineral Sands

OOLDEA REGION  
EL 1653  
TRAVERSE 3

DATE: 4-JAN-91

Compiled by  
KLB

BHP-UTAH MINERALS INTERNATIONAL

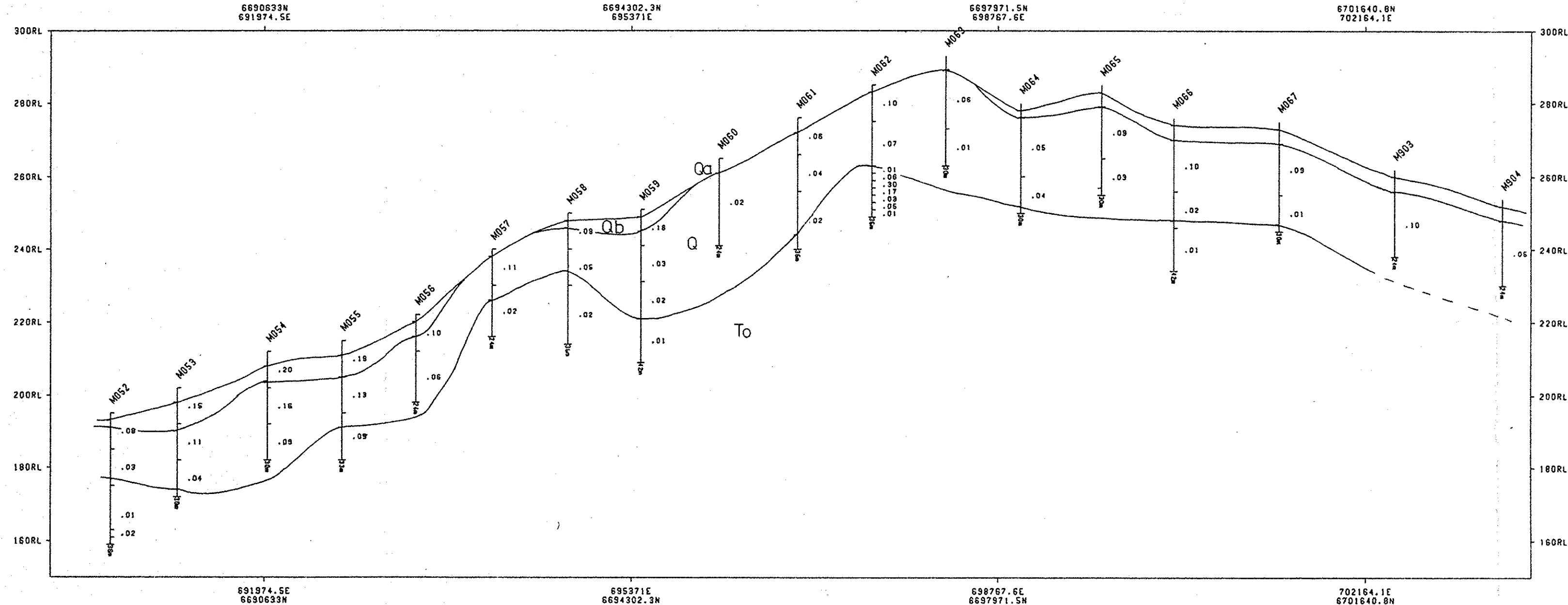
X SCALE: 1:50000

Y SCALE: 1:1000

ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

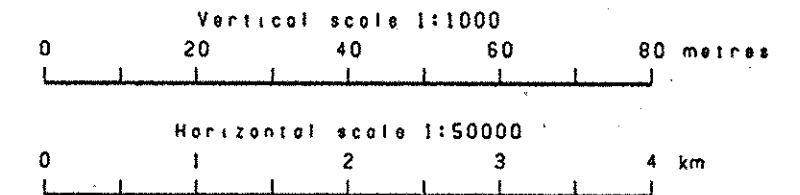
8302-4

# Ooldea - Mineral Sands - SECTION TRAV4



## SAMPLE BASED RESULTS:

HMWTPCT pct value annotation to the right, offset by 2mm.  
ranges (0-4+)



BHP-UTAH Minerals International  
Ooldea - Mineral Sands

OOLDEA REGION  
EL 1653  
TRAVERSE 4

DATE: 4-JAN-91

Compiled by  
KLB

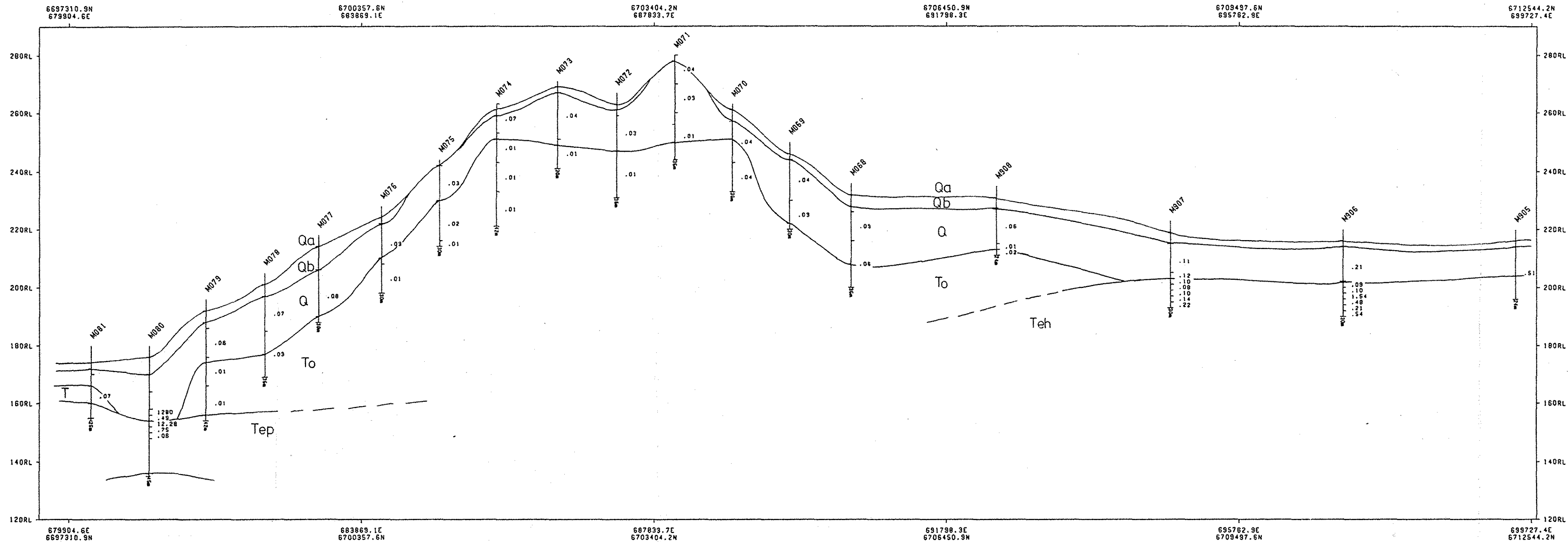
X SCALE: 1:50000

Y SCALE: 1:1000

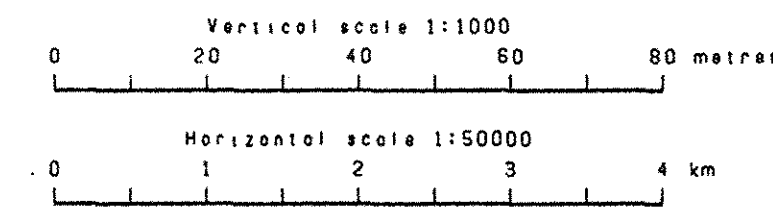
BHP-UTAH MINERALS INTERNATIONAL  
ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

8302-5

# Ooldea - Mineral Sands - SECTION TRAVERS



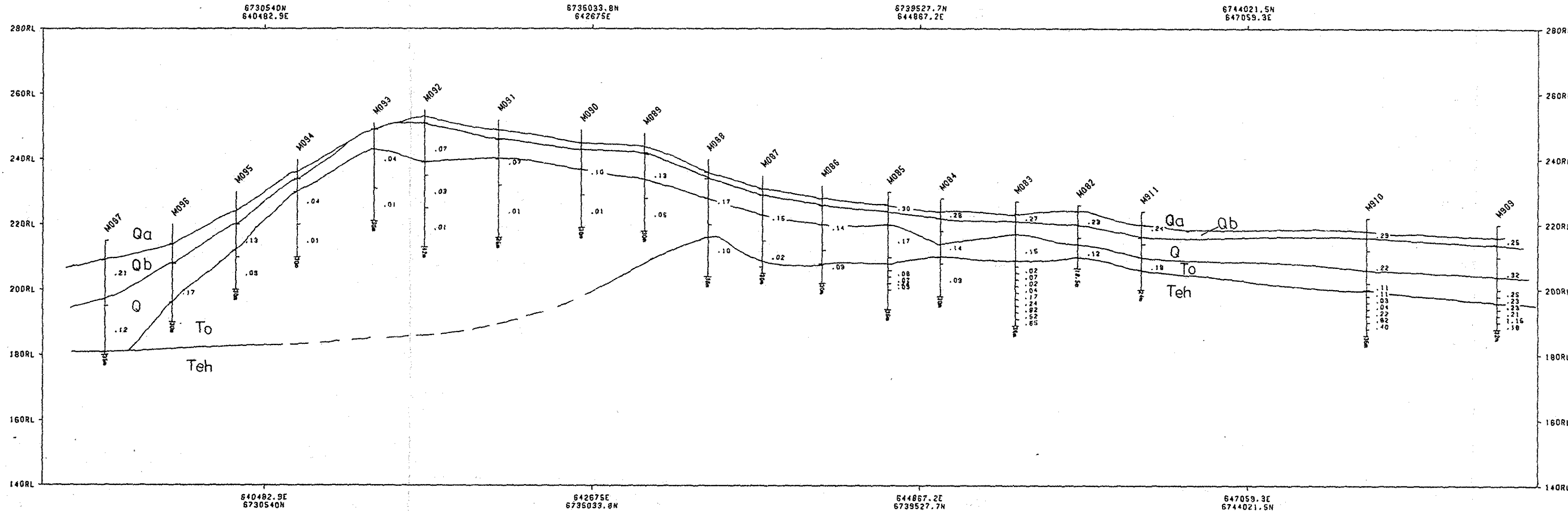
SAMPLE BASED RESULTS:  
HMWTPCT pct value annotation to the right, offset by 2mm.  
ranges (0-4+)



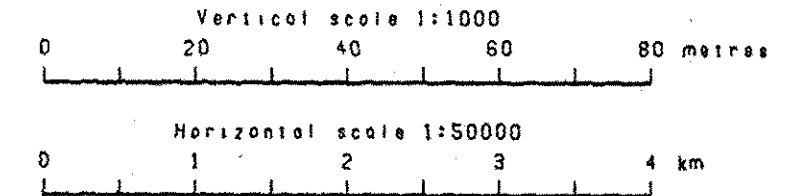
|                                 |                 |                                                 |
|---------------------------------|-----------------|-------------------------------------------------|
| BHP-UTAH Minerals International |                 |                                                 |
| Ooldea - Mineral Sands          |                 |                                                 |
| OOLDEA REGION                   |                 |                                                 |
| EL 1653                         |                 |                                                 |
| TRAVERSE 5                      |                 |                                                 |
| DATE: 4-JAN-91                  | Compiled by KLB | BHP-UTAH MINERALS INTERNATIONAL                 |
| X SCALE: 1:50000                | Y SCALE: 1:1000 | ASIA PACIFIC DIVISION<br>EXPLORATION DEPARTMENT |

8302-6

# Ooldea - Mineral Sands - SECTION TRAV8



SAMPLE BASED RESULTS:  
 HMWTPCT pct value annotation to the right, offset by 2mm.  
 ranges (0-4+)

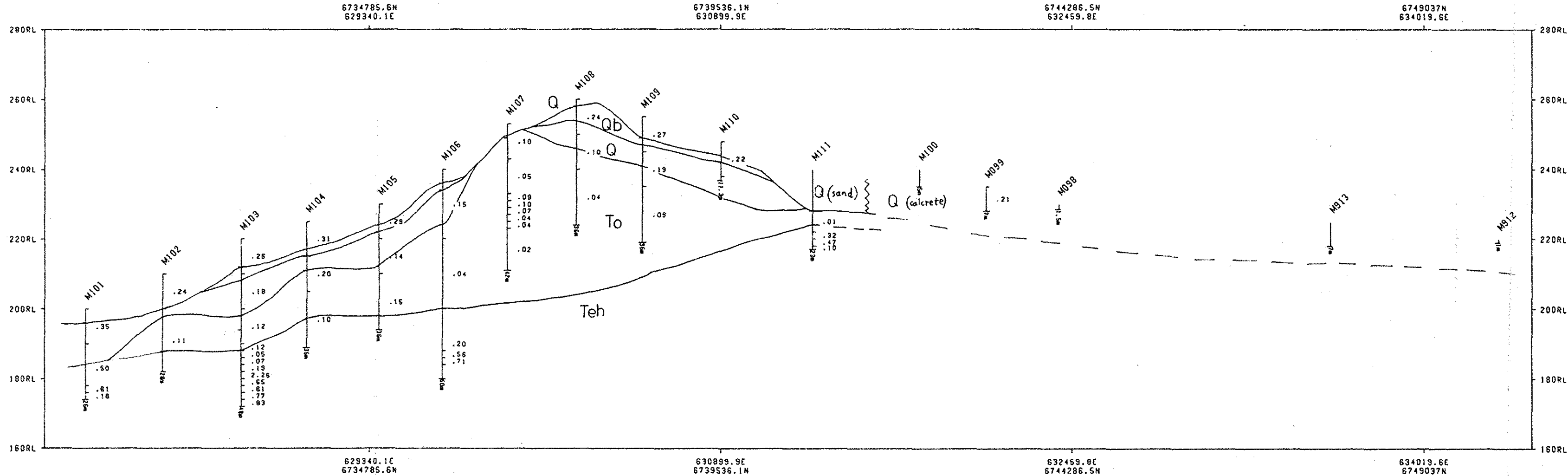


|                                 |                    |                                                 |
|---------------------------------|--------------------|-------------------------------------------------|
| BHP-UTAH Minerals International |                    |                                                 |
| Ooldea - Mineral Sands          |                    |                                                 |
| OOLDER REGION                   |                    |                                                 |
| EL 1655                         |                    |                                                 |
| TRAVERSE 8                      |                    |                                                 |
| DATE: 9-JAN-91                  | Compiled by<br>KLB | BHP-UTAH MINERALS INTERNATIONAL                 |
| X SCALE: 1:50000                | Y SCALE: 1:1000    | ASIA PACIFIC DIVISION<br>EXPLORATION DEPARTMENT |

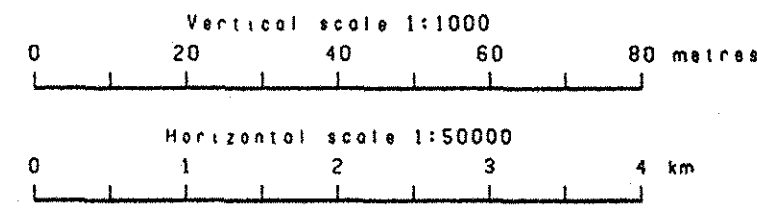
8302-7



# Ooldea - Mineral Sands - SECTION TRAV9



SAMPLE BASED RESULTS:  
 HMWTPCT pct value annotated to the right, offset by 2mm.  
 ranges (0-4+)



|                                        |                    |                                                                                    |
|----------------------------------------|--------------------|------------------------------------------------------------------------------------|
| BHP-UTAH Minerals International        |                    |                                                                                    |
| Ooldea - Mineral Sands                 |                    |                                                                                    |
| OOLDEA REGION<br>EL 1655<br>TRAVERSE 9 |                    |                                                                                    |
| DATE: 4-JAN-91                         | Compiled by<br>KLB | BHP-UTAH MINERALS INTERNATIONAL<br>ASIA PACIFIC DIVISION<br>EXPLORATION DEPARTMENT |
| X SCALE: 1:50000                       | Y SCALE: 1:1000    |                                                                                    |



6725844.21  
609724E

6730809.1  
610878.4E

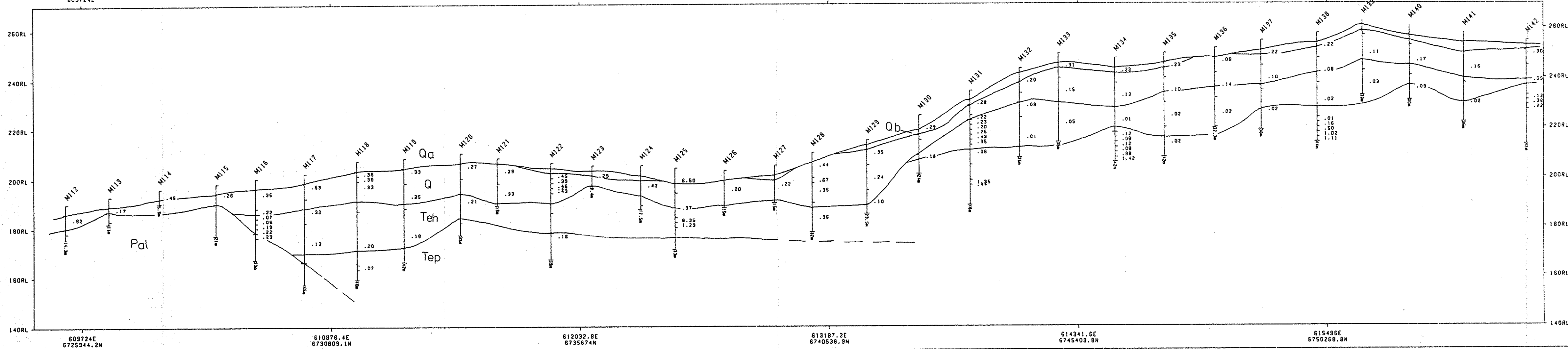
6735674N  
612032.8E  
1

6740538.9N  
613187.2E

6745403.8M  
614341.6E

6750268.81  
615496E

HMWTPCI per-value annotation to the right, offset by 2mm.  
ranges (Q-4+)



Vertical scale 1:1000  
0 20 40 60 80 metres

Horizontal scale 1:50000  
0 1 2 3 4 km

BHP-UTAH Minerals International  
 Goldea - Mineral Sands

00LDEA REGION  
EL 1654  
TRAVERSE 10

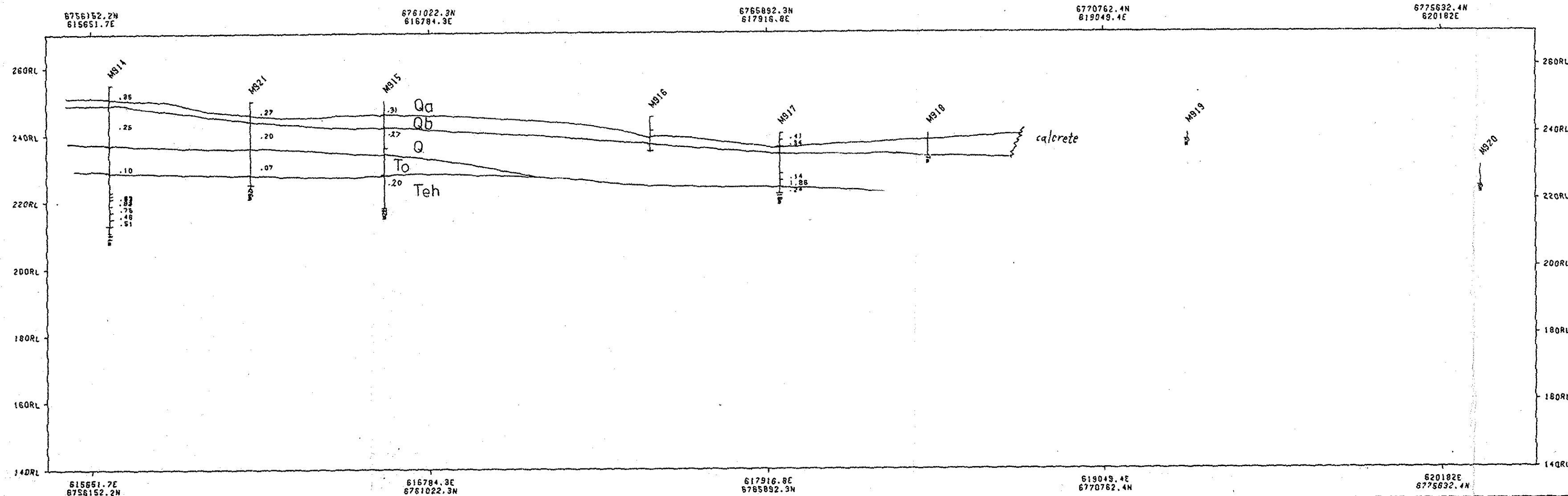
DATE: 4-JAN-91

Compiled by  
KLB

BHP-UTAH MINERALS INTERNATIONAL  
 ASIA PACIFIC DIVISION  
 EXPLORATION DEPARTMENT

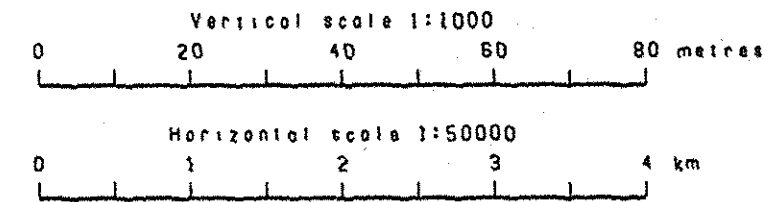
8302-9

# Ooldeo - Mineral Sands - SECTION TRAVERSA



## SAMPLE BASED RESULTS:

MMWPCT per value annotation to the right, offset by 2mm.  
ranges (0-4+)



BHP-UTAH Minerals International  
Ooldeo - Mineral Sands

OOLDEA REGION  
EL 1654  
TRAVERSE 10A

DATE: 4-JAN-91

Compiled by  
KLB

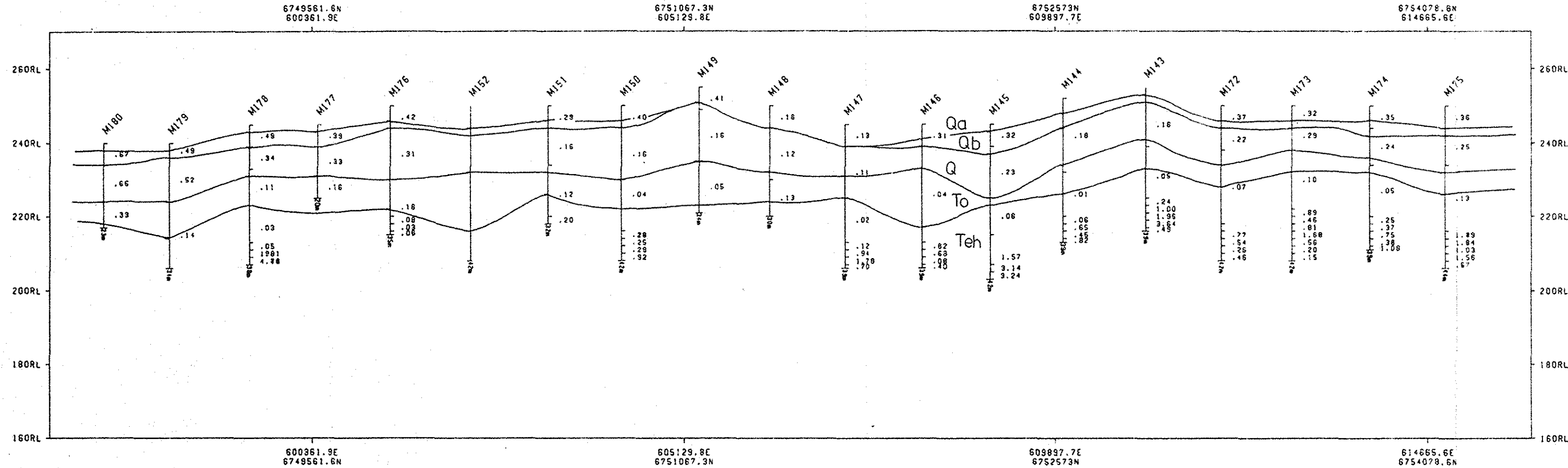
BHP-UTAH MINERALS INTERNATIONAL  
ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

X SCALE: 1:50000

Y SCALE: 1:1000

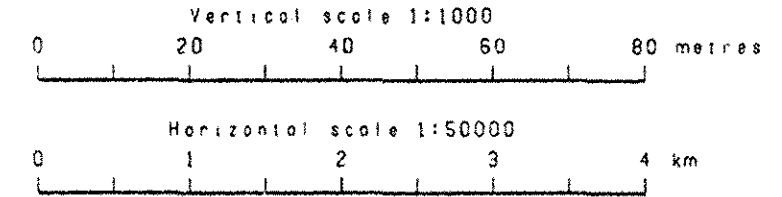
8302-10

# Doldea - Mineral Sands - SECTION TRAV11B



SAMPLE BASED RESULTS:

HMWTPCT pct value annotation to the right, offset by 2mm.  
ranges (0-4+)



BHP-UTAH Minerals International  
Doldea - Mineral Sands

OOLDEA REGION  
EL 1654  
TRAVERSE 11

DATE: 4-JAN-91

Compiled by  
KLB

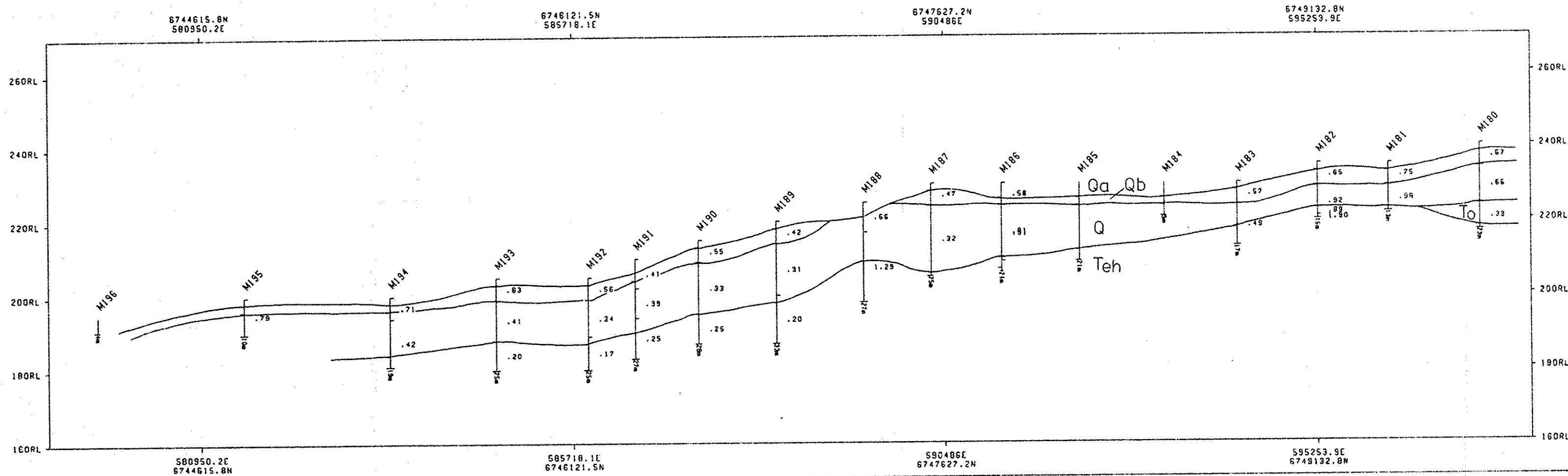
BHP-UTAH MINERALS INTERNATIONAL  
ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

X SCALE: 1:50000

Y SCALE: 1:1000

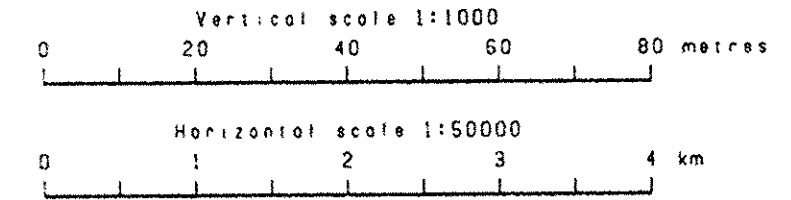
8302-11

# Ooldea - Mineral Sands - SECTION TRAV11



SAMPLE BASED RESULTS:

HMWTPCT pct value annotation to the right, offset by 2mm.  
ranges (0-4+)



BHP-UTAH Minerals International  
Ooldea - Mineral Sands

OOLDEA REGION  
EL 1654  
TRAVERSE 11

DATE: 4-JAN-91

Compiled by  
KLB

BHP-UTAH MINERALS INTERNATIONAL

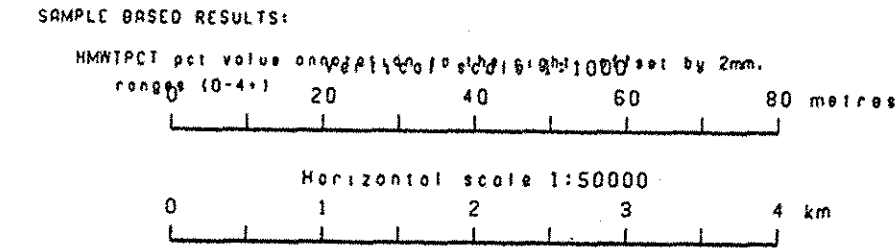
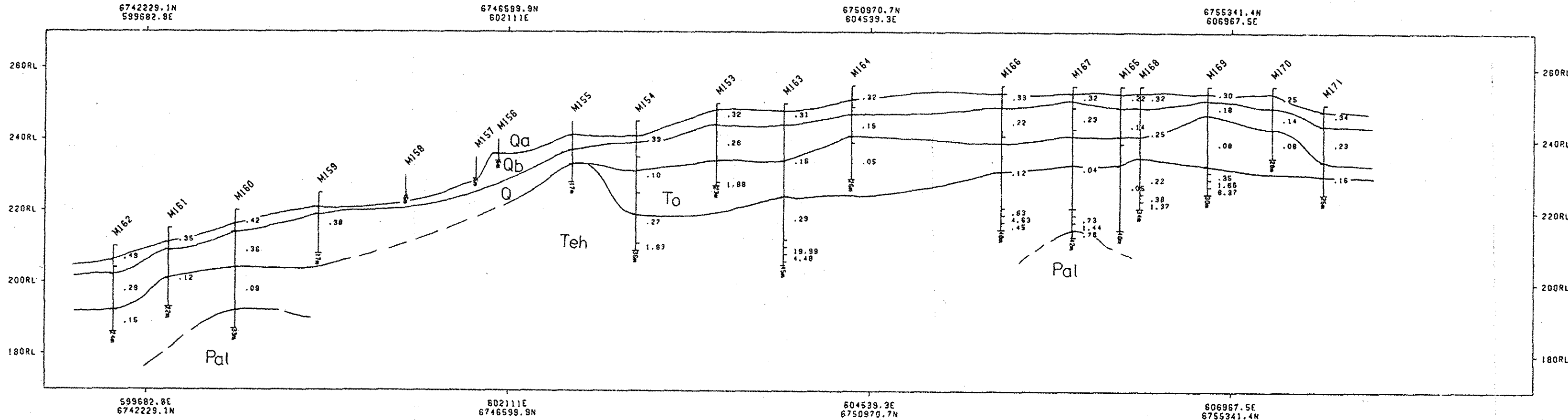
X SCALE: 1:50000

Y SCALE: 1:1000

ASA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

8302-12

# Ooldea - Mineral Sands - SECTION TRAV12



|                                 |                    |                                                 |
|---------------------------------|--------------------|-------------------------------------------------|
| BHP-UTAH Minerals International |                    |                                                 |
| Ooldea - Mineral Sands          |                    |                                                 |
| OOLDEA REGION                   |                    |                                                 |
| EL 1654                         |                    |                                                 |
| TRAVERSE 12                     |                    |                                                 |
| DATE: 4-JAN-91                  | Compiled by<br>KLB | BHP-UTAH MINERALS INTERNATIONAL                 |
| X SCALE: 1:50000                | Y SCALE: 1:1000    | ASIA PACIFIC DIVISION<br>EXPLORATION DEPARTMENT |

8302-13

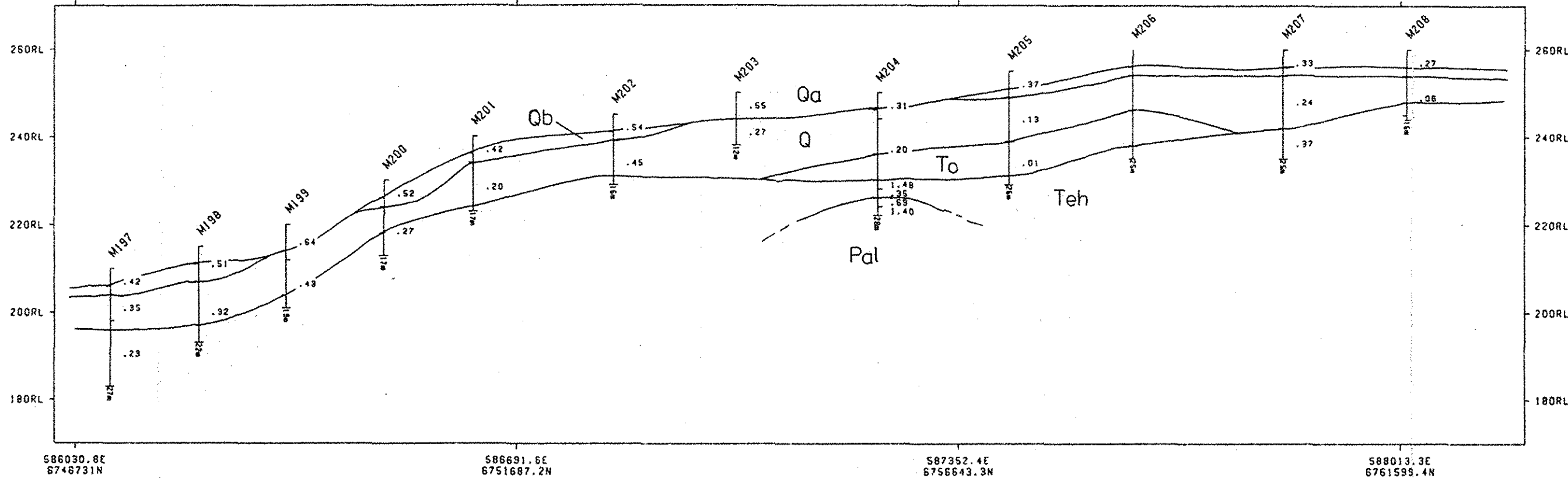
# Ooldea - Mineral Sands - SECTION TRAV13

6746731N  
586030.8E

6751687.2N  
586691.6E

6756643.3N  
587352.4E

6761599.4N  
588013.3E



SAMPLE BASED RESULTS:

HMWTPCT pct value on a 100g sample of 1000 mesh by 2mm.

range (0-4+) 20 40 60 80 metres

Horizontal scale 1:50000

0 1 2 3 4 km

BHP-UTAH Minerals International

Ooldea - Mineral Sands

OOLDEA REGION

EL 1654

TRAVERSE 13

DATE: 4-JAN-91

Compiled by  
KLB

BHP-UTAH MINERALS INTERNATIONAL

X SCALE: 1:50000

Y SCALE: 1:1000

ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

8302-14

APPENDIX 5

Heavy mineral determinations

679  
HEAVY MINERAL CONTENT OF ~~102~~ SAMPLES

## 1. INTRODUCTION

Samples were received from Mr P Darby of BHP Exploration, Victoria with a request for determination of the heavy mineral content.

## 2. PROCEDURE

### Determination of Heavy Mineral Content

- a) Dry and crush (as necessary) and riffle ~500 g (Classic Laboratories).
- b) Prepare a slurry of the ~500 g and stir mechanically.
- c) Wet sieve at 1 mm and 38  $\mu\text{m}$  with a lower 38  $\mu\text{m}$  check sieve to ensure full retention of +38  $\mu\text{m}$  material.
- d) Weigh +1 mm and -1 mm+38  $\mu\text{m}$  fractions and riffle ~90 g of the -1 mm +38  $\mu\text{m}$  fraction.
- e) Separate the ~90 g centrifugally in tetrabromoethane (TBE, 2.96 sp. gr.).
- f) Remove <2.96 sp. gr. lights and discard.
- g) Top up tube with TBE and recentrifuge in order to remove any lights in the <2.96 sp. gr. heavies.
- h) Remove second <2.96 sp. gr. lights and discard.
- i) Wash, dry and weigh the >2.96 sp. gr. product.

## 3. RESULTS

The results are given in Table 1 which gives the -1 mm+38  $\mu\text{m}$  >2.96 sp. gr. product as a percentage of the -1 mm+38  $\mu\text{m}$  fraction and of the total sample.



000477

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 6013       | 8.6               | 74.1             | 17.3         | 0.19                               | 0.14            |
| DK 6025       | 8.3               | 64.8             | 26.9         | 0.22                               | 0.14            |
| DK 6041       | 2.8               | 80.5             | 16.7         | 0.18                               | 0.14            |
| DK 6054       | 1.4               | 77.4             | 21.2         | 0.27                               | 0.21            |
| DK 6070       | 5.4               | 71.9             | 22.7         | 0.19                               | 0.14            |
| DK 6092       | 5.7               | 86.9             | 7.4          | 0.13                               | 0.12            |
| DK 6107       | 3.8               | 92.2             | 3.9          | 0.06                               | 0.06            |
| DK 6120       | 9.7               | 85.0             | 5.3          | 0.11                               | 0.09            |
| DK 6138       | 4.7               | 89.1             | 6.2          | 0.10                               | 0.09            |
| DK 6154       | 5.1               | 83.2             | 11.7         | 0.05                               | 0.04            |
| DK 6170       | 6.3               | 88.5             | 5.2          | 0.06                               | 0.06            |
| DK 6186       | 5.2               | 87.1             | 7.7          | 0.07                               | 0.06            |
| DK 6202       | 1.8               | 86.2             | 11.9         | 0.05                               | 0.05            |
| DK 6215       | 7.9               | 79.1             | 13.0         | 0.07                               | 0.06            |
| DK 6222       | 1.1               | 96.4             | 2.5          | 0.14                               | 0.13            |
| DK 6230       | 6.6               | 89.0             | 4.4          | 0.18                               | 0.16            |
| DK 6236       | 14.4              | 81.2             | 4.4          | 0.11                               | 0.09            |
| DK 6247       | 11.1              | 76.7             | 12.2         | 0.14                               | 0.10            |
| DK 6251       | 2.2               | 81.7             | 16.1         | 0.13                               | 0.11            |
| DK 6252       | 15.4              | 76.2             | 8.4          | 0.13                               | 0.10            |
| DK 6253       | 13.9              | 77.4             | 8.8          | 0.04                               | 0.03            |
| DK 6254       | 1.9               | 85.6             | 12.5         | 0.09                               | 0.08            |
| DK 6261       | 3.2               | 96.1             | 0.7          | 0.04                               | 0.04            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 6262       | 6.0               | 90.2             | 3.8          | 0.04                               | 0.04            |
| DK 6263       | 0.1               | 96.7             | 3.2          | 0.04                               | 0.04            |
| DK 6264       | 1.1               | 96.8             | 2.2          | 0.02                               | 0.02            |
| DK 6281       | 8.3               | 74.4             | 17.2         | 0.10                               | 0.07            |
| DK 6296       | 1.0               | 92.0             | 7.1          | 0.07                               | 0.07            |
| DK 6310       | 7.7               | 80.8             | 11.5         | 0.09                               | 0.08            |
| DK 6326       | 2.6               | 84.5             | 12.8         | 0.13                               | 0.11            |
| DK 6339       | 5.8               | 78.4             | 15.8         | 0.17                               | 0.13            |
| DK 6353       | 3.9               | 85.0             | 11.2         | 0.09                               | 0.08            |
| DK 6365       | 2.4               | 87.1             | 10.6         | 0.08                               | 0.07            |
| DK 6381       | 6.5               | 84.9             | 8.6          | 0.05                               | 0.04            |
| DK 6411       | 9.0               | 79.4             | 11.6         | 0.14                               | 0.11            |
| DK 6412       | 1.7               | 96.0             | 2.3          | 0.02                               | 0.02            |
| DK 6413       | 0.3               | 99.5             | 0.2          | 0.01                               | 0.01            |
| DK 6427       | 3.5               | 91.5             | 4.9          | 0.07                               | 0.06            |
| DK 6442       | 2.3               | 80.5             | 17.1         | 0.25                               | 0.20            |
| DK 6443       | 0.7               | 91.1             | 8.2          | 0.09                               | 0.08            |
| DK 6444       | 1.1               | 94.0             | 4.9          | 0.04                               | 0.04            |
| DK 6456       | 8.4               | 75.3             | 16.2         | 0.17                               | 0.13            |
| DK 6457       | 5.2               | 91.0             | 3.8          | 0.06                               | 0.05            |
| DK 6469       | 8.9               | 71.4             | 19.7         | 0.29                               | 0.21            |
| DK 6470       | 9.8               | 86.9             | 3.3          | 0.09                               | 0.08            |
| DK 6483       | 4.8               | 69.0             | 26.2         | 0.30                               | 0.21            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 6484       | 12.1              | 81.3             | 6.5          | 0.14                               | 0.12            |
| DK 6485       | 2.0               | 93.9             | 4.1          | 0.08                               | 0.08            |
| DK 6495       | 21.1              | 75.6             | 3.3          | 0.32                               | 0.24            |
| DK 6496       | 0.9               | 94.7             | 4.5          | 0.27                               | 0.26            |
| DK 6497       | 5.1               | 89.9             | 5.0          | 1.05                               | 0.94            |
| DK 6498       | 2.5               | 92.8             | 4.7          | 3.22                               | 2.99            |
| DK 6499       | 1.4               | 94.6             | 4.0          | 1.53                               | 1.45            |
| DK 6500       | 18.2              | 52.7             | 29.1         | 0.47                               | 0.25            |
| DK 6501       | 37.9              | 58.4             | 3.7          | 0.05                               | 0.03            |
| DK 6502       | 70.2              | 25.8             | 4.0          | 0.09                               | 0.02            |
| DK 6503       | 52.4              | 40.1             | 7.5          | 0.03                               | 0.01            |
| DK 6504       | 6.7               | 88.2             | 5.1          | 0.05                               | 0.04            |
| DK 6505       | 23.9              | 69.9             | 6.3          | 0.12                               | 0.08            |
| DK 6506       | 51.5              | 45.7             | 2.9          | 0.07                               | 0.03            |
| DK 6507       | 35.4              | 60.8             | 3.8          | 0.30                               | 0.18            |
| DK 6508       | 80.8              | 16.6             | 2.6          | 0.28                               | 0.05            |
| DK 6509       | 12.4              | 86.2             | 1.4          | 0.15                               | 0.13            |
| DK 6510       | 0.4               | 92.8             | 6.7          | 1.25                               | 1.16            |
| DK 6511       | 0.9               | 93.3             | 5.8          | 0.72                               | 0.67            |
| DK 6512       | 5.4               | 87.5             | 7.1          | 2.21                               | 1.93            |
| DK 6513       | 1.8               | 91.3             | 6.9          | 3.88                               | 3.54            |
| DK 6514       | 3.0               | 90.3             | 6.7          | 3.25                               | 2.93            |
| DK 6515       | 5.9               | 88.3             | 5.8          | 1.49                               | 1.32            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 6532       | 1.8               | 85.7             | 12.5         | 0.07                               | 0.06            |
| DK 6537       | 2.0               | 78.2             | 19.8         | 0.27                               | 0.21            |
| DK 6538       | 1.7               | 71.9             | 26.4         | 0.28                               | 0.20            |
| DK 6553       | 11.6              | 79.9             | 8.4          | 0.14                               | 0.11            |
| DK 6554       | 2.8               | 92.5             | 4.7          | 0.12                               | 0.11            |
| DK 6568       | 0.6               | 98.8             | 0.7          | 0.04                               | 0.04            |
| DK 6569       | 2.4               | 96.3             | 1.3          | 0.07                               | 0.07            |
| DK 6570       | 14.4              | 84.3             | 1.2          | 0.07                               | 0.06            |
| DK 6575       | 2.3               | 87.1             | 10.6         | 0.12                               | 0.11            |
| DK 6576       | 0.5               | 98.9             | 0.6          | 0.04                               | 0.04            |
| DK 6577       | 29.0              | 69.9             | 1.1          | 0.05                               | 0.03            |
| DK 6589       | 10.4              | 74.6             | 15.1         | 0.25                               | 0.18            |
| DK 6590       | 5.1               | 90.8             | 4.1          | 0.11                               | 0.10            |
| DK 6600       | 1.8               | 65.8             | 32.4         | 0.29                               | 0.19            |
| DK 6601       | 6.9               | 83.1             | 10.0         | 0.14                               | 0.12            |
| DK 6616       | 7.9               | 74.8             | 17.3         | 0.35                               | 0.26            |
| DK 6617       | 2.9               | 90.3             | 6.7          | 0.37                               | 0.34            |
| DK 6618       | 1.4               | 95.8             | 2.8          | 0.50                               | 0.48            |
| DK 6632       | 0.6               | 98.1             | 1.3          | 0.11                               | 0.11            |
| DK 6633       | 2.4               | 96.4             | 1.2          | 0.21                               | 0.20            |
| DK 6634       | 1.1               | 97.9             | 1.0          | 0.20                               | 0.20            |
| DK 6635       | 0.2               | 99.4             | 0.5          | 0.29                               | 0.28            |
| DK 6636       | 0.3               | 99.2             | 0.4          | 0.21                               | 0.21            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 6637       | 1.8               | 97.8             | 0.4          | 0.12                               | 0.12            |
| DK 6638       | 4.4               | 83.0             | 12.6         | 0.20                               | 0.16            |
| DK 6639       | 0.5               | 94.5             | 4.9          | 0.10                               | 0.10            |
| DK 6657       | 6.0               | 84.6             | 9.4          | 0.10                               | 0.08            |
| DK 6658       | 0.8               | 97.2             | 2.0          | 0.03                               | 0.03            |
| DK 6670       | 7.1               | 75.7             | 17.2         | 0.16                               | 0.12            |
| DK 6671       | 1.2               | 93.8             | 5.0          | 0.03                               | 0.03            |
| DK 6689       | 2.6               | 73.8             | 23.7         | 0.23                               | 0.17            |
| DK 6690       | 0.9               | 88.2             | 10.8         | 0.04                               | 0.04            |
| DK 6691       | 0.4               | 96.9             | 2.7          | 0.03                               | 0.03            |
| DK 6708       | 5.5               | 76.9             | 17.6         | 0.19                               | 0.15            |
| DK 6709       | 0.5               | 90.7             | 8.8          | 0.09                               | 0.08            |
| DK 6710       | 0.4               | 98.4             | 1.3          | 0.06                               | 0.06            |
| DK 6725       | 4.8               | 74.5             | 20.7         | 0.19                               | 0.14            |
| DK 6726       | 0.8               | 90.5             | 8.6          | 0.12                               | 0.11            |
| DK 6727       | 0.4               | 96.6             | 3.1          | 0.08                               | 0.08            |
| DK 6743       | 2.2               | 82.0             | 15.8         | 0.25                               | 0.21            |
| DK 6744       | 3.8               | 92.8             | 3.3          | 0.09                               | 0.08            |
| DK 6752       | 8.9               | 78.4             | 12.8         | 0.15                               | 0.12            |
| DK 6768       | 0.1               | 99.3             | 0.6          | 0.02                               | 0.02            |
| DK 6770       | 0.5               | 85.3             | 14.2         | 0.09                               | 0.08            |
| DK 6771       | 8.9               | 87.9             | 3.2          | 0.04                               | 0.03            |
| DK 6772       | 0.4               | 98.3             | 1.3          | 0.01                               | 0.01            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 6787       | 0.4               | 78.6             | 21.0         | 0.19                               | 0.15            |
| DK 6788       | 5.3               | 81.8             | 13.0         | 0.13                               | 0.11            |
| DK 6789       | 10.0              | 83.3             | 6.7          | 0.05                               | 0.04            |
| DK 6805       | 1.4               | 76.7             | 21.9         | 0.26                               | 0.20            |
| DK 6806       | 0.1               | 85.4             | 14.5         | 0.19                               | 0.16            |
| DK 6807       | 15.4              | 80.9             | 3.7          | 0.12                               | 0.09            |
| DK 6822       | 0.6               | 76.1             | 23.4         | 0.25                               | 0.19            |
| DK 6823       | 14.1              | 80.0             | 5.9          | 0.17                               | 0.13            |
| DK 6824       | 4.0               | 93.1             | 2.9          | 0.10                               | 0.09            |
| DK 6835       | 16.5              | 65.5             | 18.0         | 0.15                               | 0.10            |
| DK 6836       | 5.8               | 83.1             | 11.2         | 0.07                               | 0.06            |
| DK 6849       | 20.3              | 68.7             | 11.0         | 0.16                               | 0.11            |
| DK 6850       | 3.1               | 94.9             | 2.0          | 0.02                               | 0.02            |
| DK 6867       | 17.8              | 71.7             | 10.5         | 0.12                               | 0.09            |
| DK 6868       | 2.4               | 94.1             | 3.5          | 0.05                               | 0.05            |
| DK 6869       | 0.4               | 99.0             | 0.7          | 0.02                               | 0.02            |
| DK 6888       | 2.5               | 68.2             | 29.3         | 0.23                               | 0.16            |
| DK 6889       | 5.4               | 87.9             | 6.7          | 0.03                               | 0.03            |
| DK 6890       | 1.0               | 93.8             | 5.2          | 0.02                               | 0.02            |
| DK 6891       | 3.9               | 95.0             | 1.1          | 0.01                               | 0.01            |
| DK 6902       | 12.4              | 81.1             | 6.5          | 0.02                               | 0.02            |
| DK 6920       | 20.9              | 68.6             | 10.5         | 0.09                               | 0.06            |
| DK 6921       | 3.3               | 78.7             | 18.0         | 0.05                               | 0.04            |

000483

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 6922       | 0.4               | 95.3             | 4.3          | 0.02                               | 0.02            |
| DK 6932       | 0.4               | 99.1             | 0.4          | 0.01                               | 0.01            |
| DK 6933       | 0.3               | 99.4             | 0.3          | 0.06                               | 0.06            |
| DK 6934       | 0.2               | 99.4             | 0.3          | 0.30                               | 0.30            |
| DK 6935       | 0.1               | 99.7             | 0.2          | 0.17                               | 0.17            |
| DK 6936       | 0.3               | 99.4             | 0.4          | 0.03                               | 0.03            |
| DK 6937       | 0.4               | 99.2             | 0.3          | 0.05                               | 0.05            |
| DK 6938       | 0.4               | 99.4             | 0.2          | 0.01                               | 0.01            |
| DK 6939       | 5.2               | 74.8             | 20.1         | 0.13                               | 0.10            |
| DK 6940       | 3.4               | 92.3             | 4.3          | 0.08                               | 0.07            |
| DK 6953       | 4.5               | 84.3             | 11.2         | 0.07                               | 0.06            |
| DK 6954       | 1.1               | 93.4             | 5.5          | 0.01                               | 0.01            |
| DK 6968       | 3.2               | 88.6             | 8.2          | 0.06                               | 0.05            |
| DK 6969       | 0.9               | 95.5             | 3.7          | 0.04                               | 0.04            |
| DK 6982       | 4.8               | 85.9             | 9.2          | 0.11                               | 0.09            |
| DK 6983       | 0.4               | 96.0             | 3.6          | 0.03                               | 0.03            |
| DK 7002       | 1.4               | 82.3             | 16.2         | 0.12                               | 0.10            |
| DK 7003       | 0.9               | 93.2             | 5.9          | 0.02                               | 0.02            |
| DK 7004       | 0.4               | 99.2             | 0.4          | 0.01                               | 0.01            |
| DK 7017       | 2.6               | 85.7             | 11.8         | 0.10                               | 0.09            |
| DK 7018       | 0.6               | 94.3             | 5.1          | 0.01                               | 0.01            |
| DK 7028       | 0.5               | 86.6             | 12.9         | 0.12                               | 0.10            |
| DK 7038       | 3.5               | 89.7             | 6.7          | 0.06                               | 0.05            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 7048       | 10.5              | 81.8             | 7.7          | 0.63                               | 0.51            |
| DK 7055       | 41.4              | 56.4             | 2.2          | 0.16                               | 0.09            |
| DK 7056       | 27.8              | 71.0             | 1.2          | 0.14                               | 0.10            |
| DK 7057       | 15.5              | 82.7             | 1.8          | 1.86                               | 1.54            |
| DK 7058       | 21.8              | 74.1             | 4.1          | 0.65                               | 0.48            |
| DK 7059       | 26.7              | 70.3             | 3.0          | 0.29                               | 0.21            |
| DK 7060       | 9.1               | 87.8             | 3.1          | 0.62                               | 0.54            |
| DK 7061       | 23.0              | 68.1             | 8.8          | 0.31                               | 0.21            |
| DK 7067       | 14.9              | 73.0             | 12.0         | 0.16                               | 0.12            |
| DK 7068       | 29.0              | 63.2             | 7.9          | 0.16                               | 0.10            |
| DK 7069       | 42.4              | 52.5             | 5.1          | 0.16                               | 0.08            |
| DK 7070       | 39.6              | 57.0             | 3.4          | 0.18                               | 0.10            |
| DK 7071       | 27.8              | 68.7             | 3.5          | 0.20                               | 0.14            |
| DK 7072       | 26.9              | 70.4             | 2.7          | 0.32                               | 0.22            |
| DK 7073       | 20.7              | 67.7             | 11.5         | 0.16                               | 0.11            |
| DK 7080       | 1.2               | 92.6             | 6.2          | 0.01                               | 0.01            |
| DK 7081       | 0.3               | 96.5             | 3.2          | 0.02                               | 0.02            |
| DK 7082       | 8.2               | 84.4             | 7.4          | 0.07                               | 0.06            |
| DK 7096       | 6.0               | 82.7             | 11.4         | 0.10                               | 0.09            |
| DK 7097       | 1.9               | 93.0             | 5.1          | 0.07                               | 0.06            |
| DK 7110       | 9.5               | 82.3             | 8.3          | 0.05                               | 0.04            |
| DK 7111       | 2.0               | 92.1             | 5.9          | 0.03                               | 0.03            |
| DK 7124       | 1.4               | 95.8             | 2.8          | 0.04                               | 0.04            |



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TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 7125       | 0.3               | 99.1             | 0.6          | 0.04                               | 0.04            |
| DK 7139       | 14.8              | 77.5             | 7.7          | 0.05                               | 0.04            |
| DK 7140       | 3.6               | 89.9             | 6.4          | 0.04                               | 0.03            |
| DK 7141       | 1.1               | 97.1             | 1.8          | 0.01                               | 0.01            |
| DK 7157       | 4.2               | 86.8             | 9.0          | 0.04                               | 0.03            |
| DK 7158       | 1.5               | 97.6             | 0.9          | 0.01                               | 0.01            |
| DK 7172       | 7.3               | 83.6             | 9.1          | 0.05                               | 0.04            |
| DK 7173       | 0.9               | 96.3             | 2.8          | 0.01                               | 0.01            |
| DK 7192       | 16.1              | 72.2             | 11.8         | 0.10                               | 0.07            |
| DK 7193       | 0.8               | 98.3             | 1.0          | 0.01                               | 0.01            |
| DK 7194       | 1.5               | 98.2             | 0.3          | 0.01                               | 0.01            |
| DK 7195       | 8.5               | 90.8             | 0.7          | 0.01                               | 0.01            |
| DK 7207       | 1.2               | 98.8             | 0.0          | 0.01                               | 0.01            |
| DK 7208       | 7.7               | 85.6             | 6.7          | 0.04                               | 0.03            |
| DK 7209       | 1.0               | 97.3             | 1.7          | 0.02                               | 0.02            |
| DK 7222       | 11.4              | 80.5             | 8.1          | 0.04                               | 0.03            |
| DK 7223       | 0.5               | 97.9             | 1.6          | 0.01                               | 0.01            |
| DK 7233       | 8.1               | 75.2             | 16.7         | 0.10                               | 0.08            |
| DK 7248       | 4.9               | 82.6             | 12.5         | 0.09                               | 0.07            |
| DK 7249       | 1.2               | 95.5             | 3.2          | 0.03                               | 0.03            |
| DK 7266       | 5.5               | 86.6             | 7.9          | 0.06                               | 0.06            |
| DK 7267       | 0.4               | 97.9             | 1.7          | 0.01                               | 0.01            |
| DK 7268       | 1.6               | 94.4             | 4.1          | 0.01                               | 0.01            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 7272       | 29.2              | 61.5             | 9.3          | 0.32                               | 0.20            |
| DK 7273       | 11.7              | 83.4             | 4.9          | 0.59                               | 0.49            |
| DK 7274       | 47.5              | 49.9             | 2.6          | 24.58                              | 12.28           |
| DK 7275       | 19.7              | 75.4             | 4.9          | 1.00                               | 0.75            |
| DK 7276       | 0.0               | 97.8             | 2.2          | 0.06                               | 0.06            |
| DK 7283       | 18.9              | 72.0             | 9.1          | 2.36                               | 1.70            |
| DK 7292       | 24.8              | 61.1             | 14.1         | 0.11                               | 0.07            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 8193       | 38.8              | 56.6             | 4.6          | 0.43                               | 0.24            |
| DK 8194       | 16.2              | 71.9             | 11.9         | 1.39                               | 1.00            |
| DK 8195       | 5.8               | 81.1             | 13.2         | 2.42                               | 1.96            |
| DK 8196       | 20.9              | 62.7             | 16.4         | 5.81                               | 3.64            |
| DK 8197       | 35.3              | 47.8             | 16.9         | 1.03                               | 0.49            |
| DK 8198       | 28.4              | 62.3             | 9.4          | 0.25                               | 0.16            |
| DK 8199       | 62.0              | 35.2             | 2.8          | 0.15                               | 0.05            |
| DK 8215       | 16.8              | 81.7             | 1.5          | 0.07                               | 0.06            |
| DK 8216       | 11.7              | 83.7             | 4.5          | 0.77                               | 0.65            |
| DK 8217       | 13.6              | 82.1             | 4.3          | 0.55                               | 0.45            |
| DK 8218       | 2.2               | 89.6             | 8.2          | 0.91                               | 0.82            |
| DK 8219       | 13.3              | 71.0             | 15.7         | 0.26                               | 0.18            |
| DK 8220       | 29.1              | 67.7             | 3.3          | 0.01                               | 0.01            |
| DK 8236       | 3.7               | 91.3             | 5.0          | 3.44                               | 3.14            |
| DK 8237       | 20.1              | 74.8             | 5.1          | 4.33                               | 3.24            |
| DK 8238       | 3.0               | 70.7             | 26.3         | 0.45                               | 0.32            |
| DK 8239       | 14.4              | 66.2             | 19.5         | 0.35                               | 0.23            |
| DK 8240       | 5.7               | 90.9             | 3.3          | 0.07                               | 0.06            |
| DK 8241       | 14.9              | 81.7             | 3.4          | 1.92                               | 1.57            |
| DK 8255       | 7.2               | 86.8             | 6.0          | 0.95                               | 0.82            |
| DK 8256       | 13.7              | 75.6             | 10.7         | 0.84                               | 0.63            |
| DK 8257       | 9.1               | 76.3             | 14.6         | 0.11                               | 0.08            |
| DK 8258       | 28.8              | 52.7             | 18.5         | 0.75                               | 0.40            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 8259       | 3.8               | 65.9             | 30.3         | 0.47                               | 0.31            |
| DK 8260       | 12.2              | 85.6             | 2.2          | 0.05                               | 0.04            |
| DK 8274       | 59.8              | 35.4             | 4.8          | 0.33                               | 0.12            |
| DK 8275       | 4.2               | 85.2             | 10.6         | 1.10                               | 0.94            |
| DK 8276       | 8.6               | 79.7             | 11.8         | 2.23                               | 1.78            |
| DK 8277       | 29.0              | 61.7             | 9.3          | 1.14                               | 0.70            |
| DK 8278       | 44.7              | 48.9             | 6.4          | 0.26                               | 0.13            |
| DK 8279       | 26.2              | 66.4             | 7.4          | 0.16                               | 0.11            |
| DK 8280       | 34.6              | 61.2             | 4.2          | 0.03                               | 0.02            |
| DK 8292       | 43.0              | 45.5             | 11.6         | 0.36                               | 0.16            |
| DK 8293       | 29.5              | 62.0             | 8.6          | 0.20                               | 0.12            |
| DK 8294       | 18.1              | 79.9             | 1.9          | 0.16                               | 0.13            |
| DK 8309       | 6.0               | 65.7             | 28.3         | 0.62                               | 0.41            |
| DK 8310       | 23.0              | 68.2             | 8.7          | 0.23                               | 0.16            |
| DK 8311       | 27.2              | 69.3             | 3.5          | 0.08                               | 0.05            |
| DK 8326       | 34.7              | 60.2             | 5.1          | 0.20                               | 0.12            |
| DK 8327       | 7.2               | 81.8             | 11.0         | 0.31                               | 0.25            |
| DK 8328       | 17.6              | 72.2             | 10.1         | 0.40                               | 0.29            |
| DK 8329       | 12.6              | 73.0             | 14.4         | 1.26                               | 0.92            |
| DK 8330       | 5.2               | 67.7             | 27.2         | 0.59                               | 0.40            |
| DK 8331       | 28.0              | 61.9             | 10.1         | 0.25                               | 0.16            |
| DK 8332       | 7.2               | 90.3             | 2.4          | 0.05                               | 0.04            |
| DK 8333       | 17.6              | 71.0             | 11.4         | 0.39                               | 0.28            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 8346       | 10.0              | 79.4             | 10.5         | 0.26                               | 0.20            |
| DK 8347       | 4.6               | 65.1             | 30.3         | 0.45                               | 0.29            |
| DK 8348       | 26.2              | 65.5             | 8.2          | 0.23                               | 0.15            |
| DK 8349       | 20.5              | 74.1             | 5.4          | 0.16                               | 0.12            |
| DK 8379       | 10.0              | 88.5             | 1.5          | 2.12                               | 1.88            |
| DK 8380       | 6.7               | 75.7             | 17.6         | 0.42                               | 0.32            |
| DK 8381       | 15.3              | 73.9             | 10.8         | 0.35                               | 0.26            |
| DK 8397       | 4.9               | 85.2             | 9.9          | 2.14                               | 1.83            |
| DK 8398       | 6.9               | 72.7             | 20.3         | 0.54                               | 0.39            |
| DK 8399       | 9.7               | 88.9             | 1.4          | 0.11                               | 0.10            |
| DK 8400       | 40.8              | 52.5             | 6.7          | 0.51                               | 0.27            |
| DK 8414       | 10.2              | 74.3             | 15.5         | 0.51                               | 0.38            |
| DK 8428       | 2.8               | 70.5             | 26.7         | 0.59                               | 0.42            |
| DK 8429       | 13.5              | 72.7             | 13.8         | 0.50                               | 0.36            |
| DK 8430       | 7.5               | 78.1             | 14.5         | 0.12                               | 0.09            |
| DK 8439       | 2.4               | 71.9             | 25.7         | 0.49                               | 0.35            |
| DK 8440       | 8.9               | 87.0             | 4.1          | 0.14                               | 0.12            |
| DK 8448       | 3.0               | 73.5             | 23.4         | 0.67                               | 0.49            |
| DK 8449       | 25.7              | 58.2             | 16.1         | 0.50                               | 0.29            |
| DK 8450       | 8.1               | 86.4             | 5.5          | 0.18                               | 0.15            |
| DK 8468       | 17.0              | 52.2             | 30.8         | 38.32                              | 19.99           |
| DK 8469       | 13.0              | 34.1             | 52.9         | 13.12                              | 4.48            |
| DK 8471       | 11.6              | 61.5             | 27.0         | 0.51                               | 0.31            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 8472       | 19.0              | 74.0             | 7.1          | 0.21                               | 0.16            |
| DK 8473       | 28.8              | 64.3             | 6.9          | 0.35                               | 0.23            |
| DK 8487       | 13.7              | 61.3             | 25.0         | 0.51                               | 0.32            |
| DK 8488       | 28.5              | 64.0             | 7.4          | 0.23                               | 0.15            |
| DK 8489       | 26.1              | 72.0             | 1.9          | 0.06                               | 0.05            |
| DK 8510       | 29.2              | 56.1             | 14.7         | 0.40                               | 0.22            |
| DK 8511       | 31.5              | 59.5             | 9.0          | 0.23                               | 0.14            |
| DK 8512       | 21.6              | 74.1             | 4.3          | 0.07                               | 0.05            |
| DK 8530       | 9.9               | 81.6             | 8.4          | 0.78                               | 0.63            |
| DK 8531       | 33.2              | 54.4             | 12.4         | 8.51                               | 4.63            |
| DK 8532       | 51.1              | 38.1             | 10.8         | 1.19                               | 0.45            |
| DK 8533       | 6.0               | 61.8             | 32.3         | 0.53                               | 0.33            |
| DK 8534       | 27.0              | 66.4             | 6.6          | 0.33                               | 0.22            |
| DK 8535       | 20.4              | 74.2             | 5.4          | 0.16                               | 0.12            |
| DK 8554       | 32.2              | 56.7             | 11.1         | 1.28                               | 0.73            |
| DK 8555       | 40.5              | 42.5             | 17.1         | 3.39                               | 1.44            |
| DK 8556       | 32.4              | 41.0             | 26.5         | 1.86                               | 0.76            |
| DK 8557       | 3.6               | 68.9             | 27.6         | 0.46                               | 0.32            |
| DK 8558       | 17.5              | 72.7             | 9.8          | 0.31                               | 0.23            |
| DK 8559       | 17.6              | 79.3             | 3.1          | 0.05                               | 0.04            |
| DK 8575       | 2.8               | 90.2             | 7.0          | 0.42                               | 0.38            |
| DK 8576       | 0.9               | 85.1             | 13.9         | 1.61                               | 1.37            |
| DK 8577       | 3.3               | 71.9             | 24.7         | 0.44                               | 0.32            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 8578       | 10.9              | 79.2             | 9.9          | 0.31                               | 0.25            |
| DK 8579       | 30.7              | 65.0             | 4.3          | 0.34                               | 0.22            |
| DK 8592       | 20.7              | 72.3             | 7.0          | 0.49                               | 0.35            |
| DK 8593       | 47.7              | 44.9             | 7.4          | 3.70                               | 1.66            |
| DK 8594       | 44.6              | 46.0             | 9.4          | 18.19                              | 8.37            |
| DK 8595       | 16.2              | 61.5             | 22.3         | 0.48                               | 0.30            |
| DK 8596       | 33.0              | 60.5             | 6.5          | 0.30                               | 0.18            |
| DK 8597       | 56.6              | 41.4             | 2.1          | 0.20                               | 0.08            |
| DK 8608       | 12.9              | 62.5             | 24.7         | 0.41                               | 0.25            |
| DK 8609       | 29.3              | 66.7             | 4.0          | 0.22                               | 0.14            |
| DK 8610       | 10.6              | 87.3             | 2.1          | 0.09                               | 0.08            |
| DK 8624       | 8.7               | 79.3             | 12.0         | 0.43                               | 0.34            |
| DK 8625       | 19.4              | 67.9             | 12.7         | 0.35                               | 0.23            |
| DK 8626       | 16.6              | 80.7             | 2.7          | 0.19                               | 0.16            |
| DK 8644       | 10.6              | 81.0             | 8.4          | 0.96                               | 0.77            |
| DK 8645       | 5.4               | 78.0             | 16.6         | 0.70                               | 0.54            |
| DK 8646       | 14.1              | 70.0             | 15.9         | 0.35                               | 0.25            |
| DK 8647       | 5.5               | 72.1             | 22.5         | 0.64                               | 0.46            |
| DK 8648       | 4.1               | 68.3             | 27.6         | 0.54                               | 0.37            |
| DK 8649       | 27.1              | 64.7             | 8.3          | 0.33                               | 0.22            |
| DK 8650       | 18.6              | 78.5             | 2.9          | 0.09                               | 0.07            |
| DK 8665       | 2.1               | 88.7             | 9.2          | 1.00                               | 0.89            |
| DK 8666       | 1.6               | 88.8             | 9.5          | 0.52                               | 0.46            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 8667       | 2.1               | 87.5             | 10.4         | 0.92                               | 0.81            |
| DK 8668       | 12.7              | 74.9             | 12.5         | 2.24                               | 1.68            |
| DK 8669       | 17.0              | 66.7             | 16.3         | 0.84                               | 0.56            |
| DK 8670       | 5.8               | 70.4             | 23.8         | 0.29                               | 0.20            |
| DK 8671       | 28.5              | 42.1             | 29.4         | 0.36                               | 0.15            |
| DK 8672       | 3.5               | 66.8             | 29.8         | 0.48                               | 0.32            |
| DK 8673       | 17.9              | 71.2             | 10.9         | 0.41                               | 0.29            |
| DK 8674       | 16.8              | 81.1             | 2.1          | 0.13                               | 0.10            |
| DK 8690       | 14.6              | 81.3             | 4.1          | 0.31                               | 0.25            |
| DK 8691       | 6.1               | 87.0             | 6.9          | 0.42                               | 0.37            |
| DK 8692       | 0.2               | 88.4             | 11.4         | 0.85                               | 0.75            |
| DK 8693       | 9.4               | 68.2             | 22.4         | 0.56                               | 0.38            |
| DK 8694       | 21.2              | 53.5             | 25.3         | 2.02                               | 1.08            |
| DK 8695       | 3.4               | 65.4             | 31.1         | 0.54                               | 0.35            |
| DK 8696       | 19.7              | 67.4             | 12.9         | 0.35                               | 0.24            |
| DK 8697       | 27.3              | 70.2             | 2.5          | 0.08                               | 0.05            |
| DK 8715       | 3.2               | 91.2             | 5.5          | 1.63                               | 1.49            |
| DK 8716       | 4.7               | 84.7             | 10.5         | 2.17                               | 1.84            |
| DK 8717       | 22.9              | 57.1             | 19.9         | 1.81                               | 1.03            |
| DK 8718       | 12.2              | 56.1             | 31.6         | 2.77                               | 1.56            |
| DK 8719       | 21.4              | 55.1             | 23.5         | 1.03                               | 0.57            |
| DK 8720       | 2.2               | 72.7             | 25.2         | 0.50                               | 0.36            |
| DK 8721       | 19.7              | 67.4             | 12.9         | 0.37                               | 0.25            |



TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 8722       | 9.6               | 87.2             | 3.2          | 0.15                               | 0.13            |
| DK 8723       | 3.8               | 90.6             | 5.6          | 1.54                               | 1.39            |
| DK 8740       | 2.0               | 92.4             | 5.5          | 0.69                               | 0.63            |
| DK 8741       | 2.9               | 89.8             | 7.4          | 1.03                               | 0.93            |
| DK 8742       | 23.4              | 58.8             | 17.8         | 1.29                               | 0.76            |
| DK 8743       | 10.6              | 50.6             | 38.8         | 0.91                               | 0.46            |
| DK 8744       | 26.7              | 48.9             | 24.4         | 1.05                               | 0.51            |
| DK 8745       | 0.8               | 83.5             | 15.6         | 0.42                               | 0.35            |
| DK 8746       | 17.6              | 71.6             | 10.8         | 0.34                               | 0.25            |
| DK 8747       | 4.3               | 93.5             | 2.3          | 0.10                               | 0.10            |
| DK 8748       | 5.1               | 90.6             | 4.3          | 0.51                               | 0.47            |
| DK 8749       | 7.5               | 68.4             | 24.1         | 1.19                               | 0.82            |
| DK 8767       | 7.4               | 68.2             | 24.4         | 0.45                               | 0.31            |
| DK 8768       | 24.9              | 59.5             | 15.7         | 0.46                               | 0.27            |
| DK 8769       | 17.5              | 77.8             | 4.7          | 0.26                               | 0.20            |
| DK 8775       | 1.7               | 80.7             | 17.6         | 0.51                               | 0.41            |
| DK 8776       | 8.8               | 71.1             | 20.1         | 0.47                               | 0.34            |
| DK 8781       | 46.1              | 50.5             | 3.5          | 0.27                               | 0.14            |
| DK 8782       | 24.2              | 63.4             | 12.4         | 2.94                               | 1.86            |
| DK 8783       | 25.8              | 63.2             | 11.0         | 0.39                               | 0.24            |
| DK 8804       | 33.7              | 63.0             | 3.3          | 0.13                               | 0.08            |
| DK 8805       | 39.4              | 56.2             | 4.4          | 0.06                               | 0.03            |
| DK 8806       | 39.1              | 56.1             | 4.9          | 0.11                               | 0.06            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 8807       | 8.0               | 71.2             | 20.8         | 0.58                               | 0.42            |
| DK 8808       | 12.7              | 77.3             | 9.9          | 0.40                               | 0.31            |
| DK 8809       | 16.3              | 81.1             | 2.7          | 0.20                               | 0.16            |
| DK 8820       | 15.5              | 66.7             | 17.8         | 0.59                               | 0.39            |
| DK 8821       | 20.0              | 72.9             | 7.1          | 0.45                               | 0.33            |
| DK 8822       | 4.0               | 94.9             | 1.1          | 0.17                               | 0.16            |
| DK 8836       | 45.0              | 51.6             | 3.5          | 0.10                               | 0.05            |
| DK 8837       | 10.0              | 84.2             | 5.8          | 1.19                               | 1.01            |
| DK 8838       | 16.6              | 77.0             | 6.3          | 6.10                               | 4.70            |
| DK 8839       | 8.3               | 73.7             | 18.0         | 0.67                               | 0.49            |
| DK 8840       | 25.5              | 63.8             | 10.7         | 0.53                               | 0.34            |
| DK 8841       | 4.5               | 94.3             | 1.3          | 0.11                               | 0.11            |
| DK 8842       | 47.6              | 51.6             | 0.8          | 0.07                               | 0.03            |
| DK 8843       | 10.1              | 85.0             | 4.9          | 1.17                               | 0.99            |
| DK 8844       | 19.7              | 74.4             | 5.9          | 5.94                               | 4.41            |
| DK 8860       | 7.1               | 74.8             | 18.1         | 0.65                               | 0.49            |
| DK 8861       | 13.3              | 76.9             | 9.8          | 0.68                               | 0.52            |
| DK 8862       | 12.9              | 86.3             | 0.9          | 0.17                               | 0.14            |
| DK 8870       | 9.2               | 82.7             | 8.1          | 0.81                               | 0.67            |
| DK 8871       | 10.0              | 82.1             | 7.9          | 0.79                               | 0.65            |
| DK 8872       | 17.4              | 80.9             | 1.7          | 0.41                               | 0.33            |
| DK 8880       | 4.9               | 80.3             | 14.8         | 0.93                               | 0.75            |
| DK 8881       | 2.4               | 84.4             | 13.2         | 1.18                               | 0.99            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 8888       | 16.7              | 69.6             | 13.7         | 1.29                               | 0.89            |
| DK 8889       | 27.8              | 64.4             | 7.8          | 2.96                               | 1.90            |
| DK 8890       | 3.9               | 81.2             | 14.9         | 0.81                               | 0.65            |
| DK 8891       | 5.8               | 75.7             | 18.6         | 1.21                               | 0.92            |
| DK 8901       | 0.7               | 76.9             | 22.4         | 0.74                               | 0.57            |
| DK 8902       | 15.6              | 73.2             | 11.2         | 0.67                               | 0.49            |
| DK 8920       | 1.7               | 73.2             | 25.0         | 0.70                               | 0.51            |
| DK 8921       | 8.1               | 76.0             | 15.9         | 0.67                               | 0.51            |
| DK 8934       | 1.1               | 78.4             | 20.5         | 0.71                               | 0.56            |
| DK 8935       | 17.6              | 69.4             | 12.9         | 0.44                               | 0.31            |
| DK 8949       | 3.7               | 74.3             | 22.0         | 0.63                               | 0.47            |
| DK 8950       | 20.4              | 66.8             | 12.8         | 0.48                               | 0.32            |
| DK 8964       | 7.9               | 71.5             | 20.5         | 0.78                               | 0.56            |
| DK 8965       | 9.7               | 74.3             | 16.0         | 1.73                               | 1.29            |
| DK 8983       | 21.5              | 63.6             | 14.9         | 0.66                               | 0.42            |
| DK 8984       | 23.6              | 65.1             | 11.2         | 0.48                               | 0.31            |
| DK 8985       | 7.7               | 85.6             | 6.8          | 0.23                               | 0.20            |
| DK 9000       | 2.4               | 71.1             | 26.4         | 0.77                               | 0.55            |
| DK 9001       | 21.0              | 63.9             | 15.0         | 0.51                               | 0.33            |
| DK 9002       | 14.1              | 80.6             | 5.2          | 0.31                               | 0.25            |
| DK 9014       | 19.6              | 60.3             | 20.2         | 0.68                               | 0.41            |
| DK 9015       | 6.4               | 82.6             | 11.1         | 0.48                               | 0.39            |
| DK 9016       | 10.1              | 81.8             | 8.1          | 0.30                               | 0.25            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 9025       | 3.1               | 66.9             | 30.0         | 0.84                               | 0.56            |
| DK 9026       | 17.2              | 65.4             | 17.3         | 0.53                               | 0.34            |
| DK 9027       | 3.8               | 84.8             | 11.4         | 0.20                               | 0.17            |
| DK 9036       | 1.7               | 69.3             | 29.0         | 0.90                               | 0.63            |
| DK 9037       | 6.0               | 71.0             | 22.9         | 0.57                               | 0.41            |
| DK 9038       | 3.9               | 86.4             | 9.7          | 0.23                               | 0.20            |
| DK 9043       | 6.9               | 67.1             | 26.0         | 1.06                               | 0.71            |
| DK 9044       | 20.1              | 71.7             | 8.2          | 0.58                               | 0.42            |
| DK 9049       | 27.1              | 53.6             | 19.3         | 1.48                               | 0.79            |
| DK 9064       | 12.5              | 62.8             | 24.8         | 0.66                               | 0.42            |
| DK 9065       | 22.4              | 68.7             | 8.9          | 0.50                               | 0.35            |
| DK 9066       | 4.6               | 89.6             | 5.9          | 0.26                               | 0.23            |
| DK 9074       | 4.6               | 68.4             | 27.1         | 0.75                               | 0.51            |
| DK 9075       | 10.3              | 74.0             | 15.7         | 0.44                               | 0.32            |
| DK 9082       | 2.2               | 72.9             | 25.0         | 0.88                               | 0.64            |
| DK 9083       | 27.9              | 64.7             | 7.4          | 0.67                               | 0.43            |
| DK 9088       | 0.3               | 73.1             | 26.7         | 0.72                               | 0.52            |
| DK 9089       | 13.1              | 75.9             | 11.0         | 0.35                               | 0.27            |
| DK 9097       | 3.2               | 81.3             | 15.5         | 0.52                               | 0.42            |
| DK 9098       | 31.1              | 62.5             | 6.4          | 0.32                               | 0.20            |
| DK 9105       | 2.0               | 76.7             | 21.2         | 0.70                               | 0.54            |
| DK 9106       | 14.6              | 76.1             | 9.3          | 0.59                               | 0.45            |
| DK 9110       | 9.2               | 70.0             | 20.8         | 0.79                               | 0.55            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 9111       | 27.6              | 64.8             | 7.5          | 0.41                               | 0.27            |
| DK 9119       | 32.3              | 58.8             | 8.9          | 0.60                               | 0.35            |
| DK 9120       | 39.3              | 39.2             | 21.5         | 1.51                               | 0.59            |
| DK 9121       | 27.3              | 41.7             | 31.0         | 3.35                               | 1.40            |
| DK 9122       | 28.3              | 61.6             | 10.2         | 0.51                               | 0.31            |
| DK 9123       | 41.3              | 47.7             | 11.0         | 0.43                               | 0.20            |
| DK 9124       | 3.4               | 88.6             | 8.0          | 1.66                               | 1.48            |
| DK 9134       | 4.7               | 70.3             | 25.0         | 0.53                               | 0.37            |
| DK 9135       | 28.1              | 64.6             | 7.3          | 0.20                               | 0.13            |
| DK 9136       | 7.9               | 90.1             | 2.0          | 0.01                               | 0.01            |
| DK 9155       | 6.8               | 67.8             | 25.5         | 0.48                               | 0.33            |
| DK 9156       | 25.8              | 61.4             | 12.8         | 0.39                               | 0.24            |
| DK 9157       | 12.7              | 82.6             | 4.7          | 0.45                               | 0.37            |
| DK 9163       | 17.4              | 63.3             | 19.4         | 0.42                               | 0.27            |
| DK 9164       | 52.0              | 41.9             | 6.1          | 0.14                               | 0.06            |
| DK 9174       | 2.3               | 69.4             | 28.4         | 0.39                               | 0.27            |
| DK 9175       | 21.3              | 63.0             | 15.7         | 0.31                               | 0.20            |
| DK 9176       | 25.7              | 70.2             | 4.0          | 0.10                               | 0.07            |
| DK 7300       | 5.0               | 92.7             | 2.4          | 0.27                               | 0.25            |
| DK 7301       | 4.9               | 93.2             | 1.9          | 0.25                               | 0.23            |
| DK 7302       | 16.6              | 81.9             | 1.5          | 0.28                               | 0.23            |
| DK 7303       | 20.8              | 77.4             | 1.7          | 0.27                               | 0.21            |
| DK 7304       | 20.5              | 77.8             | 1.7          | 1.48                               | 1.15            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 7305       | 19.1              | 78.7             | 2.2          | 0.23                               | 0.18            |
| DK 7306       | 17.2              | 59.6             | 23.2         | 0.42                               | 0.25            |
| DK 7307       | 8.0               | 83.0             | 9.0          | 0.38                               | 0.32            |
| DK 7315       | 5.1               | 92.1             | 2.9          | 0.12                               | 0.11            |
| DK 7316       | 10.2              | 88.3             | 1.5          | 0.13                               | 0.11            |
| DK 7317       | 21.0              | 78.0             | 0.9          | 0.04                               | 0.03            |
| DK 7318       | 21.9              | 77.4             | 0.7          | 0.05                               | 0.04            |
| DK 7319       | 7.9               | 90.4             | 1.7          | 0.24                               | 0.22            |
| DK 7320       | 18.2              | 77.4             | 4.4          | 1.06                               | 0.82            |
| DK 7321       | 10.3              | 84.4             | 5.3          | 0.47                               | 0.40            |
| DK 7323       | 8.0               | 68.2             | 23.8         | 0.43                               | 0.29            |
| DK 7324       | 8.9               | 84.0             | 7.1          | 0.26                               | 0.22            |
| DK 7334       | 8.5               | 60.2             | 31.3         | 0.40                               | 0.24            |
| DK 7335       | 14.6              | 80.7             | 4.7          | 0.24                               | 0.19            |
| DK 7343       | 7.8               | 66.7             | 25.5         | 0.35                               | 0.23            |
| DK 7344       | 14.9              | 82.2             | 2.9          | 0.15                               | 0.12            |
| DK 7361       | 5.4               | 66.6             | 28.1         | 0.41                               | 0.27            |
| DK 7362       | 18.6              | 74.5             | 6.8          | 0.20                               | 0.15            |
| DK 7352       | 44.0              | 55.1             | 0.9          | 0.03                               | 0.02            |
| DK 7353       | 20.7              | 78.5             | 0.8          | 0.09                               | 0.07            |
| DK 7354       | 18.4              | 79.7             | 2.0          | 0.03                               | 0.02            |
| DK 7355       | 13.3              | 84.0             | 2.7          | 0.05                               | 0.04            |
| DK 7356       | 46.5              | 53.1             | 0.4          | 0.31                               | 0.17            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 7357       | 22.5              | 75.8             | 1.7          | 0.32                               | 0.24            |
| DK 7358       | 12.0              | 86.9             | 1.1          | 0.95                               | 0.82            |
| DK 7359       | 4.8               | 94.5             | 0.8          | 0.55                               | 0.52            |
| DK 7360       | 6.0               | 88.5             | 5.5          | 0.73                               | 0.65            |
| DK 7375       | 10.9              | 59.5             | 29.6         | 0.46                               | 0.28            |
| DK 7376       | 25.6              | 65.0             | 9.3          | 0.21                               | 0.14            |
| DK 7377       | 58.3              | 40.2             | 1.5          | 0.08                               | 0.03            |
| DK 7393       | 6.5               | 64.1             | 29.4         | 0.46                               | 0.30            |
| DK 7394       | 12.8              | 80.6             | 6.6          | 0.21                               | 0.17            |
| DK 7395       | 19.0              | 78.5             | 2.4          | 0.30                               | 0.24            |
| DK 7387       | 34.7              | 63.2             | 2.1          | 0.13                               | 0.08            |
| DK 7388       | 15.0              | 83.1             | 1.9          | 0.09                               | 0.07            |
| DK 7389       | 35.7              | 62.0             | 2.4          | 0.04                               | 0.03            |
| DK 7408       | 10.6              | 78.1             | 11.3         | 0.18                               | 0.14            |
| DK 7409       | 6.2               | 91.7             | 2.1          | 0.03                               | 0.03            |
| DK 7422       | 16.3              | 75.1             | 8.6          | 0.19                               | 0.15            |
| DK 7423       | 2.4               | 96.6             | 1.0          | 0.03                               | 0.02            |
| DK 7439       | 8.2               | 76.1             | 15.8         | 0.22                               | 0.17            |
| DK 7440       | 20.3              | 75.8             | 3.9          | 0.13                               | 0.10            |
| DK 7453       | 17.0              | 73.5             | 9.5          | 0.17                               | 0.13            |
| DK 7454       | 8.9               | 88.7             | 2.4          | 0.06                               | 0.05            |
| DK 7467       | 15.7              | 74.6             | 9.7          | 0.13                               | 0.10            |
| DK 7468       | 17.3              | 81.6             | 1.1          | 0.01                               | 0.01            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 7484       | 12.9              | 77.7             | 9.5          | 0.09                               | 0.07            |
| DK 7485       | 2.5               | 96.1             | 1.4          | 0.02                               | 0.01            |
| DK 7505       | 6.1               | 85.2             | 8.7          | 0.08                               | 0.07            |
| DK 7506       | 0.7               | 98.1             | 1.2          | 0.03                               | 0.03            |
| DK 7507       | 2.9               | 96.9             | 0.3          | 0.01                               | 0.01            |
| DK 7522       | 2.0               | 97.8             | 0.2          | 0.04                               | 0.04            |
| DK 7523       | 0.9               | 98.9             | 0.2          | 0.01                               | 0.01            |
| DK 7536       | 18.4              | 79.5             | 2.1          | 0.04                               | 0.04            |
| DK 7537       | 2.5               | 97.3             | 0.3          | 0.01                               | 0.01            |
| DK 7548       | 23.3              | 66.3             | 10.4         | 0.20                               | 0.13            |
| DK 7549       | 11.3              | 79.3             | 9.4          | 0.11                               | 0.09            |
| DK 7559       | 6.5               | 80.0             | 13.5         | 0.21                               | 0.17            |
| DK 7568       | 1.7               | 68.3             | 30.1         | 0.30                               | 0.21            |
| DK 7569       | 12.1              | 69.5             | 18.4         | 0.17                               | 0.12            |
| DK 7570       | 33.6              | 52.7             | 13.7         | 0.39                               | 0.21            |
| DK 7580       | 3.0               | 79.3             | 17.7         | 0.45                               | 0.35            |
| DK 7581       | 20.3              | 59.5             | 20.2         | 0.84                               | 0.50            |
| DK 7578       | 17.3              | 77.9             | 4.8          | 0.78                               | 0.61            |
| DK 7579       | 1.6               | 92.6             | 5.8          | 0.20                               | 0.18            |
| DK 7593       | 15.2              | 70.5             | 14.4         | 0.34                               | 0.24            |
| DK 7594       | 9.6               | 86.6             | 3.7          | 0.13                               | 0.11            |
| DK 7614       | 0.9               | 72.0             | 27.2         | 0.36                               | 0.26            |
| DK 7615       | 5.9               | 80.2             | 14.0         | 0.22                               | 0.18            |



TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 7616       | 12.4              | 79.3             | 8.2          | 0.16                               | 0.12            |
| DK 7605       | 14.1              | 80.5             | 5.4          | 0.15                               | 0.12            |
| DK 7606       | 9.6               | 87.7             | 2.7          | 0.06                               | 0.05            |
| DK 7607       | 22.2              | 73.5             | 4.3          | 0.10                               | 0.07            |
| DK 7608       | 36.8              | 59.1             | 4.1          | 0.32                               | 0.19            |
| DK 7609       | 24.1              | 69.0             | 6.9          | 3.27                               | 2.26            |
| DK 7610       | 36.6              | 35.5             | 27.9         | 1.83                               | 0.65            |
| DK 7611       | 2.3               | 18.8             | 78.9         | 3.26                               | 0.61            |
| DK 7612       | 3.1               | 27.3             | 69.5         | 2.82                               | 0.77            |
| DK 7613       | 20.6              | 58.1             | 21.3         | 1.43                               | 0.83            |
| DK 7632       | 3.3               | 68.0             | 28.7         | 0.45                               | 0.31            |
| DK 7633       | 12.0              | 76.2             | 11.8         | 0.27                               | 0.20            |
| DK 7634       | 20.7              | 67.3             | 12.0         | 0.16                               | 0.10            |
| DK 7648       | 7.1               | 65.3             | 27.6         | 0.44                               | 0.29            |
| DK 7649       | 19.8              | 71.3             | 8.9          | 0.19                               | 0.14            |
| DK 7650       | 10.3              | 86.7             | 3.0          | 0.17                               | 0.15            |
| DK 7678       | 8.4               | 72.2             | 19.4         | 0.20                               | 0.15            |
| DK 7679       | 4.2               | 93.2             | 2.6          | 0.05                               | 0.04            |
| DK 7680       | 11.3              | 82.8             | 5.9          | 0.24                               | 0.20            |
| DK 7674       | 5.4               | 83.5             | 11.2         | 0.67                               | 0.56            |
| DK 7675       | 2.1               | 80.3             | 17.6         | 0.89                               | 0.71            |
| DK 7701       | 20.2              | 71.4             | 8.5          | 0.14                               | 0.10            |
| DK 7702       | 0.2               | 99.2             | 0.6          | 0.05                               | 0.05            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 7690       | 0.0               | 99.5             | 0.4          | 0.09                               | 0.09            |
| DK 7691       | 0.0               | 99.4             | 0.6          | 0.10                               | 0.10            |
| DK 7692       | 0.0               | 99.4             | 0.6          | 0.07                               | 0.07            |
| DK 7693       | 0.0               | 99.4             | 0.6          | 0.04                               | 0.04            |
| DK 7694       | 0.0               | 99.2             | 0.8          | 0.04                               | 0.04            |
| DK 7703       | 0.5               | 99.0             | 0.6          | 0.02                               | 0.02            |
| DK 7719       | 14.0              | 64.7             | 21.3         | 0.37                               | 0.24            |
| DK 7720       | 5.5               | 86.2             | 8.3          | 0.11                               | 0.10            |
| DK 7721       | 0.9               | 96.4             | 2.7          | 0.04                               | 0.04            |
| DK 7737       | 2.1               | 63.3             | 34.6         | 0.43                               | 0.27            |
| DK 7738       | 14.9              | 70.4             | 14.7         | 0.27                               | 0.19            |
| DK 7739       | 9.9               | 85.4             | 4.8          | 0.10                               | 0.09            |
| DK 7742       | 17.1              | 55.0             | 27.9         | 0.40                               | 0.22            |
| DK 7746       | 0.5               | 91.2             | 8.2          | 0.36                               | 0.32            |
| DK 7747       | 5.0               | 88.4             | 6.6          | 0.54                               | 0.47            |
| DK 7748       | 29.6              | 62.7             | 7.7          | 0.17                               | 0.10            |
| DK 7749       | 19.7              | 77.7             | 2.6          | 0.01                               | 0.01            |
| DK 7750       | 3.8               | 56.9             | 39.3         | 1.09                               | 0.62            |
| DK 7751       | 41.1              | 39.9             | 19.1         | 0.42                               | 0.17            |
| DK 7752       | 9.2               | 65.2             | 25.6         | 0.69                               | 0.45            |
| DK 7755       | 26.7              | 57.9             | 15.4         | 0.45                               | 0.26            |
| DK 7761       | 17.1              | 78.0             | 4.9          | 0.28                               | 0.22            |
| DK 7762       | 3.5               | 93.0             | 3.5          | 0.07                               | 0.07            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 7763       | 1.6               | 93.1             | 5.3          | 0.05                               | 0.05            |
| DK 7764       | 6.0               | 76.5             | 17.5         | 0.17                               | 0.13            |
| DK 7765       | 2.1               | 89.4             | 8.6          | 0.24                               | 0.22            |
| DK 7766       | 4.7               | 80.8             | 14.5         | 0.28                               | 0.23            |
| DK 7767       | 6.0               | 76.6             | 17.4         | 0.46                               | 0.35            |
| DK 7786       | 1.1               | 79.2             | 19.8         | 0.67                               | 0.53            |
| DK 7787       | 10.1              | 74.3             | 15.6         | 0.45                               | 0.33            |
| DK 7788       | 4.5               | 87.0             | 8.5          | 0.15                               | 0.13            |
| DK 7790       | 0.3               | 79.9             | 19.8         | 0.45                               | 0.36            |
| DK 7791       | 0.9               | 82.6             | 16.5         | 0.46                               | 0.38            |
| DK 7809       | 43.5              | 52.6             | 3.9          | 0.14                               | 0.07            |
| DK 7812       | 4.8               | 82.2             | 13.0         | 0.40                               | 0.33            |
| DK 7813       | 8.4               | 82.1             | 9.5          | 0.25                               | 0.20            |
| DK 7833       | 0.7               | 88.2             | 11.2         | 0.38                               | 0.33            |
| DK 7834       | 5.4               | 84.0             | 10.7         | 0.42                               | 0.35            |
| DK 7835       | 2.6               | 88.1             | 9.2          | 0.20                               | 0.18            |
| DK 7848       | 14.4              | 71.0             | 14.6         | 0.38                               | 0.27            |
| DK 7849       | 3.5               | 82.5             | 14.0         | 0.25                               | 0.21            |
| DK 7854       | 0.8               | 76.4             | 22.7         | 0.38                               | 0.29            |
| DK 7855       | 11.9              | 70.7             | 17.4         | 0.47                               | 0.33            |
| DK 7856       | 1.2               | 85.7             | 13.1         | 0.52                               | 0.45            |
| DK 7857       | 1.7               | 92.9             | 5.4          | 0.42                               | 0.39            |
| DK 7858       | 0.7               | 95.3             | 4.0          | 0.49                               | 0.46            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 7859       | 0.1               | 96.9             | 3.0          | 0.44                               | 0.43            |
| DK 7870       | 2.1               | 86.5             | 11.4         | 0.48                               | 0.41            |
| DK 7871       | 3.9               | 75.5             | 20.6         | 0.21                               | 0.16            |
| DK 7874       | 13.9              | 69.0             | 17.1         | 0.43                               | 0.29            |
| DK 7881       | 21.5              | 65.2             | 13.3         | 0.66                               | 0.43            |
| DK 7891       | 10.5              | 77.3             | 12.1         | 8.21                               | 6.35            |
| DK 7892       | 1.9               | 88.2             | 9.9          | 7.37                               | 6.50            |
| DK 7895       | 0.6               | 83.7             | 15.7         | 0.45                               | 0.37            |
| DK 7896       | 19.9              | 68.1             | 12.1         | 1.81                               | 1.23            |
| DK 7903       | 10.6              | 79.7             | 9.7          | 0.25                               | 0.20            |
| DK 7910       | 17.6              | 67.4             | 15.1         | 0.33                               | 0.22            |
| DK 7914       | 0.1               | 89.8             | 10.2         | 0.75                               | 0.67            |
| DK 7925       | 0.8               | 81.5             | 17.7         | 0.54                               | 0.44            |
| DK 7926       | 0.1               | 92.6             | 7.2          | 0.38                               | 0.35            |
| DK 7927       | 11.7              | 80.0             | 8.4          | 0.46                               | 0.36            |
| DK 7941       | 6.4               | 73.1             | 20.5         | 0.48                               | 0.35            |
| DK 7942       | 17.8              | 70.5             | 11.7         | 0.34                               | 0.24            |
| DK 7943       | 28.6              | 64.2             | 7.3          | 0.16                               | 0.10            |
| DK 7953       | 11.6              | 63.3             | 25.2         | 0.46                               | 0.29            |
| DK 7954       | 18.8              | 75.3             | 5.9          | 0.21                               | 0.16            |
| DK 7976       | 16.4              | 63.0             | 20.5         | 0.44                               | 0.28            |
| DK 7957       | 25.0              | 68.8             | 6.2          | 0.31                               | 0.22            |
| DK 7958       | 10.2              | 81.9             | 7.9          | 0.28                               | 0.23            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 7959       | 1.9               | 93.0             | 5.1          | 0.22                               | 0.20            |
| DK 7960       | 0.9               | 96.2             | 2.9          | 0.25                               | 0.25            |
| DK 7961       | 0.4               | 98.6             | 1.0          | 0.43                               | 0.43            |
| DK 7962       | 5.0               | 94.3             | 0.7          | 0.37                               | 0.35            |
| DK 7977       | 32.9              | 65.7             | 1.3          | 0.08                               | 0.06            |
| DK 7978       | 13.7              | 67.8             | 18.5         | 0.65                               | 0.44            |
| DK 7970       | 3.9               | 85.5             | 10.6         | 1.58                               | 1.35            |
| DK 7993       | 17.2              | 62.0             | 20.8         | 0.32                               | 0.20            |
| DK 7994       | 11.1              | 84.2             | 4.7          | 0.10                               | 0.08            |
| DK 7995       | 9.1               | 90.3             | 0.6          | 0.01                               | 0.01            |
| DK 8010       | 3.8               | 69.6             | 26.6         | 0.44                               | 0.31            |
| DK 8011       | 17.3              | 74.9             | 7.8          | 0.20                               | 0.15            |
| DK 8012       | 2.9               | 93.0             | 4.1          | 0.06                               | 0.05            |
| DK 8031       | 7.8               | 66.2             | 26.0         | 0.34                               | 0.23            |
| DK 8032       | 22.8              | 68.4             | 8.8          | 0.19                               | 0.13            |
| DK 8033       | 28.1              | 69.9             | 2.0          | 0.01                               | 0.01            |
| DK 8025       | 14.7              | 83.7             | 1.6          | 0.15                               | 0.12            |
| DK 8026       | 21.8              | 75.1             | 3.1          | 0.10                               | 0.08            |
| DK 8027       | 11.1              | 84.5             | 4.4          | 0.14                               | 0.12            |
| DK 8028       | 3.3               | 91.1             | 5.6          | 0.10                               | 0.09            |
| DK 8029       | 6.9               | 85.3             | 7.8          | 1.15                               | 0.98            |
| DK 8030       | 12.6              | 78.8             | 8.6          | 1.81                               | 1.42            |
| DK 8052       | 23.9              | 57.2             | 18.9         | 0.40                               | 0.23            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Sample<br>no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|               | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 8053       | 19.0              | 71.2             | 9.8          | 0.13                               | 0.10            |
| DK 8054       | 13.8              | 83.4             | 2.9          | 0.02                               | 0.02            |
| DK 8055       | 29.2              | 67.8             | 3.0          | 0.02                               | 0.02            |
| DK 8070       | 50.3              | 42.4             | 7.2          | 0.22                               | 0.09            |
| DK 8071       | 20.4              | 68.7             | 10.9         | 0.20                               | 0.14            |
| DK 8072       | 12.1              | 84.2             | 3.7          | 0.02                               | 0.02            |
| DK 8088       | 12.4              | 64.8             | 22.8         | 0.33                               | 0.22            |
| DK 8089       | 27.2              | 64.7             | 8.1          | 0.15                               | 0.10            |
| DK 8090       | 41.3              | 55.5             | 3.1          | 0.04                               | 0.02            |
| DK 8111       | 16.5              | 61.4             | 22.2         | 0.36                               | 0.22            |
| DK 8112       | 18.0              | 74.4             | 7.6          | 0.11                               | 0.08            |
| DK 8113       | 7.6               | 90.2             | 2.2          | 0.02                               | 0.02            |
| DK 8105       | 20.2              | 78.7             | 1.1          | 0.01                               | 0.01            |
| DK 8106       | 13.2              | 82.3             | 4.5          | 0.20                               | 0.16            |
| DK 8107       | 1.8               | 88.5             | 9.7          | 0.56                               | 0.50            |
| DK 8108       | 3.9               | 85.5             | 10.6         | 1.19                               | 1.02            |
| DK 8109       | 7.6               | 83.4             | 9.0          | 1.33                               | 1.11            |
| DK 8127       | 28.8              | 62.1             | 9.0          | 0.18                               | 0.11            |
| DK 8128       | 6.7               | 90.9             | 2.4          | 0.03                               | 0.03            |
| DK 8141       | 15.7              | 79.9             | 4.4          | 0.22                               | 0.17            |
| DK 8142       | 15.5              | 83.4             | 1.1          | 0.10                               | 0.09            |
| DK 8157       | 23.0              | 64.4             | 12.5         | 0.25                               | 0.16            |
| DK 8158       | 9.0               | 89.0             | 2.0          | 0.03                               | 0.02            |

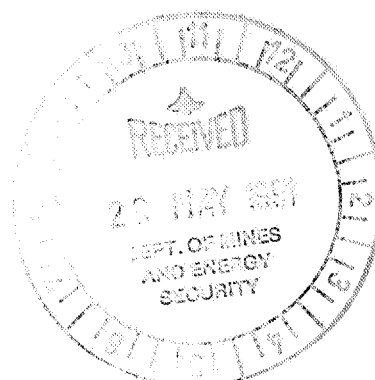
TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| SIZE DISTRIBUTION |             |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|-------------------|-------------|------------------|--------------|------------------------------------|-----------------|
| Sample<br>no.     | +1mm<br>wt% | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| DK 8168           | 47.7        | 49.6             | 2.7          | 0.27                               | 0.13            |
| DK 8169           | 1.3         | 91.5             | 7.2          | 0.41                               | 0.38            |
| DK 8170           | 0.4         | 92.6             | 7.0          | 0.24                               | 0.22            |
| DK 8178           | 11.9        | 70.9             | 17.2         | 0.43                               | 0.30            |
| DK 8179           | 33.6        | 62.0             | 4.3          | 0.14                               | 0.09            |

CR 7269  
EXPLORATION LICENCES 1653  
1654 AND 1655 MARALINGA  
SOUTH AUSTRALIA

REPORT FOR THE QUARTER  
ENDED 29 APRIL 1991  
AND FINAL REPORT

P R DARBY  
MELBOURNE  
MAY 1991





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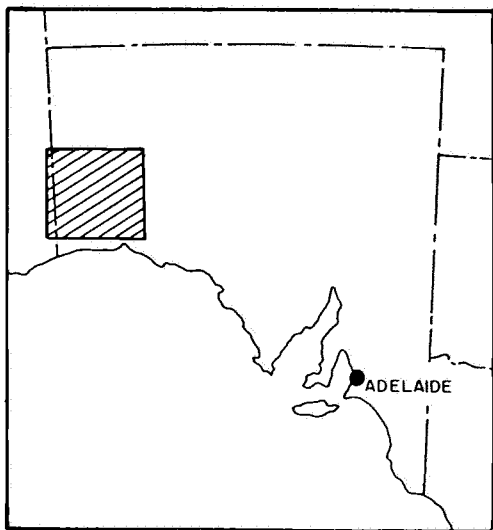
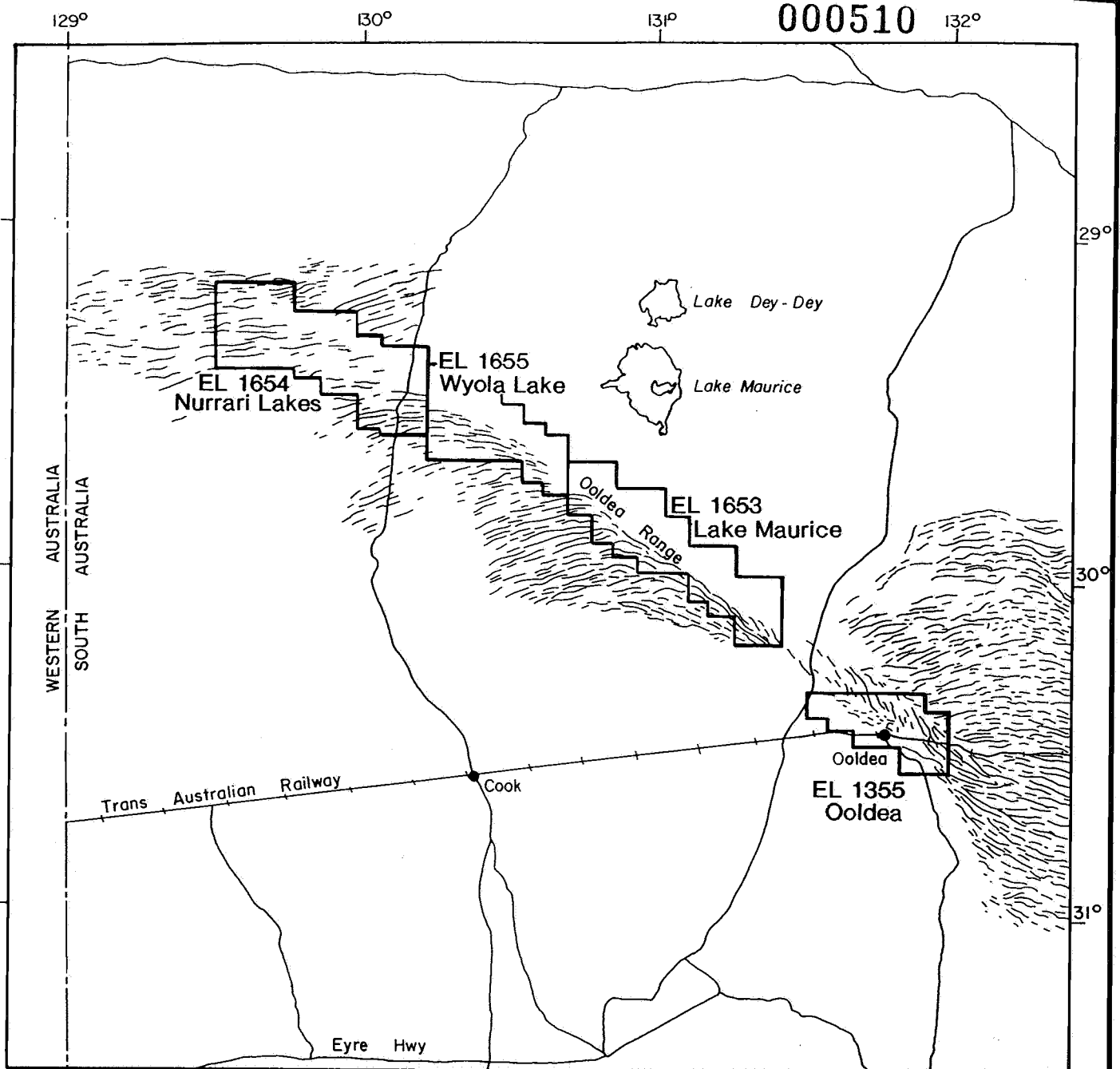
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## APPENDICES

- Appendix 1 Heavy Mineral Assays
- Appendix 2 Determination of Mineralogy and Grainsize Distribution of Composites
- Appendix 3 Geological cross sections of drill traverses with heavy mineral assays and assemblages

000510



NORTH

SCALE 1:2,000,000

0 50 100 150 km

FIG. 1

Centre  
MELBOURNE

Date  
SEPT '90

THE BROKEN HILL PROPRIETARY CO. LTD.

EL 1655, EL 1654, EL 1653 and EL 1355. OOLDEA S.A.  
LOCATION MAP

Project N<sup>o</sup>  
T63

Drawing N<sup>o</sup>  
A4-3076

## 1 SUMMARY

The Ooldea Range was identified by BHP Minerals as an exploration target for heavy minerals following recognition of the range as a palaeo-beach ridge system of unusually large dimensions. Some recent beach ridges on the eastern Australian coast are richly mineralised, and at 650 km long by 15 to 20 km wide and 100 metres high, it was considered that the Ooldea Range had the potential to be a major new heavy mineral province.

Applications for exploration licences were lodged in early 1986. Following four years of negotiations with the Maralinga-Tjarutja People (the licences being entirely within Maralinga Land) ELs 1653, 1654 and 1655 were granted on 30 April 1990.

AUSLIG were contracted to survey and mark in the field the proposed drill traverses. The Maralinga-Tjarutja were contracted to clear access along the drill traverses. Following track clearing, drilling commenced in October 1990.

In excess of 6400 metres were drilled on 13 traverses over a five week period. The results were negative. The Ooldea Range itself was found to be unmineralised. Anomalous intersections were obtained in the Hampton Sandstone, which underlies the Ooldea Sand. However, the excessive overburden and lack of evidence pointing to the sort of deposit needed to overcome the remoteness of the area (chiefly the low rutile content in the heavy mineral assemblage) led to the conclusion that further work was not warranted. The three licences were therefore not renewed, and expired on 29 April 1991.

## 2 INTRODUCTION

Exploration Licences 1653 Lake Maurice, 1654 Nurrari Lakes and 1655 Wyola Lakes were applied for in order to explore for heavy mineral sands. They were located in the far west of South Australia, immediately to the north of the Nullarbor Plain (Figure 1). The licences straddled a major portion of the Ooldea Range which is interpreted as an aeolian palaeo-beach ridge of latest Eocene or Early Oligocene age.

Since the last quarterly report (quarter ended 29 January 1991) the analytical results that were unavailable at that time came to hand and were assessed. The following report details this work and evaluates the three licences in the light of all the available sample data.

### 3 TITLE

The exploration licences were granted on 30 April 1990 for a twelve month term. Due to negative exploration results the licences were not renewed, and they therefore expired on 29 April 1991.

### 4 RESULTS

The data below are from samples collected from the drilling program carried out in October/November 1990. Drill hole locations are shown in Figures 2, 3 and 4. Geological logs were supplied in the previous quarterly report, together with heavy mineral assays of 679 samples. The following results comprise additional assays, mineralogy and grain size distribution of selected samples.

#### 4.1 Raw Data

An additional 41 samples were submitted to AMDEL for heavy mineral assays. Most of these samples were constituent two metre intervals of 10 metre composites that had returned values greater than approximately 0.5 % HM. The assays may be found in Appendix 1, and are also annotated beside the drill hole traces in Appendix 3.

Following initial appraisal of the heavy mineral assays, several areas were considered to have either anomalous grades or mineral assemblage or both. These anomalies are numbered from 1 to 14 on Figures 2, 3 and 4. For each anomaly, a composite was made of the >2.96 SG product which then underwent determination of grain size and mineralogy. The raw data are summarised in Tables 1 and 2 and presented in their entirety in Appendix 2. The mineralogical information in Table 1 is also annotated on the geological sections in Appendix 3.

Anomalies 1, 10 and 11 had the best mineral assemblages, being low in trash minerals. Unfortunately, the economic minerals are dominated by ilmenite and, to a lesser extent, zircon. Rutile accounts for only about 1 percent of the heavy mineral assemblage. Trash minerals are moderately high (eg anomalies 2,3 and 14) to very high (eg anomalies 4 to 8 and 12) in the other composites (Table 1). The grain size distribution is summarised in Table 2, and shows that for most of the composites the bulk of the grains are between 125 and 63 microns.

Table 1. Grade in percent heavy mineral (% HM) and mineralogy of anomalous zones. The anomaly, hole, sample numbers and depths are also shown for each composite.

| Anomaly No 1 - Traverse 2  |         |      |      |      |                |       |
|----------------------------|---------|------|------|------|----------------|-------|
| Hole                       | Sample  | From | To   | % HM | Mineralogy (%) |       |
| M 36                       | DK 6497 | 30   | 32   | 0.94 | Ilm'te         | 59    |
|                            | DK 6498 | 32   | 34   | 2.99 | Rutile         | 1     |
|                            | DK 6499 | 34   | 36   | 1.45 | Zircon         | 17    |
| M 37                       | DK 6510 | 28   | 30   | 1.16 | Leu'xne        | 5     |
|                            | DK 6511 | 30   | 32   | 0.67 | Mon'zte        | trace |
|                            | DK 6512 | 32   | 34   | 1.93 | Trash          | 18    |
|                            | DK 6513 | 34   | 36   | 3.54 |                |       |
|                            | DK 6514 | 36   | 38   | 2.93 |                |       |
|                            | DK 6515 | 38   | 39.5 | 1.32 |                |       |
|                            |         |      |      |      |                |       |
| Anomaly No 2 - Traverse 5  |         |      |      |      |                |       |
| Hole                       | Sample  | From | To   | % HM | Mineralogy (%) |       |
| M 906                      | DK 7057 | 22   | 24   | 1.54 | Ilm'te         | 35    |
|                            | DK 7058 | 24   | 26   | 0.48 | Rutile         | 1     |
|                            | DK 7059 | 26   | 28   | 0.21 | Zircon         | 28    |
|                            | DK 7060 | 28   | 30   | 0.54 | Leu'xne        | 8     |
| M 907                      | DK 7071 | 26   | 28   | 0.14 | Trash          | 28    |
|                            | DK 7072 | 28   | 30   | 0.22 |                |       |
|                            |         |      |      |      |                |       |
| Anomaly No 3 - Traverse 8  |         |      |      |      |                |       |
| Hole                       | Sample  | From | To   | % HM | Mineralogy (%) |       |
| M 909                      | DK 7304 | 28   | 30   | 1.15 | Ilm'te         | 53    |
| M 910                      | DK 7320 | 30   | 32   | 0.82 | Rutile         | trace |
|                            |         |      |      |      | Zircon         | 14    |
|                            |         |      |      |      | Leu'xne        | 4     |
|                            |         |      |      |      | Trash          | 29    |
|                            |         |      |      |      |                |       |
| Anomaly No 4 - Traverse 9  |         |      |      |      |                |       |
| Hole                       | Sample  | From | To   | % HM | Mineralogy (%) |       |
| M 103                      | DK 7609 | 38   | 40   | 2.26 | Ilm'te         | 1     |
|                            | DK 7610 | 40   | 42   | 0.65 | Rutile         | trace |
|                            |         |      |      |      | Zircon         | 4     |
|                            |         |      |      |      | Leu'xne        | 3     |
|                            |         |      |      |      | Trash          | 92    |
|                            |         |      |      |      |                |       |
| Anomaly No 5 - Traverse 10 |         |      |      |      |                |       |
| Hole                       | Sample  | From | To   | % HM | Mineralogy (%) |       |
| M 131                      | DK 7970 | 36   | 38   | 1.35 | Ilm'te         | 6     |
|                            | DK 7978 | 30   | 46   | 0.44 | Rutile         | trace |
| M 134                      | DK 8029 | 38   | 40   | 0.98 | Zircon         | 12    |
|                            | DK 8030 | 40   | 41.8 | 1.42 | Leu'xne        | 5     |
|                            |         |      |      |      | Trash          | 77    |

Table 1 (continued)

| Anomaly No 6 - Traverse 10 |         |      |    |      |                |
|----------------------------|---------|------|----|------|----------------|
| Hole                       | Sample  | From | To | % HM | Mineralogy (%) |
| M 138                      | DK 8107 | 38   | 40 | 0.50 | Ilm'te 7       |
|                            | DK 8108 | 40   | 42 | 1.02 | Rutile trace   |
|                            | DK 8109 | 42   | 44 | 1.11 | Zircon 1       |
|                            |         |      |    |      | Leu'xne 8      |
|                            |         |      |    |      | Trash 84       |
| Anomaly No 7 - Traverse 11 |         |      |    |      |                |
| Hole                       | Sample  | From | To | % HM | Mineralogy (%) |
| M 143                      | DK 8194 | 32   | 34 | 1.00 | Ilm'te 13      |
|                            | DK 8195 | 34   | 36 | 1.96 | Rutile 1       |
|                            | DK 8196 | 36   | 38 | 3.64 | Zircon 4       |
|                            | DK 8197 | 38   | 39 | 0.49 | Leu'xne 9      |
| M 144                      | DK 8216 | 34   | 36 | 0.65 | Trash 73       |
|                            | DK 8217 | 36   | 38 | 0.45 |                |
|                            | DK 8218 | 38   | 39 | 0.82 |                |
| M 145                      | DK 8236 | 38   | 40 | 3.14 |                |
|                            | DK 8237 | 40   | 42 | 3.24 |                |
|                            | DK 8241 | 30   | 42 | 1.57 |                |
| M 146                      | DK 8255 | 32   | 34 | 0.82 |                |
|                            | DK 8256 | 34   | 36 | 0.63 |                |
| M 147                      | DK 8275 | 34   | 36 | 0.94 |                |
|                            | DK 8276 | 36   | 38 | 1.78 |                |
|                            | DK 8277 | 38   | 39 | 0.70 |                |
| M 172                      | DK 8644 | 34   | 36 | 0.77 |                |
|                            | DK 8645 | 36   | 38 | 0.54 |                |
|                            | DK 8646 | 38   | 40 | 0.25 |                |
|                            | DK 8647 | 40   | 42 | 0.46 |                |
| M 173                      | DK 8665 | 28   | 30 | 0.89 |                |
|                            | DK 8666 | 30   | 32 | 0.46 |                |
|                            | DK 8667 | 32   | 34 | 0.81 |                |
|                            | DK 8668 | 34   | 36 | 1.68 |                |
| M 174                      | DK 8669 | 36   | 38 | 0.56 |                |
|                            | DK 8692 | 34   | 36 | 0.75 |                |
|                            | DK 8693 | 36   | 38 | 0.38 |                |
|                            | DK 8694 | 38   | 39 | 1.08 |                |
| M 175                      | DK 8715 | 34   | 36 | 1.49 |                |
|                            | DK 8716 | 36   | 38 | 1.84 |                |
|                            | DK 8717 | 38   | 40 | 1.03 |                |
|                            | DK 8718 | 40   | 42 | 1.56 |                |
|                            | DK 8719 | 42   | 44 | 0.57 |                |
| Anomaly No 8 - Traverse 12 |         |      |    |      |                |
| Hole                       | Sample  | From | To | % HM | Mineralogy (%) |
| M 167                      | DK 8554 | 36   | 38 | 0.73 | Ilm'te 12      |
|                            | DK 8555 | 38   | 40 | 1.44 | Rutile trace   |
|                            | DK 8556 | 40   | 42 | 0.76 | Zircon 4       |
| M 168                      | DK 8575 | 30   | 32 | 0.38 | Leu'xne 4      |
|                            | DK 8576 | 32   | 34 | 1.37 | Trash 80       |
| M 169                      | DK 8592 | 24   | 26 | 0.35 |                |
|                            | DK 8593 | 26   | 28 | 1.66 |                |

Table 1 (continued)

| Anomaly No 9 - Traverse 10  |         |      |    |      |                |
|-----------------------------|---------|------|----|------|----------------|
| Hole                        | Sample  | From | To | % HM | Mineralogy (%) |
| M 914                       | DK 8741 | 34   | 36 | 0.93 | Ilm'te 27      |
|                             | DK 8742 | 36   | 38 | 0.76 | Rutile 2       |
|                             | DK 8743 | 38   | 40 | 0.46 | Zircon 8       |
|                             | DK 8744 | 40   | 42 | 0.51 | Leu'xne 14     |
|                             |         |      |    |      | Mon'zte trace  |
|                             |         |      |    |      | Trash 49       |
| Anomaly No 10 - Traverse 11 |         |      |    |      |                |
| Hole                        | Sample  | From | To | % HM | Mineralogy (%) |
| M 178                       | DK 8837 | 34   | 36 | 1.01 | Ilm'te 31      |
|                             | DK 8838 | 36   | 38 | 4.70 | Rutile 2       |
|                             |         |      |    |      | Zircon 47      |
|                             |         |      |    |      | Leu'xne 5      |
|                             |         |      |    |      | Mon'zte 2      |
|                             |         |      |    |      | Trash 13       |
| Anomaly No 11 - Traverse 13 |         |      |    |      |                |
| Hole                        | Sample  | From | To | % HM | Mineralogy (%) |
| M 204                       | DK 9119 | 22   | 24 | 0.35 | Ilm'te 54      |
|                             | DK 9120 | 24   | 26 | 0.59 | Rutile 2       |
|                             |         |      |    |      | Zircon 24      |
|                             |         |      |    |      | Leu'xne 9      |
|                             |         |      |    |      | Mon'zte trace  |
|                             |         |      |    |      | Trash 11       |
| Anomaly No 12 - Traverse 13 |         |      |    |      |                |
| Hole                        | Sample  | From | To | % HM | Mineralogy (%) |
| M 204                       | DK 9121 | 26   | 28 | 1.40 | Ilm'te 8       |
|                             | DK 9124 | 20   | 22 | 1.48 | Rutile 1       |
|                             |         |      |    |      | Zircon 4       |
|                             |         |      |    |      | Leu'xne 2      |
|                             |         |      |    |      | Mon'zte trace  |
|                             |         |      |    |      | Trash 85       |
| Anomaly No 13 - Traverse 11 |         |      |    |      |                |
| Hole                        | Sample  | From | To | % HM | Mineralogy (%) |
| M 150                       | DK 8327 | 36   | 38 | 0.25 | Ilm'te 33      |
|                             | DK 8328 | 38   | 40 | 0.29 | Rutile 4       |
|                             |         |      |    |      | Zircon 25      |
|                             |         |      |    |      | Leu'xne 16     |
|                             |         |      |    |      | Mon'zte trace  |
|                             |         |      |    |      | Trash 22       |
| Anomaly No 14 - Traverse 12 |         |      |    |      |                |
| Hole                        | Sample  | From | To | % HM | Mineralogy (%) |
| M 154                       | DK 8397 | 34   | 36 | 1.83 | Ilm'te 26      |
|                             | DK 8400 | 20   | 36 | 0.27 | Rutile 5       |
|                             |         |      |    |      | Zircon 30      |
|                             |         |      |    |      | Leu'xne 8      |
|                             |         |      |    |      | Mon'zte 1      |
|                             |         |      |    |      | Trash 30       |

Table 2. Grainsize distribution (%) of the anomalous areas. The results are summarised into 4 size classes below, but are reported in more detail (19 size classes) in Appendix 2.

| Anomaly<br>Number | Weight % in each size class |                |               |              |
|-------------------|-----------------------------|----------------|---------------|--------------|
|                   | -1mm<br>+250um              | -250<br>+125um | -125<br>+63um | -63<br>+38um |
| 1                 | 3                           | 21             | 72            | 4            |
| 2                 | 8                           | 11             | 72            | 9            |
| 3                 | 8                           | 38             | 49            | 5            |
| 4                 | 40                          | 22             | 27            | 14           |
| 5                 | 21                          | 21             | 44            | 14           |
| 6                 | 17                          | 22             | 49            | 13           |
| 7                 | 23                          | 20             | 36            | 22           |
| 8                 | 39                          | 22             | 27            | 12           |
| 9                 | 27                          | 11             | 23            | 39           |
| 10                | 6                           | 3              | 56            | 34           |
| 11                | 2                           | 4              | 76            | 18           |
| 12                | 57                          | 19             | 18            | 6            |
| 13                | 3                           | 7              | 72            | 17           |
| 14                | 12                          | 7              | 61            | 20           |
| Average           | 19                          | 16             | 49            | 16           |

#### 4.2 Discussion of Results

The results suggest that the Ooldea Sand and overlying Quaternary units do not contain economic concentrations of heavy minerals. Where anomalous intersections were encountered, generally in the Hampton Sandstone, the mineral assemblages ranged from moderately good to very poor. As noted above, the best anomalies in terms of their mineral assemblage were numbers 1, 10 and 11. These three composites had low trash contents, however the rutile content was only one or two percent. This factor suggests that a deposit in the area may be likely to have a similarly low rutile content, thus seriously downgrading the Ooldea Range.

The grainsize distribution however, is quite good (Table 2 and Appendix 2) and indicates that the sand should be amenable to conventional gravity separation techniques. It is also interesting to observe the variation in grainsize with the heavy mineral assemblage. In Figure 5 these parameters are plotted against each other and show a correlation between decreasing grainsize and improving mineral assemblage.



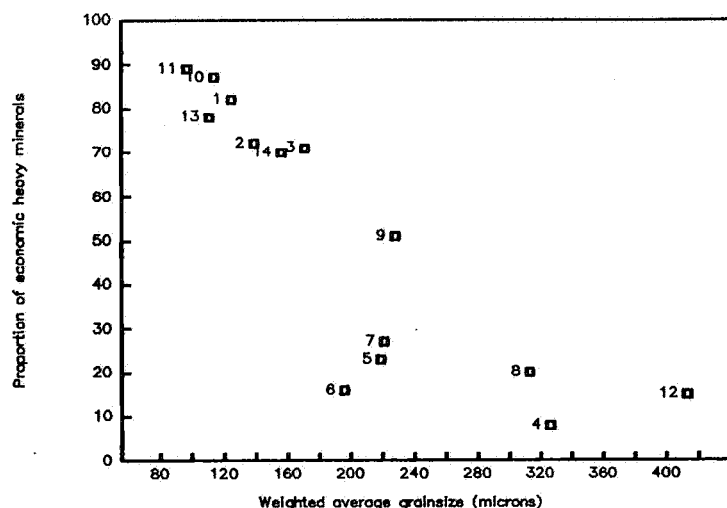


Figure 5. Weighted average grainsize of each anomaly (numbered on graph) versus heavy mineral assemblage. The assemblage is the sum of the economic heavy minerals as a percent of the >2.96 SG product.

As shown in the cross sections in Appendix 3, anomalous grades were consistently intersected in the Hampton Sandstone, most evidently in the eastern half of traverse 11. Unfortunately the intersections were all at considerable depths. The depth to the Hampton Sandstone was therefore contoured over the Ooldea Range in an attempt to locate areas of minimum overburden (Figure 6). The contours suggest that, except for hole M 123 on traverse 10, nowhere in the three licences is the overburden likely to be less than 10 metres. It was therefore concluded that the Ooldea Range itself was not prospective.

One hole which intersected mineralisation near surface in addition to the Hampton Sandstone was M 125. It intersected: 0-10m 6.50 % HM, 20-22m 6.35 % HM and 22-24m 1.29 % HM. Visual inspection of these samples revealed them to be dominated by trash minerals. The assemblage for the deeper intersection is probably similar to that in anomaly 5 (see Table 1 and cross section of traverse 10 in Appendix 3).

#### 4.3 Seaward Flank of Ooldea Range

Despite the conclusion reached above, it was considered that the area between the Ooldea Range and the Nullarbor Plain (that is, the seaward flank of the range) could be prospective. In essence, the possibility was considered that if the mineralised horizon in the Hampton Sandstone was

laterally continuous to the southwest at a roughly constant elevation, then the seaward flank could have near-surface mineralisation due to the decreasing elevation of the ground surface.

An additional factor, though forming a geologically separate target, favouring this area is that it represents the maximum landward extent of the Nullarbor Limestone and thus could have Miocene shoreline deposits. Such deposits have been identified around the Yarle Lakes, named the Yarle Sandstone (Benbow, 1990), and they have been inferred to extend along the length of the Ooldea Range. The Yarle Sandstone could have been intersected but not recognised in the southern end of traverse 10 (see Figure 6).

Drilling of this area however, traverse 10 and holes M 15 to M 20 in EL 1355 to the southeast, yielded negative results. This factor, combined with the generally poor mineral assemblage and difficult access (the seaward flank of the range is covered by parallel sand dunes 5 to 15 metres high) downgrade this area. Further, only a small part of the area between the Nullarbor Plain and the Ooldea Range is actually within the three licences.

## 5 CONCLUSION

Further drilling in ELs 1653, 1654 and 1655 is not warranted due to the depth to mineralisation, low grades and poor mineral assemblages. It is acknowledged that the area between the Ooldea Range and the Nullarbor Plain could be prospective and is virtually untested, however equally prospective areas exist elsewhere with far easier access.

It was therefore recommended that ELs 1653, 1654 and 1655 be allowed to expire on 29 April 1991.

## 6 REFERENCES

Benbow, M. C., 1990. The Yarle Sandstone: a Miocene coastal terrigenous sequence of the Eucla Platform. Quarterly Geological Notes, SADME, 113, 1990.

BHP Minerals, ELs 1653, 1654, 1655 Report for the quarter ended 29 January 1991.

## 7 EXPENDITURE

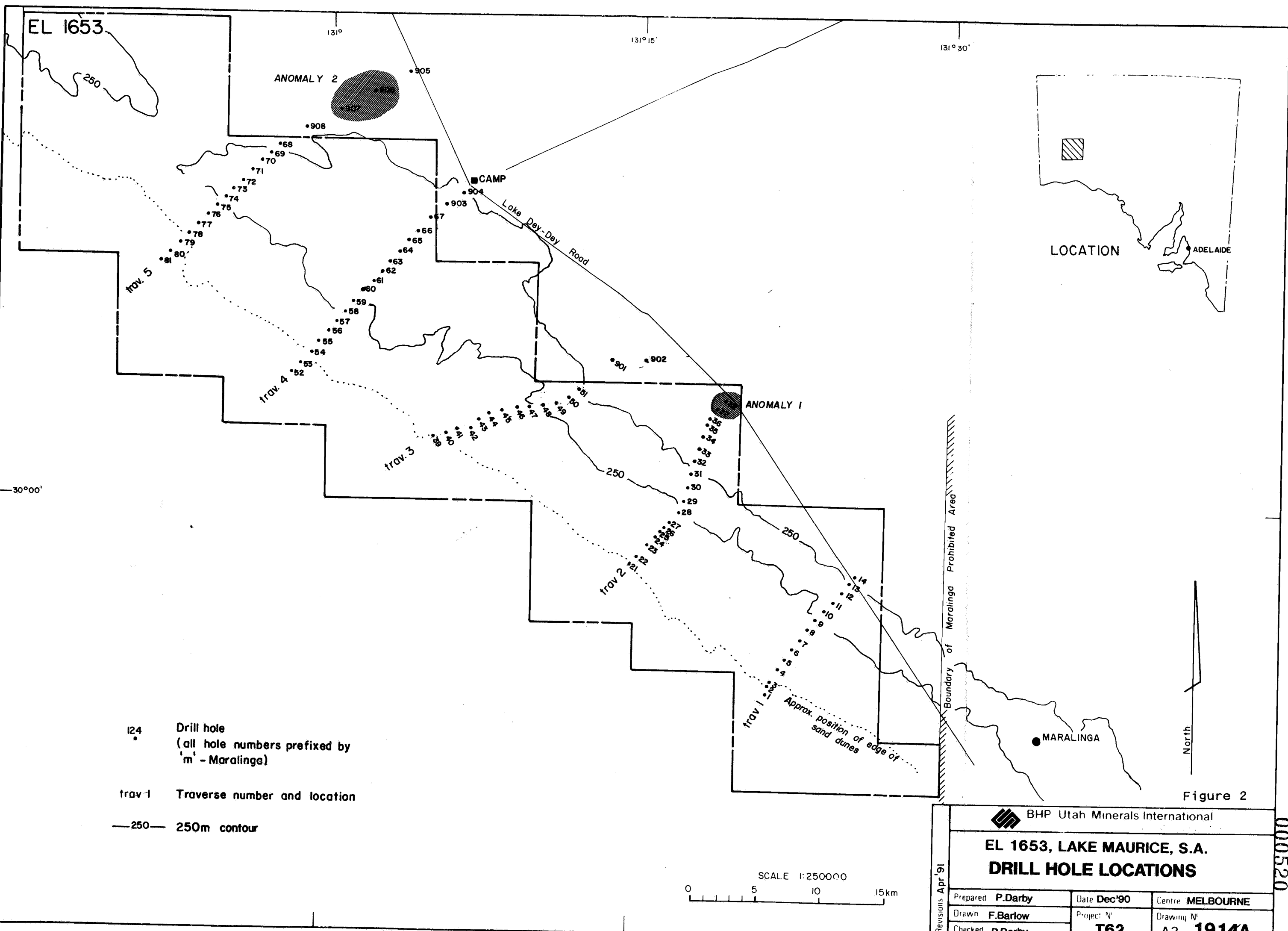
Expenditure for the quarter ended 29 April 1991 totalled \$94,073 and was accrued to each licence as follows:

EL 1653 \$30,401; EL 1654 \$30,499; EL 1655 \$33,173.

The breakdown of expenses by category was:

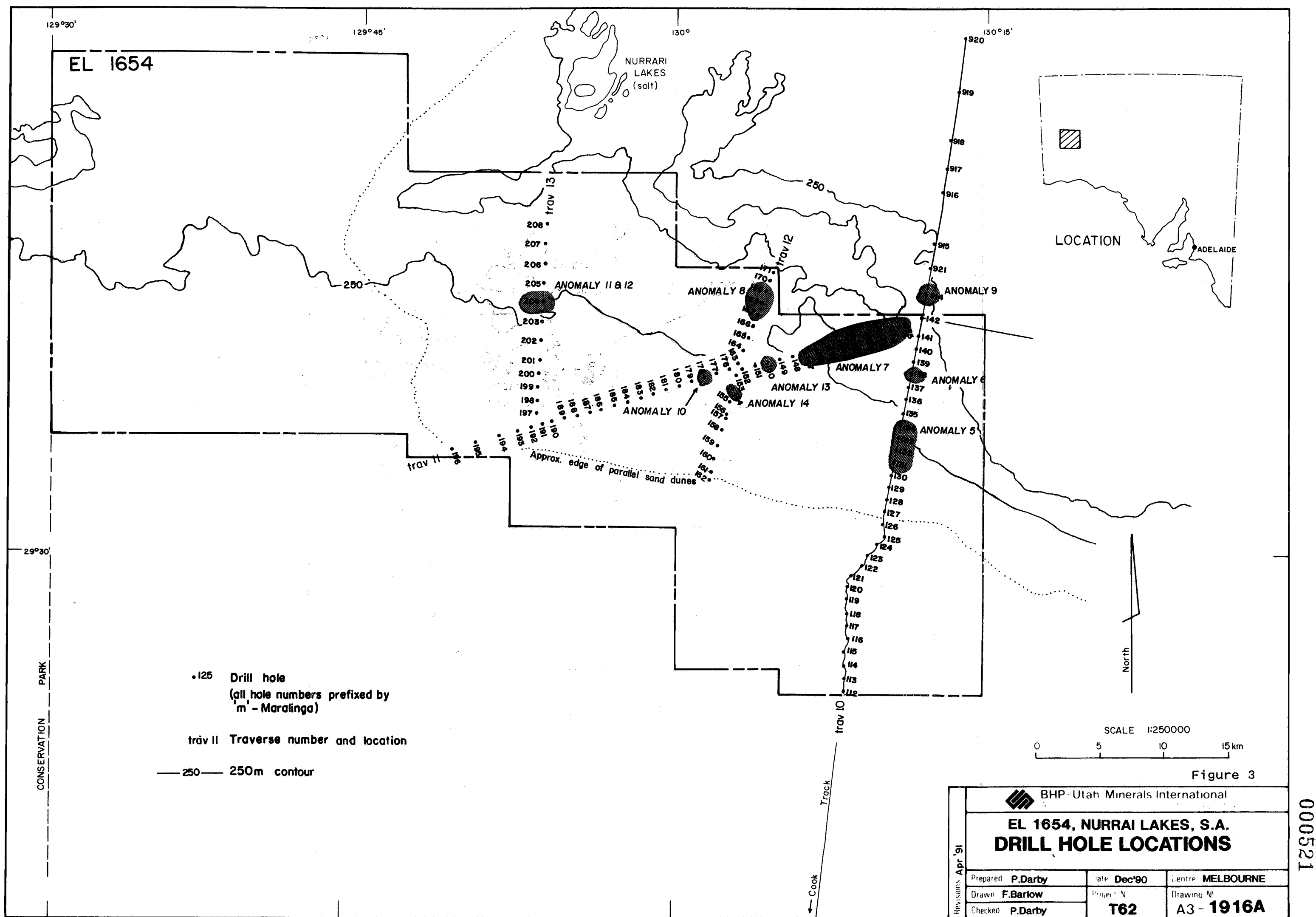
| Item              | EL 1653 | EL 1654 | EL 1655 |
|-------------------|---------|---------|---------|
| Wages & salaries  | 2200    | 2200    | 2420    |
| Field support     | 150     | 405     | 3080    |
| Vehicles          | 36      | -       | -       |
| Equipment         | 12444   | 12419   | 12524   |
| Geochemistry      | 468     | 864     | 295     |
| Surveys           | 11559   | 11509   | 11509   |
| Office expenses   | 139     | 156     | 156     |
| In-house services | 636     | 174     | 174     |
| Other             | 6       | -       | -       |
| Admin & overheads | 2763    | 2772    | 3015    |
| Totals            | 30401   | 30499   | 33173   |

The grand total expenditure for the life of all three licences was \$475,138. The breakdown for each licence was EL 1653 \$191862; EL 1654 \$168752; EL 1655 \$114,524.



|                   |                                 |             |                  |
|-------------------|---------------------------------|-------------|------------------|
| Revisions Apr '91 | BHP Utah Minerals International |             |                  |
|                   | EL 1653, LAKE MAURICE, S.A.     |             |                  |
|                   | DRILL HOLE LOCATIONS            |             |                  |
|                   | Prepared P.Darby                | Date Dec'90 | Centre MELBOURNE |
|                   | Drawn F.Barlow                  | Project N°  | Drawing N°       |
|                   | Checked P.Darby                 | T62         | A3 - 1914A       |

000520



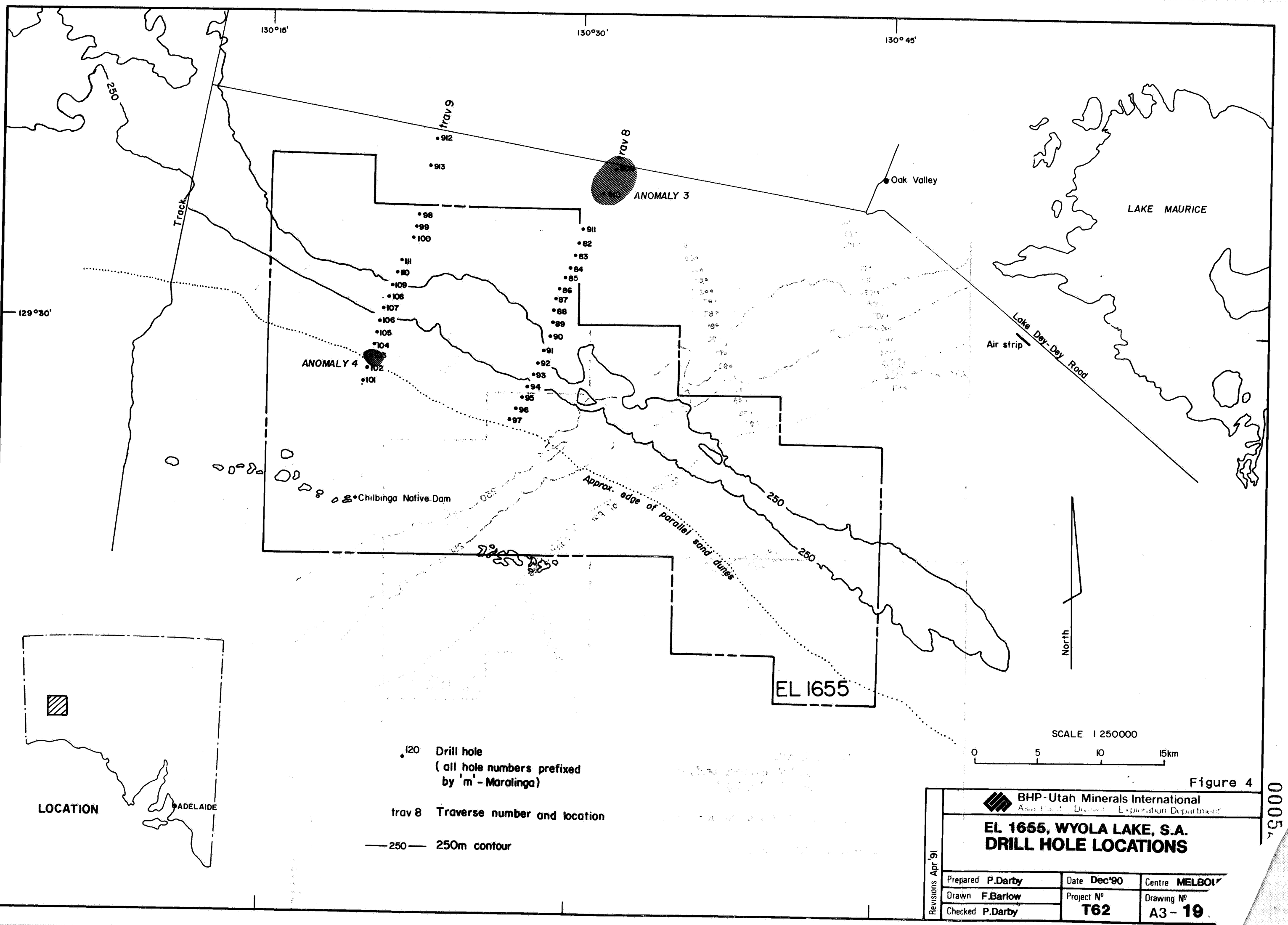


Figure 4

**BHP-Utah Minerals International**  
Asia Pacific Division - Exploration Department

**EL 1655, WYOLA LAKE, S.A.  
DRILL HOLE LOCATIONS**

|                   |                         |                       |                         |
|-------------------|-------------------------|-----------------------|-------------------------|
| Revisions Apr '91 | Prepared <b>P.Darby</b> | Date <b>Dec'90</b>    | Centre <b>MELBOURNE</b> |
|                   | Drawn <b>F.Barlow</b>   | Project No <b>T62</b> | Drawing No <b>A3-19</b> |
|                   | Checked <b>P.Darby</b>  |                       |                         |

0005



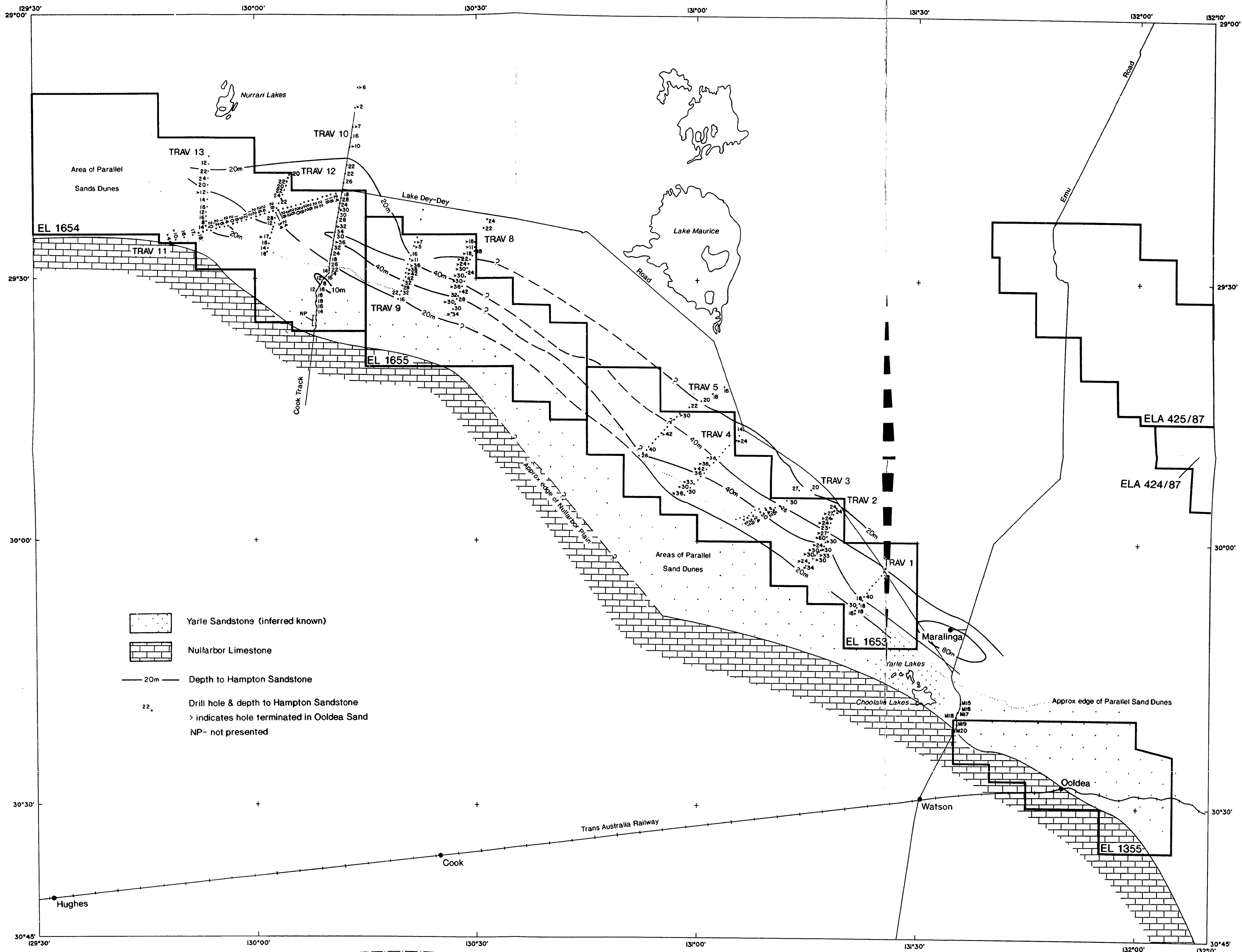


FIG. 6

**BHP Minerals**  
Asia Pacific Division - Exploration Department

**CONTOURED DEPTH TO  
HAMPTON SANDSTONE**

|                    |                     |                   |
|--------------------|---------------------|-------------------|
| Prepared: P. Darby | Date: April 91      | Centre: Melbourne |
| Drawn: P. Digney   | Project No.:        |                   |
| Checked: P. Darby  | Drawing No: A2-1765 | <b>FIGURE 6</b>   |

**8302-15**

0 10 20 30 40 50 km

STAEDTLER MARS 581 70-13 Made in England

BS1347

0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 mm

**APPENDIX 1**

**Heavy Mineral Assays**



41  
HEAVY MINERAL CONTENT OF ~~41~~ SAMPLES

## 1. INTRODUCTION

Samples were received from Mr P Darby of BHP Exploration, Victoria with a request for determination of the heavy mineral content.

## 2. PROCEDURE

### Determination of Heavy Mineral Content

- a) Dry and crush (as necessary) and riffle ~500 g (Classic Laboratories).
- b) Prepare a slurry of the ~500 g and stir mechanically.
- c) Wet sieve at 1 mm and 38  $\mu\text{m}$  with a lower 38  $\mu\text{m}$  check sieve to ensure full retention of +38  $\mu\text{m}$  material.
- d) Weigh +1 mm and -1 mm+38  $\mu\text{m}$  fractions and riffle ~90 g of the -1 mm +38  $\mu\text{m}$  fraction.
- e) Separate the ~90 g centrifugally in tetrabromoethane (TBE, 2.96 sp. gr.).
- f) Remove <2.96 sp. gr. lights and discard.
- g) Top up tube with TBE and recentrifuge in order to remove any lights in the <2.96 sp. gr. heavies.
- h) Remove second <2.96 sp. gr. lights and discard.
- i) Wash, dry and weigh the >2.96 sp. gr. product.



TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Hole No | Depth (m) | Sample no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------|-----------|------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|         |           |            | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| M 45    | 20-22     | DK 6611    | 2.8               | 91.8             | 5.4          | 0.29                               | 0.27            |
|         | 22-24     | DK 6612    | 1.3               | 94.9             | 3.8          | 0.38                               | 0.36            |
|         | 24-26     | DK 6613    | 1.1               | 95.3             | 3.6          | 0.38                               | 0.36            |
|         | 26-28     | DK 6614    | 1.7               | 95.5             | 2.8          | 0.70                               | 0.67            |
|         | 28-30     | DK 6615    | 0.2               | 99.5             | 0.3          | 0.16                               | 0.16            |
| M905    | 6-8       | DK 7039    | 40.0              | 48.5             | 11.4         | 0.45                               | 0.22            |
|         | 8-10      | DK 7040    | 30.5              | 61.8             | 7.8          | 0.25                               | 0.16            |
|         | 10-12     | DK 7041    | 19.0              | 71.0             | 10.0         | 0.38                               | 0.27            |
|         | 12-14     | DK 7042    | 15.7              | 73.0             | 11.3         | 0.43                               | 0.32            |
|         | 14-16     | DK 7043    | 11.5              | 80.2             | 8.3          | 0.39                               | 0.31            |
|         | 16-18     | DK 7044    | 2.5               | 92.6             | 5.0          | 0.37                               | 0.35            |
|         | 18-20     | DK 7045    | 5.5               | 92.3             | 2.2          | 0.47                               | 0.43            |
|         | 20-22     | DK 7046    | 14.6              | 82.3             | 3.1          | 1.17                               | 0.96            |
|         | 22-24     | DK 7047    | 31.9              | 64.6             | 3.5          | 0.94                               | 0.61            |
| M101    | 10-12     | DK 7572    | 44.2              | 48.1             | 7.8          | 0.39                               | 0.19            |
|         | 12-14     | DK 7573    | 39.9              | 51.9             | 8.1          | 0.28                               | 0.14            |
|         | 14-16     | DK 7574    | 12.4              | 67.3             | 20.3         | 0.35                               | 0.23            |
|         | 16-18     | DK 7575    | 28.9              | 37.3             | 33.8         | 0.18                               | 0.07            |
|         | 18-20     | DK 7576    | 8.8               | 41.0             | 50.2         | 0.33                               | 0.13            |
|         | 20-22     | DK 7577    | 16.4              | 66.9             | 16.7         | 4.85                               | 3.24            |
| M142    | 28-30     | DK 8171    | 35.9              | 58.3             | 5.9          | 0.19                               | 0.11            |
|         | 30-32     | DK 8172    | 50.5              | 37.3             | 12.2         | 0.71                               | 0.27            |
|         | 32-34     | DK 8173    | 45.4              | 42.0             | 12.6         | 0.76                               | 0.32            |

TABLE 1 : SIZE AND SPECIFIC GRAVITY DISTRIBUTION  
OF SAND SAMPLES

| Hole No | Depth (m) | Sample no. | SIZE DISTRIBUTION |                  |              | -1mm+38um >2.96 sp.gr<br>as a % of |                 |
|---------|-----------|------------|-------------------|------------------|--------------|------------------------------------|-----------------|
|         |           |            | +1mm<br>wt%       | -1mm+38um<br>wt% | -38um<br>wt% | -1mm+38um<br>size fr.              | total<br>sample |
| M142    | 34-36     | DK 8174    | 31.7              | 50.1             | 18.2         | 0.57                               | 0.29            |
|         | 36-38     | DK 8175    | 25.6              | 52.8             | 21.6         | 0.49                               | 0.26            |
|         | 38-40     | DK 8176    | 38.0              | 44.8             | 17.1         | 0.27                               | 0.12            |
|         | 40-42     | DK 8177    | 10.1              | 55.9             | 34.0         | 0.48                               | 0.27            |
| M155    | 8-17      | DK 8407    | 11.7              | 85.6             | 2.6          | 0.18                               | 0.15            |
| M152    | 36-38     | DK 8364    | 10.6              | 85.8             | 3.5          | 0.04                               | 0.03            |
|         | 38-40     | DK 8365    | 6.4               | 89.4             | 4.2          | 0.14                               | 0.13            |
|         | 40-42     | DK 8366    | 22.2              | 69.1             | 8.7          | 1.12                               | 0.78            |
|         | 16-42     | DK 8369    | 29.4              | 66.0             | 4.6          | 0.15                               | 0.10            |
| M188    | 8-10      | DK 8955    | 2.3               | 77.0             | 20.6         | 0.77                               | 0.60            |
|         | 10-12     | DK 8956    | 0.5               | 83.5             | 16.1         | 0.64                               | 0.53            |
|         | 12-14     | DK 8957    | 0.3               | 72.7             | 27.0         | 0.69                               | 0.50            |
|         | 14-16     | DK 8958    | 0.6               | 72.9             | 26.5         | 0.58                               | 0.42            |
|         | 16-18     | DK 8959    | 8.6               | 72.3             | 19.1         | 0.59                               | 0.43            |
|         | 18-20     | DK 8960    | 26.6              | 63.2             | 10.2         | 0.46                               | 0.29            |
|         | 20-22     | DK 8961    | 11.8              | 71.5             | 16.7         | 0.41                               | 0.29            |
|         | 22-24     | DK 8962    | 32.4              | 53.6             | 14.0         | 6.73                               | 3.61            |
|         | 24-26     | DK 8963    | 34.3              | 59.6             | 6.2          | 4.59                               | 2.73            |

APPENDIX 2

Determination of Mineralogy  
and  
Grainsize Distribution  
of Composites

14  
MINERALOGY OF ~~18~~ COMPOSITES

## 1. INTRODUCTION

A request was received from Mr P Darby of BHP-Utah Exploration, Melbourne for compositing, sizing and mineralogy of >2.96 sp. gr. products of selected samples. The composites were produced from the following samples.

| Composite No. | No. of samples | DK sample number           |
|---------------|----------------|----------------------------|
| 1             | 9              | 6497 to 6515               |
| 2             | 6              | 7057 to 8072               |
| 3             | 2              | 7304, 7320                 |
| 4             | 2              | 7609, 7610                 |
| 5             | 4              | 7970 to 8030               |
| 6             | 3              | 8107 to 8109               |
| 7             | 32             | 8914 to 8277, 8644 to 8719 |
| 8             | 7              | 8554 to 8593               |
| 9             | 4              | 8741 to 8744               |
| 10            | 2              | 8837, 8838                 |
| 11            | 2              | 9119, 9124                 |
| 12            | 2              | 9120, 9121                 |
| 13            | 2              | 8327, 8328                 |
| 14            | 2              | 8397, 8400                 |

## 2. PROCEDURE

- Centrifugally separate in 41 TBE extra portions of selected samples to give sufficiently representative >2.96 sp. gr. products for steps (b) to (e) below.
- Composite in proportion of the Wt % >2.96 sp. gr. of the individual samples.
- Dry sieve at a range of sizes, weigh fractions and recombine.
- Separate centrifugally in methylene iodide (3.3 sp. gr.).
- Separate the >3.3 sp. gr. product on an isodynamic magnetic separator at a setting of 0.5A.

2.

- f) Examine microscopically the 2.96-3.3 sp. gr. product, the >3.3 sp. gr. 0.5A magnetic fraction (in polished section, PS50237 to 251) and the >3.3 sp. gr. 0.5A non-magnetic fraction (in polished section and grain mount) and visually estimate the mineral proportions.
- g) Calculate the results.

### 3. RESULTS

The results are tabulated as follows :

| <u>Table</u> | <u>Description</u>                                                                               |
|--------------|--------------------------------------------------------------------------------------------------|
| 1            | Mineralogy of the -1 mm+38 $\mu$ m >2.96 sp. gr. products.                                       |
| 2            | Size distribution of -1 mm+38 $\mu$ m >2.96 sp. gr. composite samples.                           |
| 3            | Sp. Gr. and magnetic susceptibility distribution of the -1 mm+38 $\mu$ m >2.96 sp. gr. products. |

TABLE 1: MINERALOGY (WT %) OF THE -1mm+38um &gt;2.96 SP.GR. PRODUCTS.

| Composite No. | >3.32 sp.gr. 0.5 Amp Magnetics |          |        |          |        | >3.32 sp.gr. 0.5 Amp Non-magnetics |        |           |          |        | Total |
|---------------|--------------------------------|----------|--------|----------|--------|------------------------------------|--------|-----------|----------|--------|-------|
|               | Light-Heavies                  | Ilmenite | Spinel | Goethite | Others | Zircon                             | Rutile | Leucoxene | Monazite | Others |       |
| 1             | 13.8                           | 59.0     | 0.0    | 2.2      | 1.0    | 17.3                               | 0.9    | 4.8       | 0.10     | 1.0    | 100.0 |
| 2             | 26.1                           | 35.1     | 0.2    | 0.7      | 0.9    | 28.2                               | 0.7    | 8.1       | 0.00     | 0.0    | 100.0 |
| 3             | 24.9                           | 52.7     | 0.0    | 2.0      | 0.4    | 14.4                               | 0.5    | 4.0       | 0.00     | 1.0    | 100.0 |
| 4             | 42.6                           | 1.1      | 0.0    | 47.9     | 0.4    | 4.0                                | 0.5    | 3.2       | 0.00     | 0.2    | 100.0 |
| 5             | 42.6                           | 6.3      | 0.0    | 32.7     | 1.4    | 11.5                               | 0.3    | 4.8       | 0.00     | 0.3    | 100.0 |
| 6             | 58.9                           | 6.8      | 0.0    | 23.6     | 0.5    | 0.6                                | 0.2    | 8.1       | 0.00     | 1.2    | 100.0 |
| 7             | 48.2                           | 13.4     | 0.0    | 21.7     | 2.3    | 4.2                                | 0.6    | 9.3       | 0.00     | 0.4    | 100.0 |
| 8             | 46.0                           | 11.7     | 0.0    | 31.2     | 3.3    | 4.0                                | 0.2    | 3.5       | 0.00     | 0.2    | 100.0 |
| 9             | 39.3                           | 27.0     | 0.0    | 8.2      | 0.3    | 8.3                                | 1.8    | 13.9      | 0.10     | 1.0    | 100.0 |
| 10            | 9.4                            | 30.8     | 0.0    | 2.5      | 0.6    | 46.7                               | 1.9    | 4.7       | 2.25     | 1.1    | 100.0 |
| 11            | 7.0                            | 53.8     | 0.3    | 1.0      | 0.5    | 24.7                               | 2.2    | 9.1       | 0.37     | 1.1    | 100.0 |
| 12            | 67.9                           | 7.7      | 0.0    | 16.7     | 0.3    | 4.1                                | 0.7    | 2.4       | 0.03     | 0.1    | 100.0 |
| 13            | 15.6                           | 32.9     | 0.1    | 4.9      | 0.5    | 24.6                               | 4.1    | 15.8      | 0.18     | 1.4    | 100.0 |
| 14            | 22.9                           | 26.3     | 0.1    | 5.4      | 0.5    | 29.6                               | 5.2    | 7.8       | 1.34     | 0.9    | 100.0 |

\* Altered ilmenite and pseudorutile

\*\* Staurolite, zircon, quartz/Fe-oxide composites and (in 15 only) garnet and amphibole

\*\*\* Kyanite, andalusite and (in 15 only) pyroxene and epidote

Note that the values are quoted to  $\pm 0.1\%$  for convenience but this does not imply this degree of accuracy. The accuracy of the results is probably  $\pm 15-25\%$  relative.

TABLE 2: SIZE DISTRIBUTION (WT.%) OF -1mm+38um &gt;2.96 SP.GR. COMPOSITE SAMPLES

| Composite No | +850um | -850<br>+710um | -710<br>+600um | -600<br>+500um | -500<br>+425um | -425<br>+355um | -355<br>+300um | -300<br>+250um | -250<br>+212um | -212<br>+180um | -180<br>+150um | -150<br>+125um | -125<br>+106um | -106<br>+90um | -90<br>+75um | -75<br>+63um | -63<br>+53um | -53<br>+45um | -45<br>+38um | -38um | Total |
|--------------|--------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------|--------------|--------------|--------------|--------------|-------|-------|
| 1            | 0.1    | 0.2            | 0.3            | 0.2            | 0.3            | 0.4            | 0.5            | 0.7            | 1.4            | 3.2            | 8.4            | 7.9            | 15.3           | 21.7          | 22.9         | 12.1         | 3.1          | 1.1          | 0.4          | 0.0   | 100.0 |
| 2            | 1.0    | 0.6            | 0.7            | 0.7            | 1.0            | 1.0            | 1.3            | 1.2            | 1.2            | 1.4            | 2.2            | 6.2            | 11.5           | 18.6          | 22.8         | 19.1         | 6.7          | 1.9          | 0.7          | 0.0   | 100.0 |
| 3            | 0.5    | 0.3            | 0.6            | 0.6            | 1.2            | 1.4            | 1.6            | 2.2            | 2.2            | 5.9            | 9.0            | 20.7           | 20.0           | 14.6          | 9.2          | 5.0          | 2.5          | 1.7          | 0.7          | 0.0   | 100.0 |
| 4            | 7.5    | 5.3            | 2.2            | 5.8            | 5.1            | 4.6            | 4.9            | 5.0            | 4.5            | 6.1            | 5.0            | 6.5            | 4.7            | 4.6           | 5.8          | 7.6          | 6.8          | 5.0          | 2.6          | 0.3   | 100.0 |
| 5            | 3.4    | 2.1            | 2.2            | 1.8            | 2.8            | 2.6            | 3.0            | 3.2            | 2.8            | 4.6            | 4.7            | 8.8            | 10.9           | 12.8          | 10.3         | 10.0         | 7.4          | 4.3          | 1.8          | 0.3   | 100.0 |
| 6            | 3.4    | 1.5            | 1.6            | 1.4            | 1.9            | 2.1            | 2.1            | 2.6            | 2.5            | 4.3            | 4.8            | 10.0           | 12.8           | 15.0          | 10.8         | 10.3         | 6.3          | 4.2          | 2.2          | 0.2   | 100.0 |
| 7            | 2.4    | 2.1            | 2.3            | 2.1            | 3.3            | 3.1            | 3.5            | 3.7            | 3.4            | 4.8            | 4.4            | 7.2            | 6.7            | 7.4           | 9.6          | 11.9         | 9.8          | 7.5          | 4.2          | 0.5   | 100.0 |
| 8            | 4.1    | 3.8            | 4.0            | 3.7            | 5.6            | 5.6            | 6.0            | 5.7            | 5.0            | 5.6            | 4.8            | 6.7            | 5.6            | 5.8           | 6.5          | 8.6          | 6.1          | 4.1          | 2.4          | 0.3   | 100.0 |
| 9            | 6.1    | 3.1            | 3.5            | 2.6            | 3.5            | 2.8            | 2.7            | 2.6            | 2.1            | 2.8            | 2.3            | 3.5            | 3.6            | 3.8           | 5.1          | 10.1         | 13.3         | 14.8         | 10.6         | 1.1   | 100.0 |
| 10           | 0.6    | 0.9            | 0.7            | 0.8            | 0.9            | 0.8            | 0.8            | 0.7            | 0.6            | 1.0            | 0.7            | 1.1            | 1.8            | 5.1           | 14.7         | 34.3         | 25.0         | 7.3          | 1.7          | 0.5   | 100.0 |
| 11           | 0.1    | 0.1            | 0.1            | 0.1            | 0.2            | 0.2            | 0.3            | 0.4            | 0.6            | 0.7            | 0.7            | 2.1            | 6.4            | 17.9          | 28.7         | 23.2         | 11.9         | 4.3          | 1.5          | 0.3   | 100.0 |
| 12           | 8.4    | 6.1            | 7.3            | 6.6            | 8.8            | 6.9            | 7.0            | 6.3            | 5.0            | 5.0            | 3.8            | 4.8            | 5.0            | 5.0           | 3.8          | 3.7          | 2.9          | 2.1          | 1.1          | 0.2   | 100.0 |
| 13           | 0.2    | 0.2            | 0.2            | 0.3            | 0.4            | 0.5            | 0.7            | 0.9            | 0.7            | 1.1            | 1.2            | 4.3            | 11.3           | 20.4          | 21.5         | 19.0         | 11.2         | 4.4          | 1.5          | 0.2   | 100.0 |
| 14           | 1.7    | 1.5            | 1.7            | 1.3            | 1.8            | 1.5            | 1.3            | 1.4            | 1.3            | 1.7            | 1.5            | 2.4            | 4.1            | 10.9          | 19.5         | 26.1         | 15.2         | 3.7          | 1.1          | 0.1   | 100.0 |



TABLE 3: SPECIFIC GRAVITY AND MAGNETIC SUSCEPTIBILITY  
DISTRIBUTION OF THE -1mm+38um >2.96 SP.GR. PRODUCTS.

| Composite No. | Sp.Gr.Distribution |       | >3.32 Sp.Gr. Magnetic Distribution |           |
|---------------|--------------------|-------|------------------------------------|-----------|
|               | <3.32              | >3.32 | .5 Mags                            | .5 Non-mg |
| 1             | 13.8               | 86.2  | 62.2                               | 24.0      |
| 2             | 26.1               | 73.9  | 36.8                               | 37.1      |
| 3             | 24.9               | 75.1  | 55.1                               | 20.0      |
| 4             | 42.6               | 57.4  | 49.5                               | 7.9       |
| 5             | 42.6               | 57.4  | 40.4                               | 17.0      |
| 6             | 58.9               | 41.1  | 31.0                               | 10.2      |
| 7             | 48.2               | 51.8  | 37.3                               | 14.4      |
| 8             | 46.0               | 54.0  | 46.2                               | 7.8       |
| 9             | 39.3               | 60.7  | 35.5                               | 25.2      |
| 10            | 9.4                | 90.6  | 34.0                               | 56.7      |
| 11            | 7.0                | 93.0  | 55.6                               | 37.4      |
| 12            | 67.9               | 32.1  | 24.8                               | 7.3       |
| 13            | 15.6               | 84.4  | 38.4                               | 46.0      |
| 14            | 22.9               | 77.1  | 32.3                               | 44.9      |
|               |                    |       |                                    |           |

APPENDIX 3

Geological Cross Sections  
of  
Drill Traverses  
with  
Heavy Mineral Assays and Assemblages

## Notes to accompany Appendix 3

- 1 Numbers annotated on either side of drill trace are grade in % HM. The ticks mark the interval for each grade.
- 2 Shaded (stippled) areas represent anomalous zones, for which the mineralogy is annotated.
- 3 Stratigraphic symbols in the sections are as follows:

Quaternary

- Qa      Victoria Desert Sand  
          Red-brown quartz sand, aeolian. Typically 2-4 metres thick, except on dunes where thicknesses up to 20 metres may be attained.
- Qb      Red-brown calcareous sand with high silt and mud content. Typically 2-4 metres thick.
- Q      Ferruginous sand and sandstone. Poorly sorted, with high silt component. Typically 5-15 metres thick.

Tertiary

- To      Ooldea Sand. Quartz sand.  
          Medium to coarse, gritty in part.  
          Well rounded, moderate to good sorting.  
          Typically in excess of 70 metres thick in centre of Ooldea Range, lensing out.
- Teh      Hampton Sandstone.  
          Marked by grit at top, underlain by Fine-grained, variably coloured sand, silt and clay, including spongolite below grit.  
          Mineralisation in lower part.  
          Well cemented in parts.  
          Typical thickness 10-20 metres.
- Tep      Pidinga Formation. Sandstone, silt, clay.  
          Frequently carbonaceous. May be capped by iron stone.
- T      Unknown sand interpreted to be Tertiary age.  
          (possibly Yarle Sandstone ?)

Palaeozoic

- Pal      Weathered bedrock intersected in southern most holes of traverses 5 and 10.

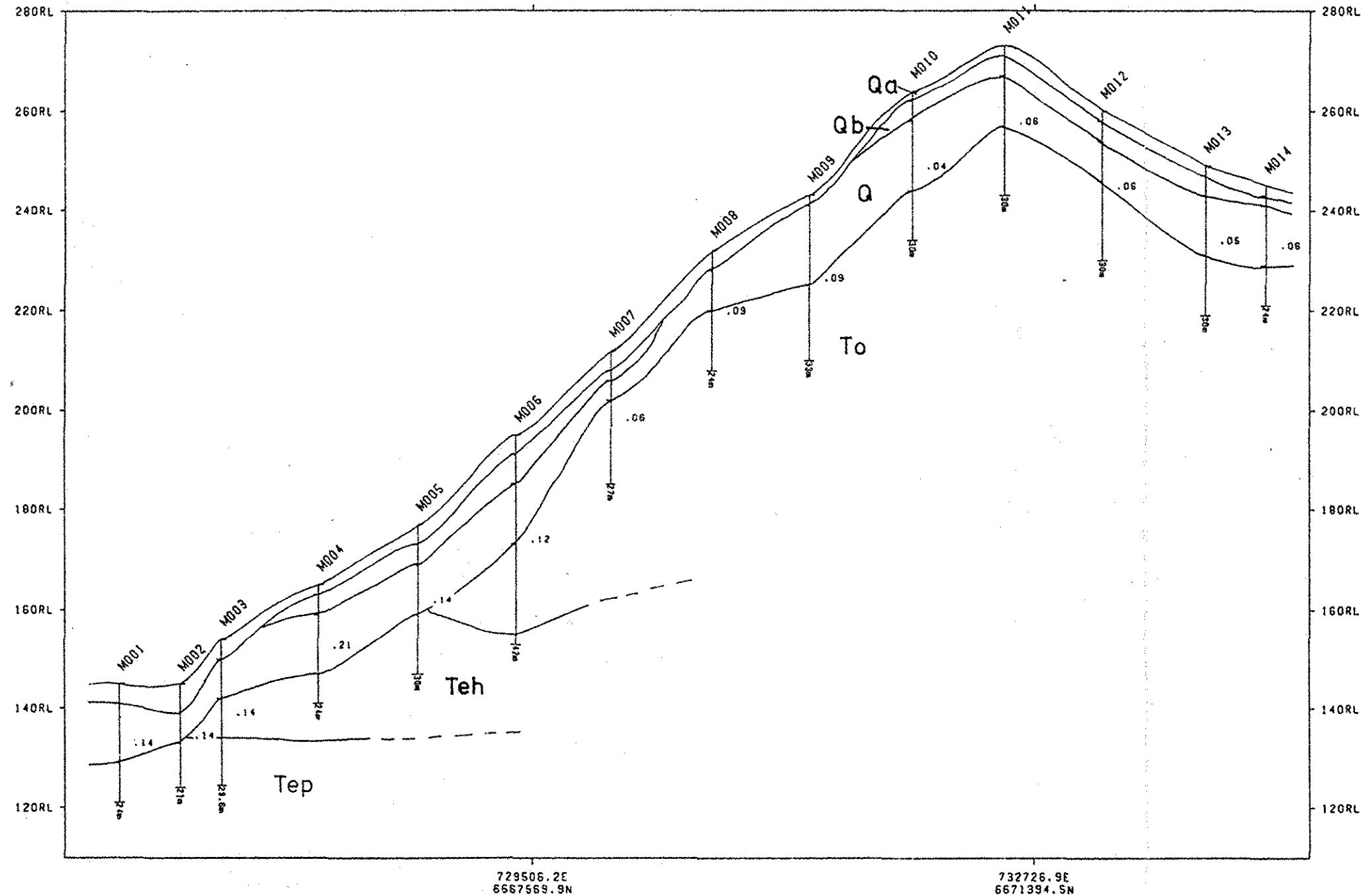
# Ooldea - Mineral Sands - SECTION TRAVER 1

6667569.9N  
729506.2E

6671394.5N  
732726.9E

SAMPLE BASED RESULTS:

HMWPCT pct value annotation to the right, offset by 2mm.  
ranges (0-4+)



BHP-UTAH Minerals International  
Ooldea - Mineral Sands

OOLDEA REGION

EL 1653

TRAVERSE 1

**8302-16**

DATE: 4-JAN-91

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KLB

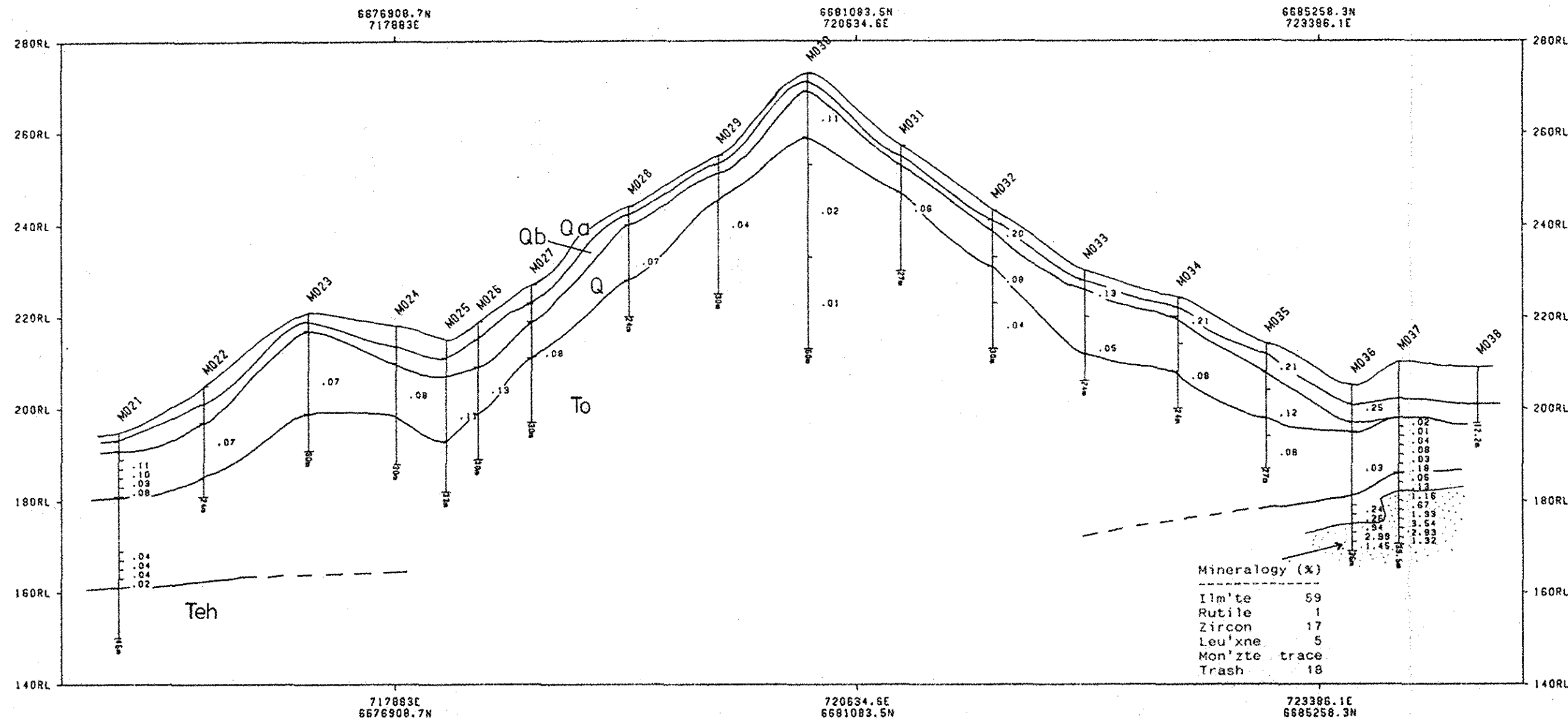
BHP-UTAH MINERALS INTERNATIONAL

ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

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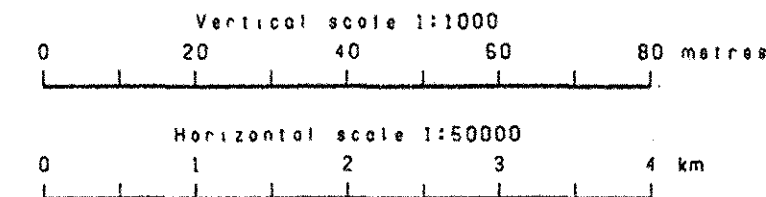
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# Ooldea - Mineral Sands - SECTION TRAV2



## SAMPLE BASED RESULTS:

HMWTPCT pct value annotation to the right, offset by 2mm.  
ranges (0-4+)



BHP-UTAH Minerals International  
Ooldea - Mineral Sands

OOLDEA REGION  
EL 1653  
TRAVERSE 2

**8302-17**

DATE: 4-JAN-91

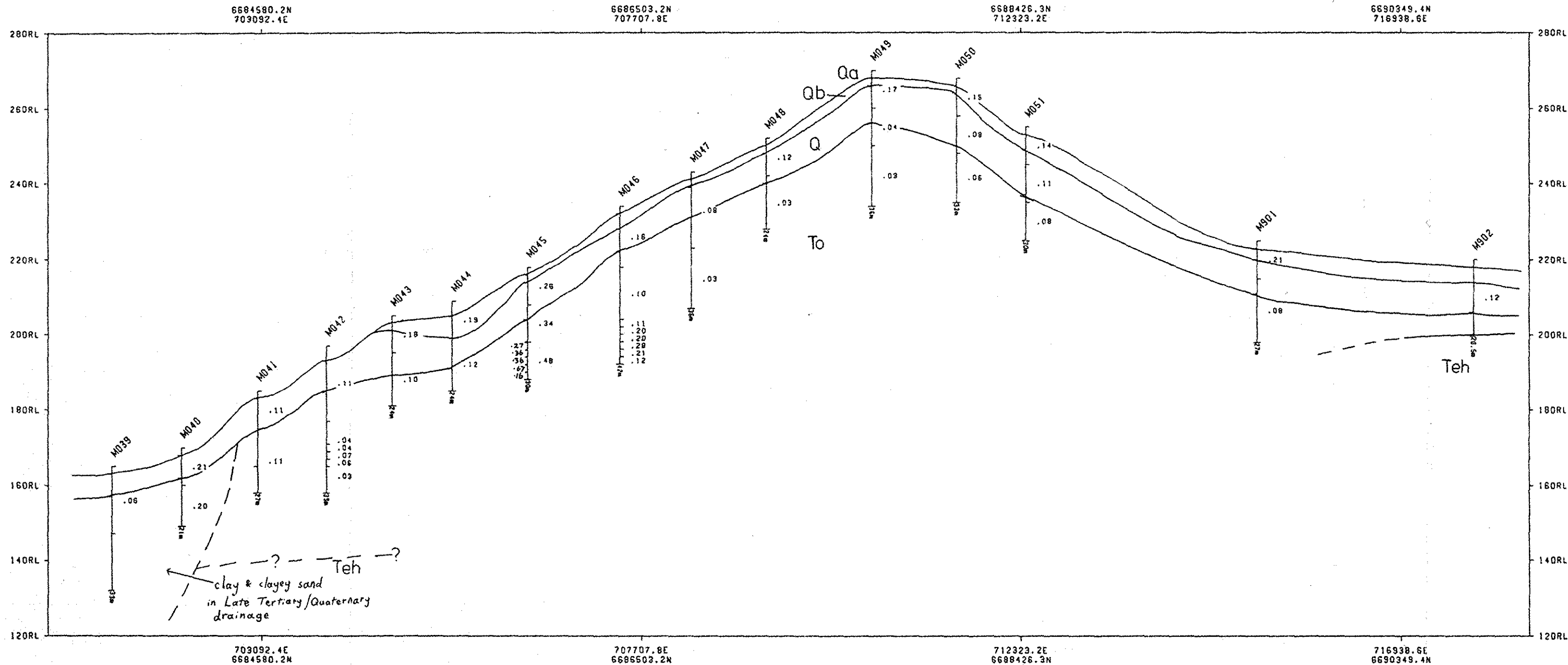
Compiled by  
KLB

BHP-UTAH MINERALS INTERNATIONAL  
ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

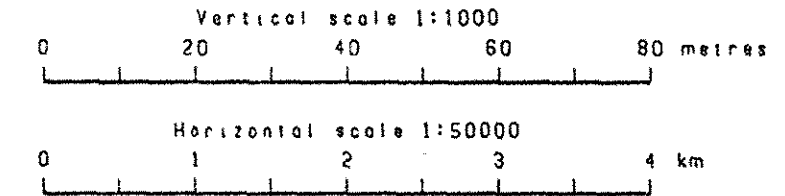
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Y SCALE: 1:1000

# Ooldea - Mineral Sands - SECTION TRAV3



SAMPLE BASED RESULTS:  
HMWTPCT pct value annotation to the right, offset by 2mm.  
ranges (0-4+)



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Ooldea - Mineral Sands

OOLDEA REGION  
EL 1653  
TRAVERSE 3

DATE: 4-JAN-91

Compiled by  
KLB

BHP-UTAH MINERALS INTERNATIONAL

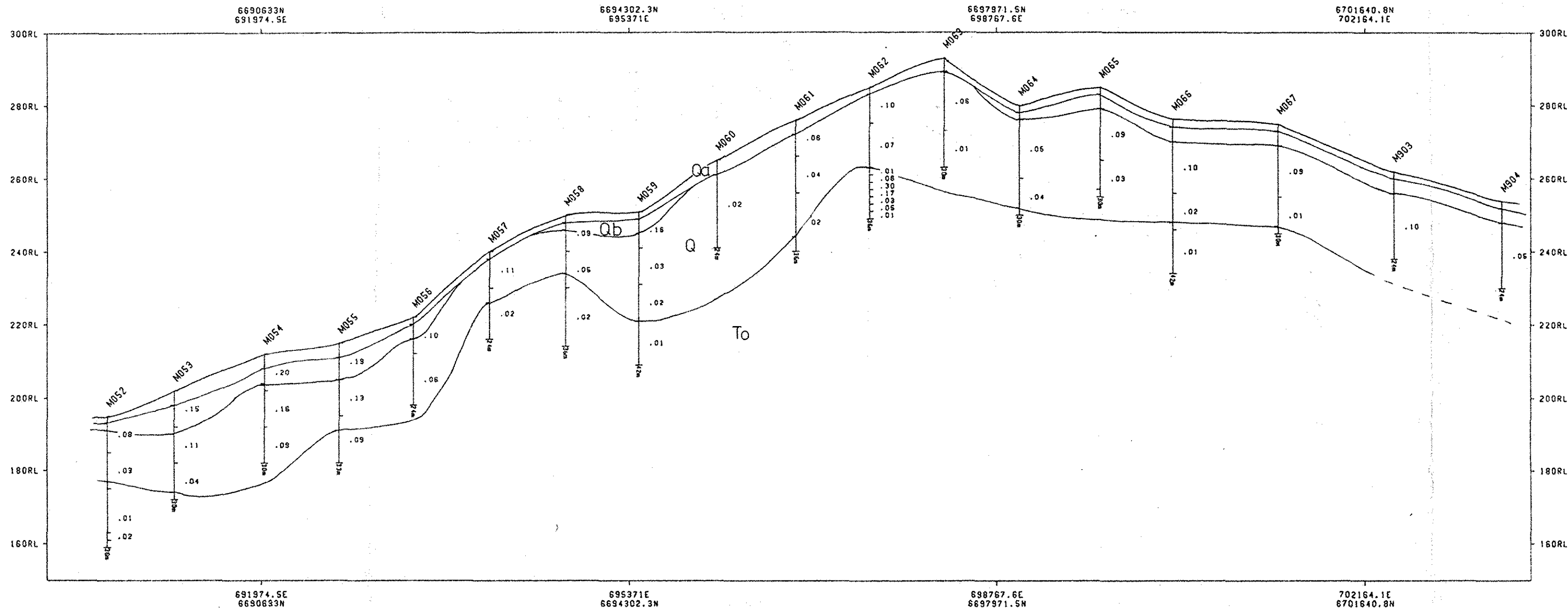
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ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

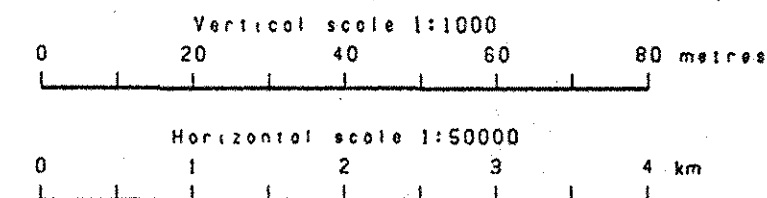
8302-18

# Ooldea - Mineral Sands - SECTION TRAV4



## SAMPLE BASED RESULTS:

HMWTPCT pct value annotation to the right, offset by 2mm.  
ranges (0-4+)



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Ooldea - Mineral Sands

OOLDEA REGION  
EL 1653  
TRAVERSE 4

DATE: 4-JAN-91

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KLB

BHP-UTAH MINERALS INTERNATIONAL

X SCALE: 1:50000

Y SCALE: 1:1000

ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

8302-19

6697310.9M  
679904.6E

6700357.6N  
683869.1E

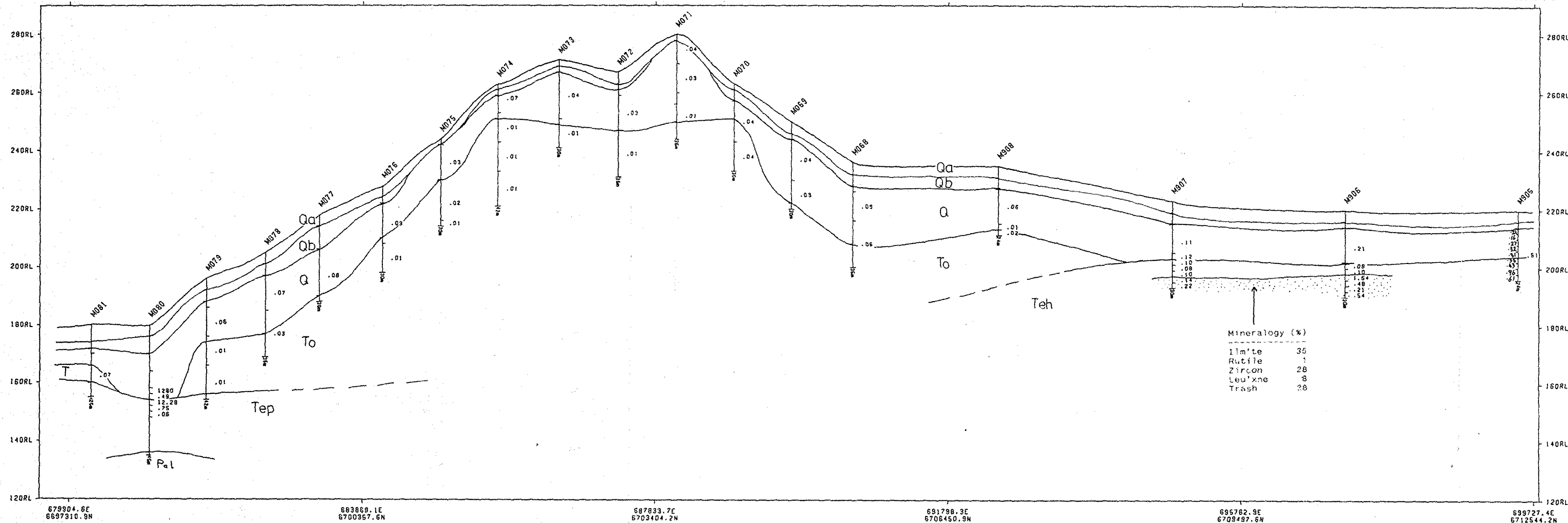
6703404.2M  
687833.7E

6706450.9N  
691798.3E

6709437.61  
685762.95

6712544.2M  
699727.4E

HMWTPCT per value annotation to the right, offset by 2mm.  
ranges (0-4+)



Vertical scale 1:1000

0 20 40 60 80 metres

Horizontal scale 1:50000

0 1 2 3 4 km

BHP-UTAH Minerals International  
Doldeo - Mineral Sands

COLDERA REGION

EL 1653

TRAVERSE 5

DATE: 4-JAN-91

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KLB

X SCALE: 1:50000

Y SCALE: 1:1000

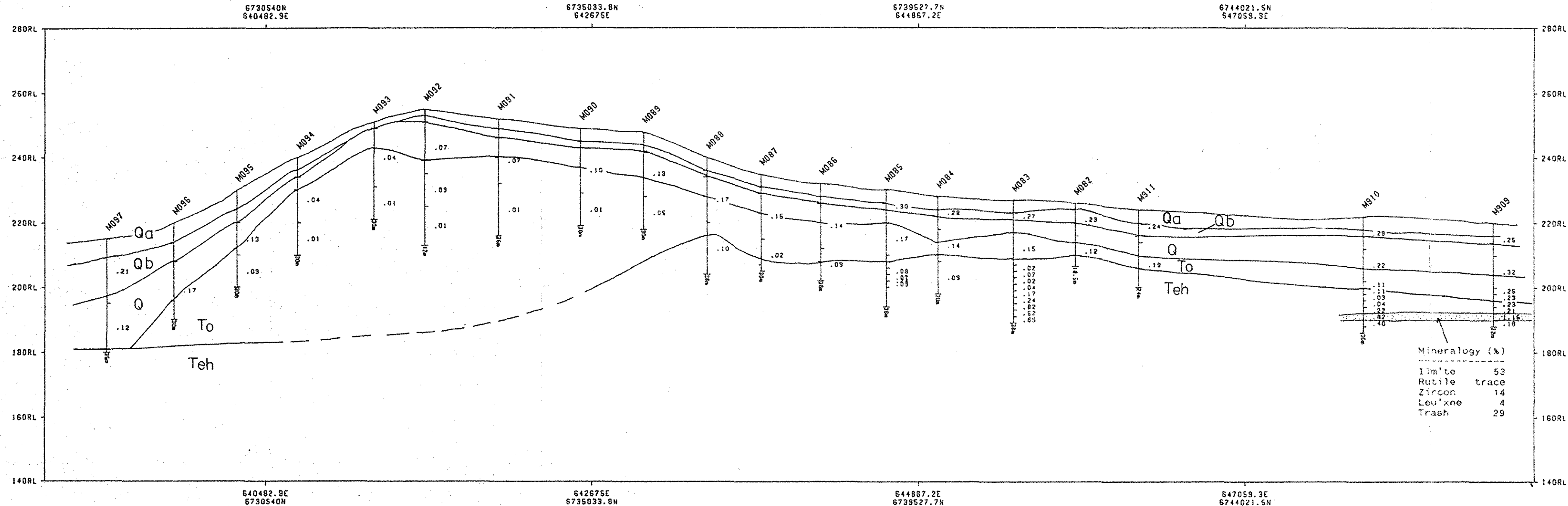


ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

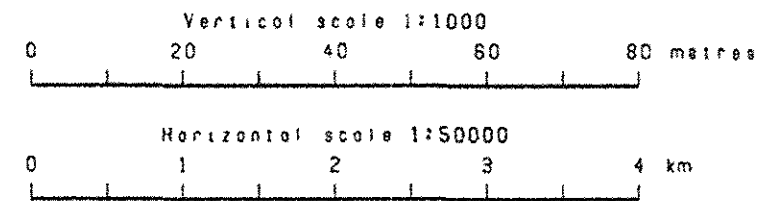
8302-20



# Ooldea - Mineral Sands - SECTION TRAV8



SAMPLE BASED RESULTS:  
HMWTPCT per value annotation to the right, offset by 2mm.  
ranges (2-4+)



BHP-UTAH Minerals International

Ooldea - Mineral Sands

OOLDEA REGION

EL 1655

TRAVERSE 8

8302-21

DATE: 9-JAN-91

Compiled by KLB

X SCALE: 1:50000

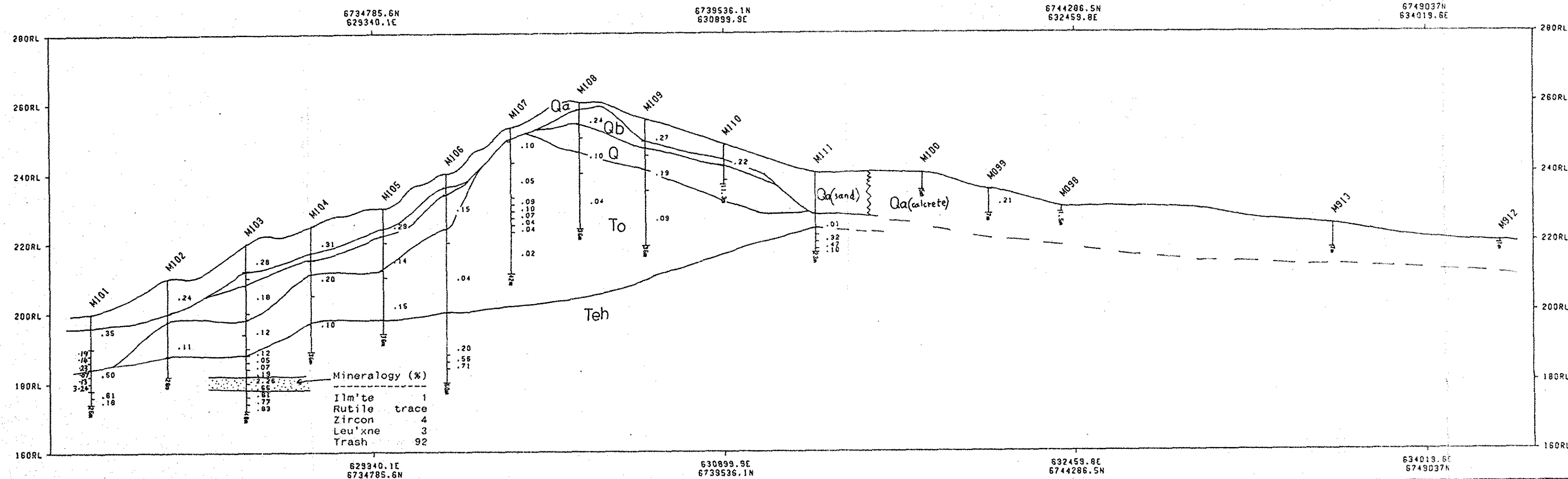
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BHP-UTAH MINERALS INTERNATIONAL

ASIA PACIFIC DIVISION

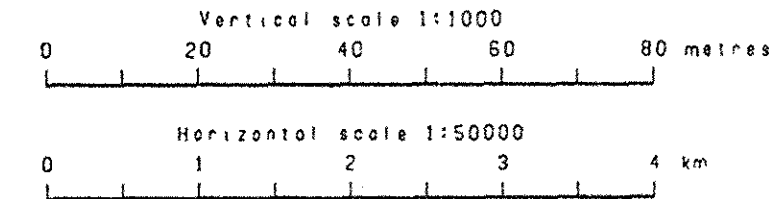
EXPLORATION DEPARTMENT

# Ooldea - Mineral Sands - SECTION TRAV9



SAMPLE BASED RESULTS:

HMWTPCT pct value annotation to the right, offset by 2mm.  
ranges (0-4+)



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Ooldea - Mineral Sands

OOLDEA REGION  
EL 1655  
TRAVERSE 9

DATE: 4-JAN-91

Compiled by  
KLB

BHP-UTAH MINERALS INTERNATIONAL

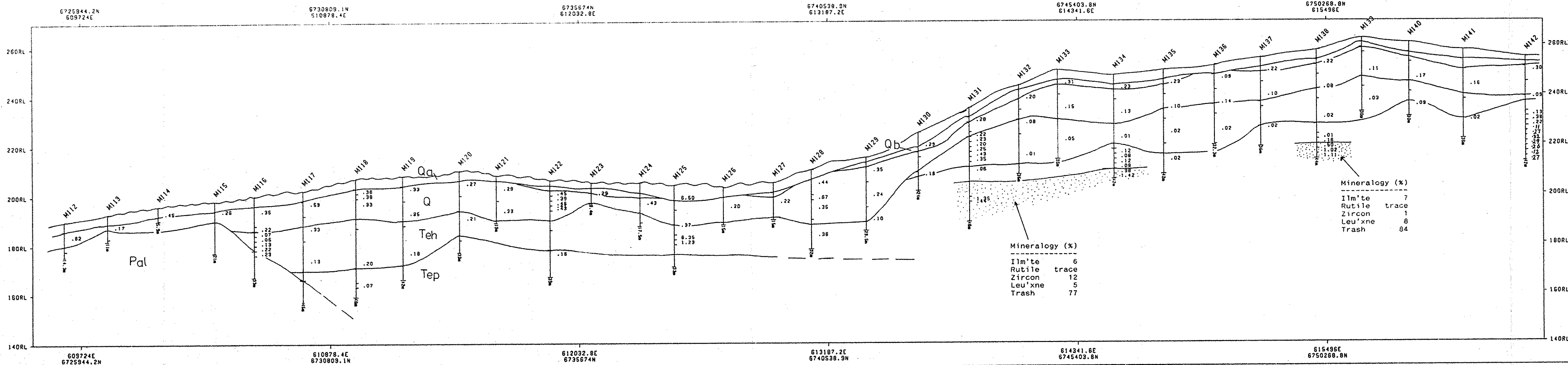
ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

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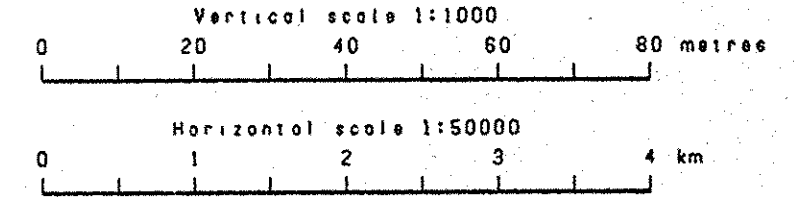
Y SCALE: 1:1000

8302-22

# Ooldea - Mineral Sands - SECTION TRAV10



SAMPLE BASED RESULTS:  
HMWPCY pct value annotated to the right, offset by 2mm.  
ranges (0-4+)



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Ooldea - Mineral Sands

OOLDEA REGION  
EL 1654  
TRAVERSE 10

DATE: 4-JAN-91

Compiled by  
KLB

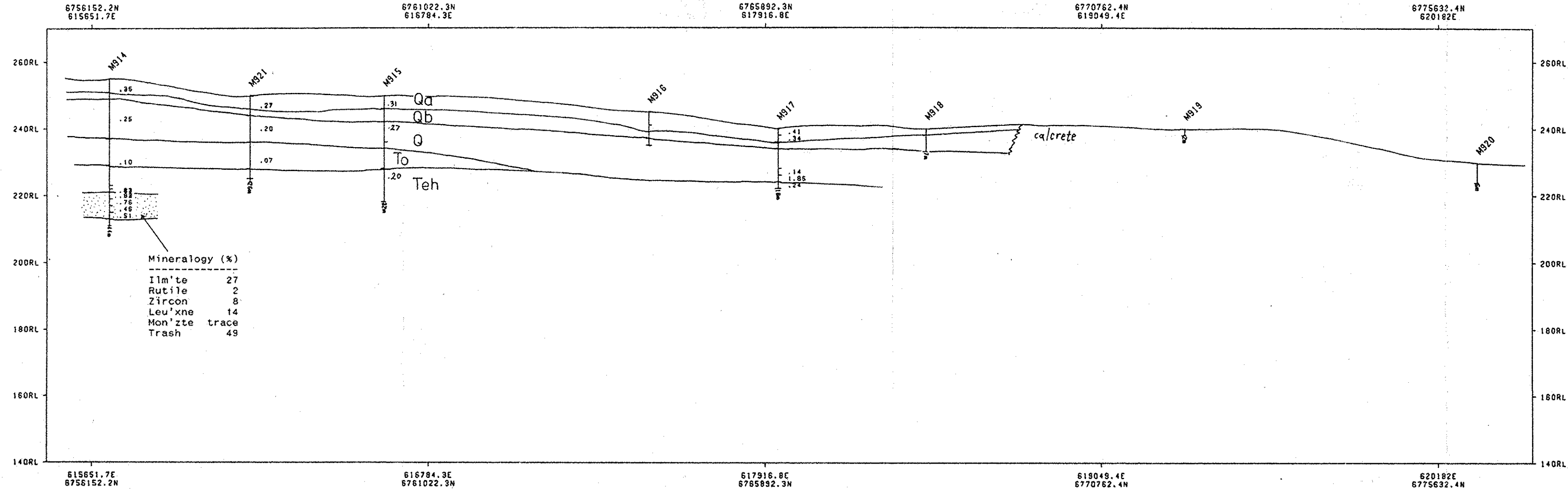
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Y SCALE: 1:1000

BHP-UTAH MINERALS INTERNATIONAL  
ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

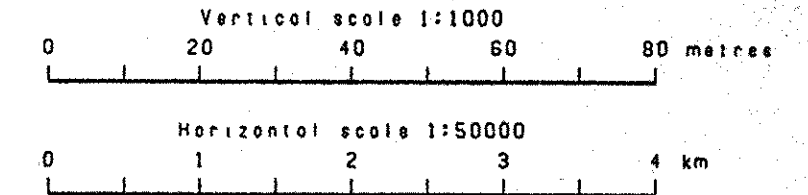
8302-23

# Ooldea - Mineral Sands - SECTION TRAVER 10A



## SAMPLE BASED RESULTS:

HMWTPCT pct value annotation to the right, offset by 2mm.  
ranges (Q-4\*)



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Ooldea - Mineral Sands

OOLDEA REGION

EL 1654

TRAVERSE 10A

DATE: 4-JAN-91

Compiled by  
KLB

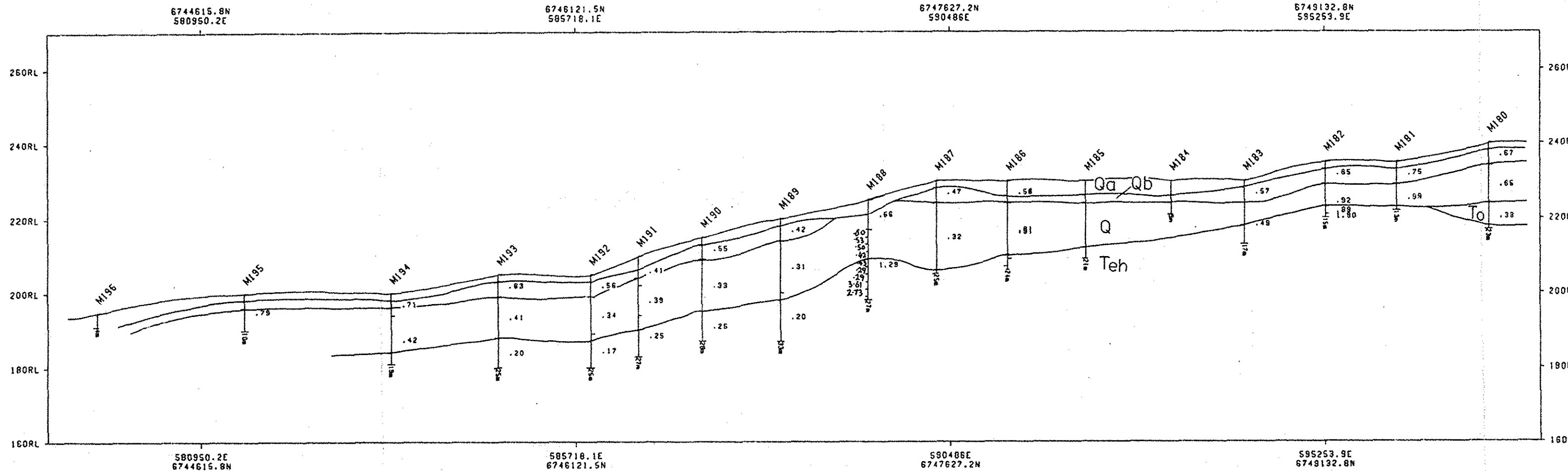
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Y SCALE: 1:1000

BHP-UTAH MINERALS INTERNATIONAL  
ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

8302-24

# Ooldea - Mineral Sands - SECTION TRAV11



SAMPLE BASED RESULTS:

HMWTPCT pct value annotation to the right, offset by 2mm.  
ranges (0-4+)

Vertical scale 1:1000  
0 20 40 60 80 metres

Horizontal scale 1:50000  
0 1 2 3 4 km

BHP-UTAH Minerals International  
Ooldea - Mineral Sands

OOLDEA REGION  
EL 1654  
TRAVERSE 11

DATE: 4-JAN-91

Compiled by  
KLB

BHP-UTAH MINERALS INTERNATIONAL

ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

X SCALE: 1:50000

Y SCALE: 1:1000

8302-25

# Ooldea - Mineral Sands - SECTION TRAV11B

6749561.6N  
600361.9E

6751067.3N  
605129.8E

6752573N  
609897.7E

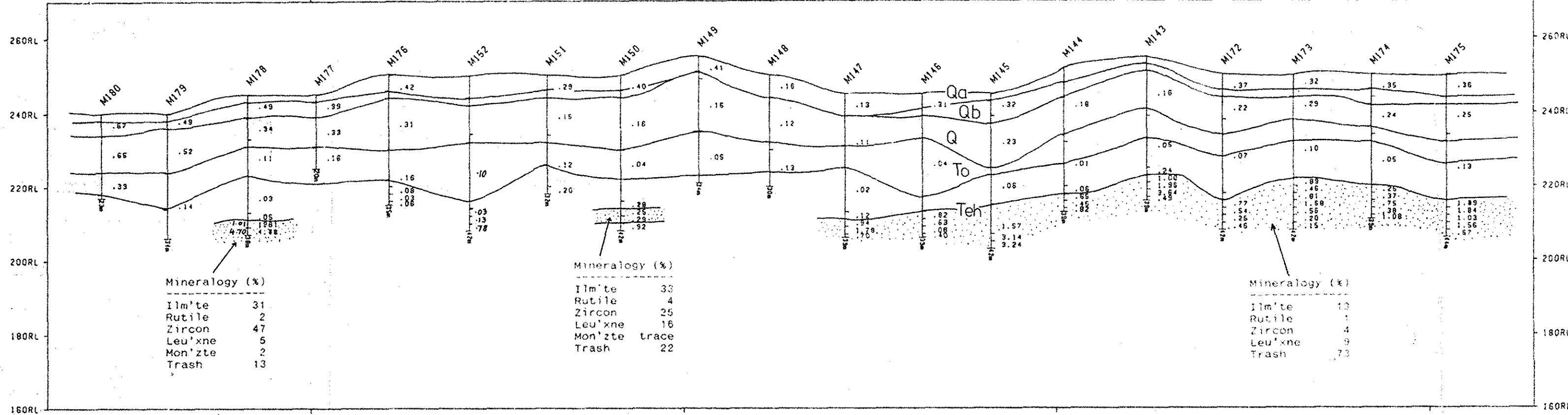
6754078.6N  
614665.6E

SAMPLE BASED RESULTS:

HMWIPCT pct value annotation to the right, offset by 2mm.  
ranges (0-4+)

Vertical scale 1:1000  
0 20 40 60 80 metres

Horizontal scale 1:50000  
0 1 2 3 4 km



BHP-UTAH Minerals International  
Ooldea - Mineral Sands

OOLDEA REGION  
EL 1654  
TRAVERSE 11

DATE: 4-JAN-91

Compiled by  
KLB

BHP-UTAH MINERALS INTERNATIONAL

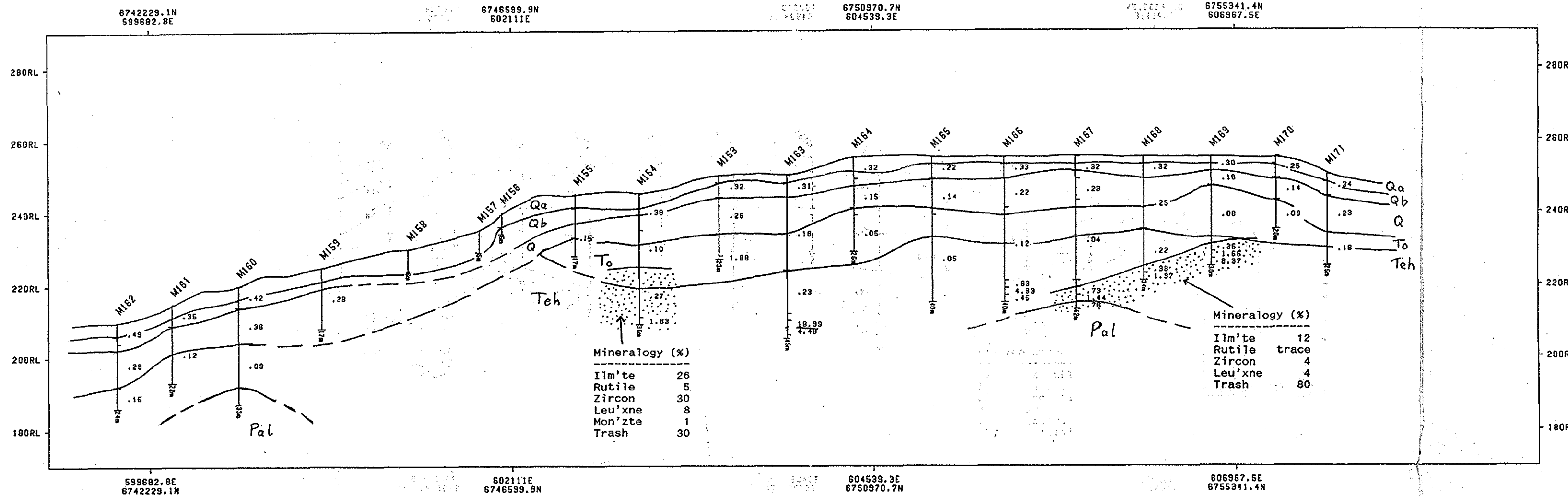
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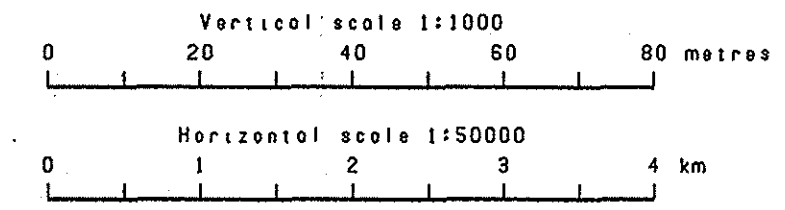
ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

8302-26

# Ooldea - Mineral Sands - SECTION TRAV12



SAMPLE BASED RESULTS:  
HMWTPCT pct value annotation to the right, offset by 2mm.  
ranges (0-4+)



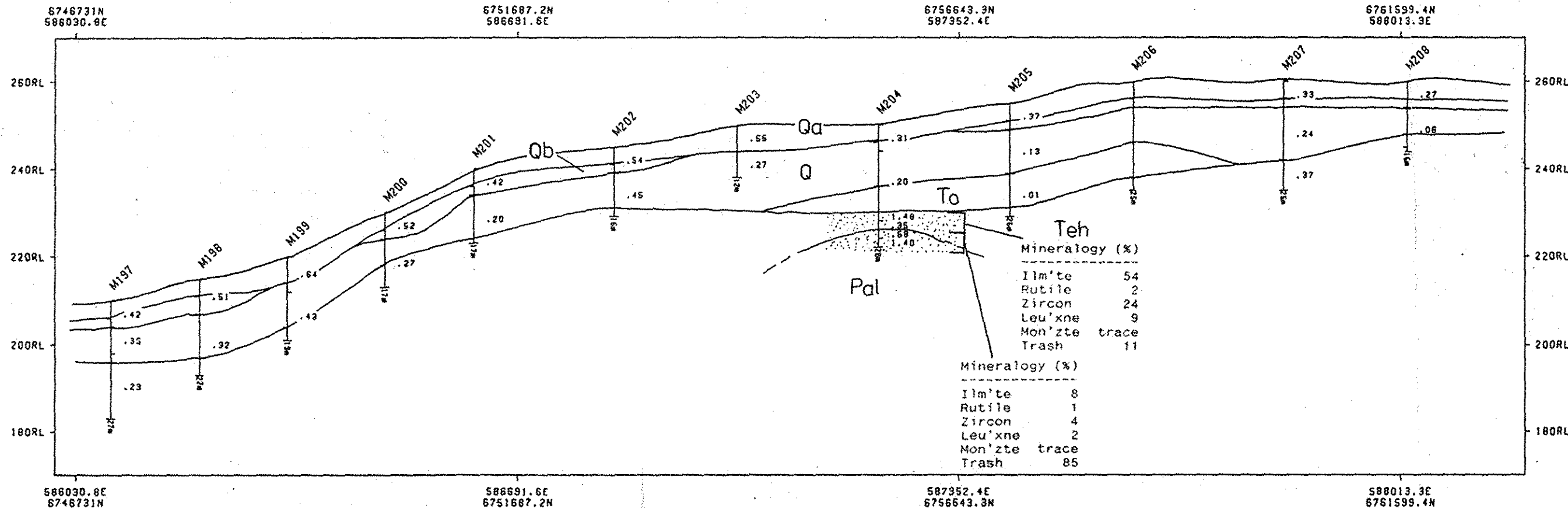
**BHP MINERALS**  
Ooldea - Mineral Sands

OOLDEA REGION  
EL 1654  
TRAVERSE 12

|                  |                    |                                                                                    |
|------------------|--------------------|------------------------------------------------------------------------------------|
| DATE: 4-APR-91   | Compiled by<br>KLB | BHP-UTAH MINERALS INTERNATIONAL<br>ASIA PACIFIC DIVISION<br>EXPLORATION DEPARTMENT |
| X SCALE: 1:50000 | Y SCALE: 1:1000    |                                                                                    |



# Ooldea - Mineral Sands - SECTION TRAV13



SAMPLE BASED RESULTS:

MMWPCT pct value on a 100g sample of 1000 mesh by 2mm.  
range (0-4+) 20 40 60 80 metres

Horizontal scale 1:50000  
0 1 2 3 4 km

BHP-UTAH Minerals International  
Ooldea - Mineral Sands

OOLDEA REGION

EL 1654

TRAVERSE 13

DATE: 4-JAN-91

Compiled by  
KL8

BHP-UTAH MINERALS INTERNATIONAL

ASIA PACIFIC DIVISION  
EXPLORATION DEPARTMENT

X SCALE: 1:50000

Y SCALE: 1:1000

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