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EL 154

PERNATTY LAGOON

PROGRESS AND FINAL REPORTS TO LICENCE SURRENDER FOR THE PERIOD 5/9/1974 TO 7/7/1975

Submitted by
Otter Exploration NL
1975

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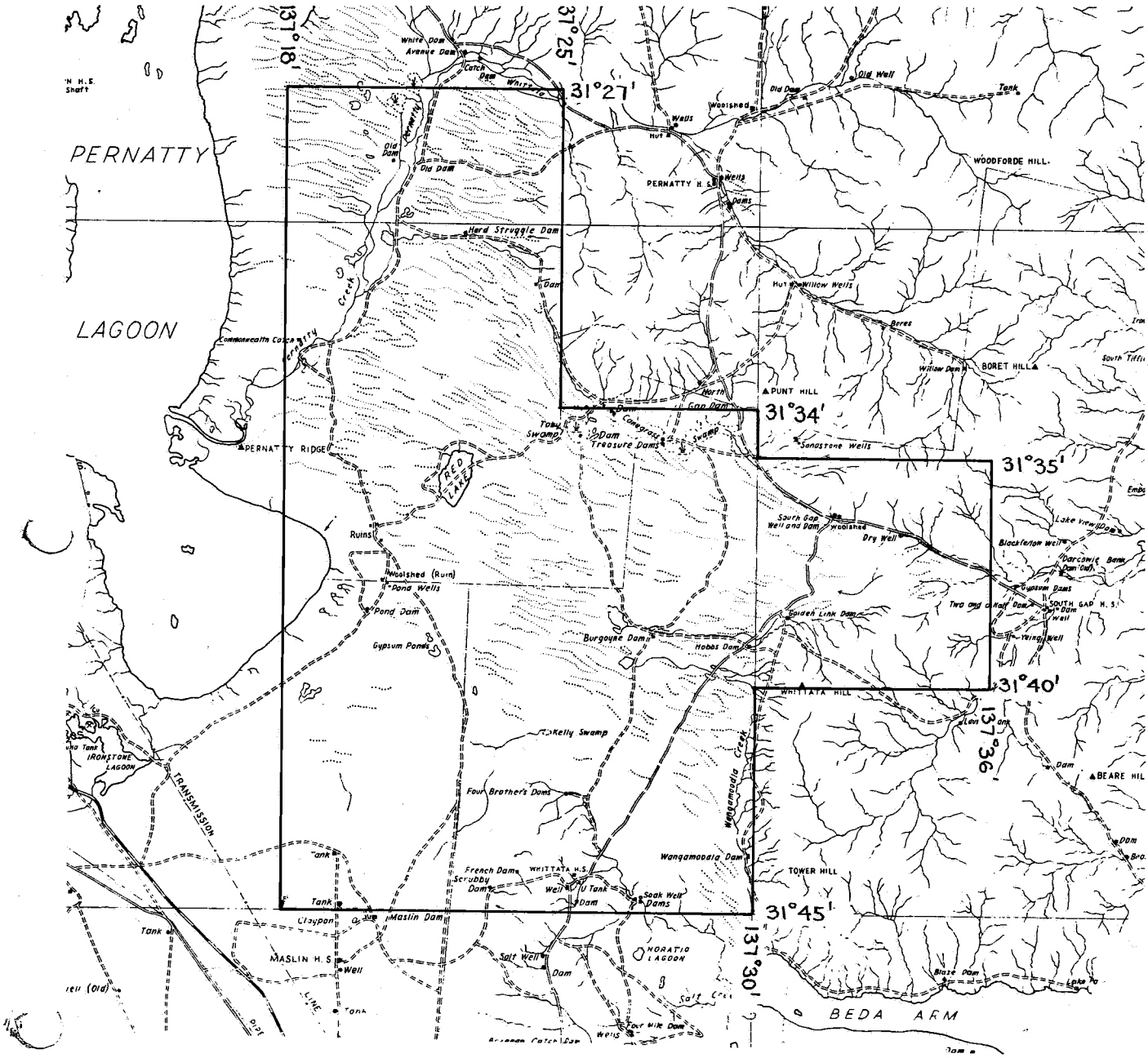
Government of South Australia
Primary Industries and Resources SA



SCALE

KILOMETRES 5 0 5 10 15 20 25 KILOMETRES

MILES 2 1 0 2 4 6 8 10 12 14 16 18 20 MILES

OTTER EXPLORATION N.L.

DOCKET 570/74 **AREA** 616 km^2

1:250000 PLANS . TORRENS

LOCALITY PERNATTY LAGOON AREA - APPROX. 60 km S.E. OF WOOMERA

E.L. No. **154** EXPIRY **DATE** 3·9·75

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TENEMENT: EXPLORATION LICENCE 154

TENEMENT HOLDER: OTTER EXPLORATION N.L.

REPORTS:

BANKERS & TRADERS BUILDING, 115 PITT STREET, SYDNEY, N.S.W. 2000, AUSTRALIA
TELEPHONE 28-2062 CABLES OTTEREX TELEX 22612

OTTER EXPLORATION N. L.

HDK/PJ

7 February 1975

The Director of Mines,
Department of Mines,
Box 38, Rundle St. P.O.,
ADELAIDE S.A. 5000

Dear Sir,

RE: EXPLORATION LICENCE NO. 154, PERNATTY
QUARTERLY REPORT TO 5 DECEMBER 1974

A. FIELD OPERATIONS

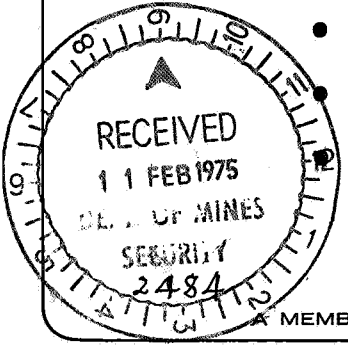
No field exploration work was accomplished during the subject quarter. It is expected that field work will commence in early 1975.

B. RESEARCH

The exploration model which is assumed for the Pernatty-Mt. Gunson area is that of the Zambian Copperbelt (Garlick, 1964). It is expected that copper mineralization is associated with facies changes within the Proterozoic sediments of the area, and that copper may particularly be concentrated within or near a carbonate rich facies. This implies that a "Sabhka" process may have been operative (Renfro, 1974).

Implicit in the exploration model is control by basement topography of sedimentary deposition, i.e. basement topographic control of facies distribution. Accordingly, to facilitate planning of surface and subsurface exploration the following materials were secured:

- ERTS Satellite imagery for the Pernatty area.
- All available geological maps.
- Published BMR aeromagnetic maps at scales of 1:250,000 and 1:63,360.



It was learned from study of the 1:250,000 scale aeromagnetics that the Pernatty-Mt. Gunson district overlies basement having generally "busier" magnetic characteristics than those of surrounding areas. We infer, of course, that this results from compositional differences in the basement, however we believe further that the "busier" area may reflect a basement which is more resistant to erosion -- that basement may be generally shallower and of more rugged "terrain" than that of surrounding areas.

A number of discrete aeromagnetic anomalies, both within the Mt. Gunson area and within EL No. 154, were specified for geophysical interpretation at scale of 1:63,360. The geophysical consultant constructed magnetic profiles for these anomalies and used the profiles to calculate depth to the basement sources of the anomalies.

Data to date indicate that basement is indeed shallower within much of the study area (±500 feet) and deeper in surrounding areas (±1500 feet). Further, the Mt. Gunson deposits may overlie the flanks of specific basement highs.

The southwestern 60% of EL 154 appears to have basement characteristics favourably similar to those of the Mt. Gunson mine area. Field efforts will be directed initially to this portion of the Licence.

EXPENDITURES - To 5 December, 1974:

Maps, photographs, and supplies	$ 70.00
Staff research (one man month)	2,100.00
Geophysical consultation (six days x $150)	900.00
Project overheads at 15%	460.00
Total	$3,530.00

Respectfully Submitted,
OTTER EXPLORATION N.L.

(H.D. Kennedy)
Exploration Manager

References:

Garlick, W.G., 1964, Association of Mineralization and Algal Reef Structures on Northern Rhodesian Copperbelt: Econ. Geol., V.59, p.416-427.

Renfro, A.R., 1974, Genesis of Evaporite-Associated Stratiform Metalliferous Deposits -- A Sabhka Process: Econ. Geol. V.69, p.33-45.

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BANKERS & TRADERS BUILDING, 115 PITT STREET, SYDNEY, N.S.W. 2000, AUSTRALIA
TELEPHONE 232-2066 ■ CABLES OTTEREX ■ TELEX 22612

OTTER EXPLORATION N. L.

HDK/PJ

4 April 1975

The Director of Mines,
Department of Mines,
Box 38, Rundle Street P.O.,
ADELAIDE S.A. 5000

Dear Sir,

RE: EXPLORATION LICENCE NO. 154, PERNATTY
QUARTERLY REPORT TO 5 MARCH 1975

A. FIELD OPERATIONS

A senior geologist visited the prospect to determine possible logistical and access problems and to enable planning of appropriate geophysical and drilling approaches.

B. RESEARCH

A senior geologist carried out extensive research in Adelaide to determine and secure results of ~~previous~~ exploration in the area and to refine our conception as regards metallogeny.

It is apparent that the significant copper occurrences in the Pernatty-Mt. Gunson area are of remobilized type and that they are spatially related to the unconformity at the top of the Pandurra formation and to absence or near absence of the Woocalla dolomite facies. Furthermore, preservation of the Whyalla sandstone unit in the sedimentary sequence is apparently prerequisite to deposition and preservation of copper sulphides in appreciable amounts.

Results of exploration work completed by a previous investigator (Stuarts Bluff Minerals Ltd.), when combined with newly available published information (Johns, 1974) reinforces our belief that the southwestern 60% of EL No.154 is eminently prospective for deposits of Mt. Gunson type.

These data confirm the presence of Whyalla formation throughout the said area and imply that the Woocalla dolomitic shale is absent beneath the Whyalla in large portions of the area.

C. EXPENDITURES

December 5, 1974 to March 5, 1975

Staff - three geological man weeks	$1,550.00
Geophysical consultation (two days x $150)	300.00
Vehicle costs (petrol, amortisation, maintenance)	330.00
Travel and accommodation	1,040.00
Maps, photographs, publications, supplies	30.00
Overheads at 15%	490.00
Total for period	$3,740.00
Previously reported	3,530.00
Total Expenditure to date	$7,270.00

Respectfully Submitted,
OTTER EXPLORATION N.L.

(H.D. Kennedy)
Exploration Manager

Reference:

Johns, R.K., 1974; Base Metal Mineralization in the Pernatty Lagoon Region; Geological Survey of South Australia Report of Investigations 42

BANKERS & TRADERS BUILDING, 115 PITT STREET, SYDNEY, N.S.W. 2000, AUSTRALIA
TELEPHONE 232-2066 CABLES OTTEREX TELEX 22612

OTTER EXPLORATION N. L.

HDK/PJ

7 July 1975

The Director of Mines
Department of Mines
Box 38, Rundle Street P.O.
ADELAIDE S.A. 5000

Dear Sir,

RE: EXPLORATION LICENCE NO. 154, PERNATTY
QUARTERLY REPORT TO 5 JUNE 1975

A. FIELD OPERATIONS

Premised upon geological inferences described in the previous quarterly reports a percussion drilling program was planned for the western and southern portions of EL 154. Initial relatively widely spaced drilling was intended to verify in preliminary manner the inferred presence, at reasonable depth, of the Whyalla-Pandurra interface.

Drilling contractor Northbridge Pty. Ltd. provided a T64 Schramm machine equipped with 66 metres of rods. Drilling, under the direction of a geologist commenced 16 May 1975. Twelve vertical rotary/percussion holes were completed in this program which ended 26 May 1975. Drilling depths ranged from 30 to 66 metres and an aggregate of 570 metres was drilled.

B. TECHNICAL DISCUSSION

The relevant portion of the Upper Proterozoic stratigraphic column in the Mt. Gunson area is as follows:

TENT HILL FORMATION (CORRABERRA SANDSTONE MEMBER
(TREGOLANA SHALE MEMBER
(WHYALLA SANDSTONE MEMBER

WOOCALLA DOLOMITE (locally absent)

PANDURRA FORMATION

From results of a seismic survey conducted earlier on behalf of Stuarts Bluff Minerals Ltd. it can be inferred that favourable geological circumstances similar to those obtaining at the Mt. Gunson mine also obtain within the northwestern and southwestern portions of EL 154. This mineralized setting is interpreted to involve the interface between the Whyalla sandstone and the underlying Pandurra formation and to require the absence or near-absence of the usually-intermediate Woocalla dolomite.

Our interpretations of published BMR gravity and aeromagnetic data suggested that a topographically positive basement feature should exist beneath much of EL 154 and, thus, that the Whyalla-Pandurra interface could exist within open pit depth (say 35 metres) of surface. Shallow depth to this horizon is a prerequisite because the Mt. Gunson deposit exploration model will not permit of development utilising underground mining methods.

Locations of the twelve completed rotary/percussion drill holes are indicated on the attached plan and results are summarised as follows :-

HOLE NO.	TOTAL DEPTH	BOTTOM OF HOLE ROCK TYPE
OEP-1	48 metres	Whyalla Sandstone
OEP-2	48 "	" "
OEP-3	48 "	" "
OEP-4	42 "	" "
OEP-5	48 "	Tregolana Shale
OEP-6	48 "	" "
OEP-7	42 "	" "
OEP-8	48 "	" "
OEP-9	30 "	" "
OEP-10	36 "	" "
OEP-11	66 "	Whyalla Sandstone
OEP-12	66 "	" "

In the northwestern portion of EL 154 none of the five holes drilled succeeded in penetrating the Tregolana Shale member which overlies the Whyalla Sandstone; obviously the lower contact of the Whyalla Sandstone must be at prohibitive depth.

In the southern portion of EL 154 none of the seven holes drilled succeeded in penetrating the Whyalla Sandstone, and one hole bottomed in Tregolana Shale. It is also evident that the favourable Whyalla-Pandurra interface is beyond open pit depth in the southern portion of the Licence.

C. CONCLUSIONS AND RECOMMENDATIONS

It is concluded that prohibitive depth considerations alone effectively eliminate the possibility that a viable copper deposit exists within EL 154, and it is recommended that no further exploration be undertaken by Otter Exploration N.L.

D. EXPENDITURES

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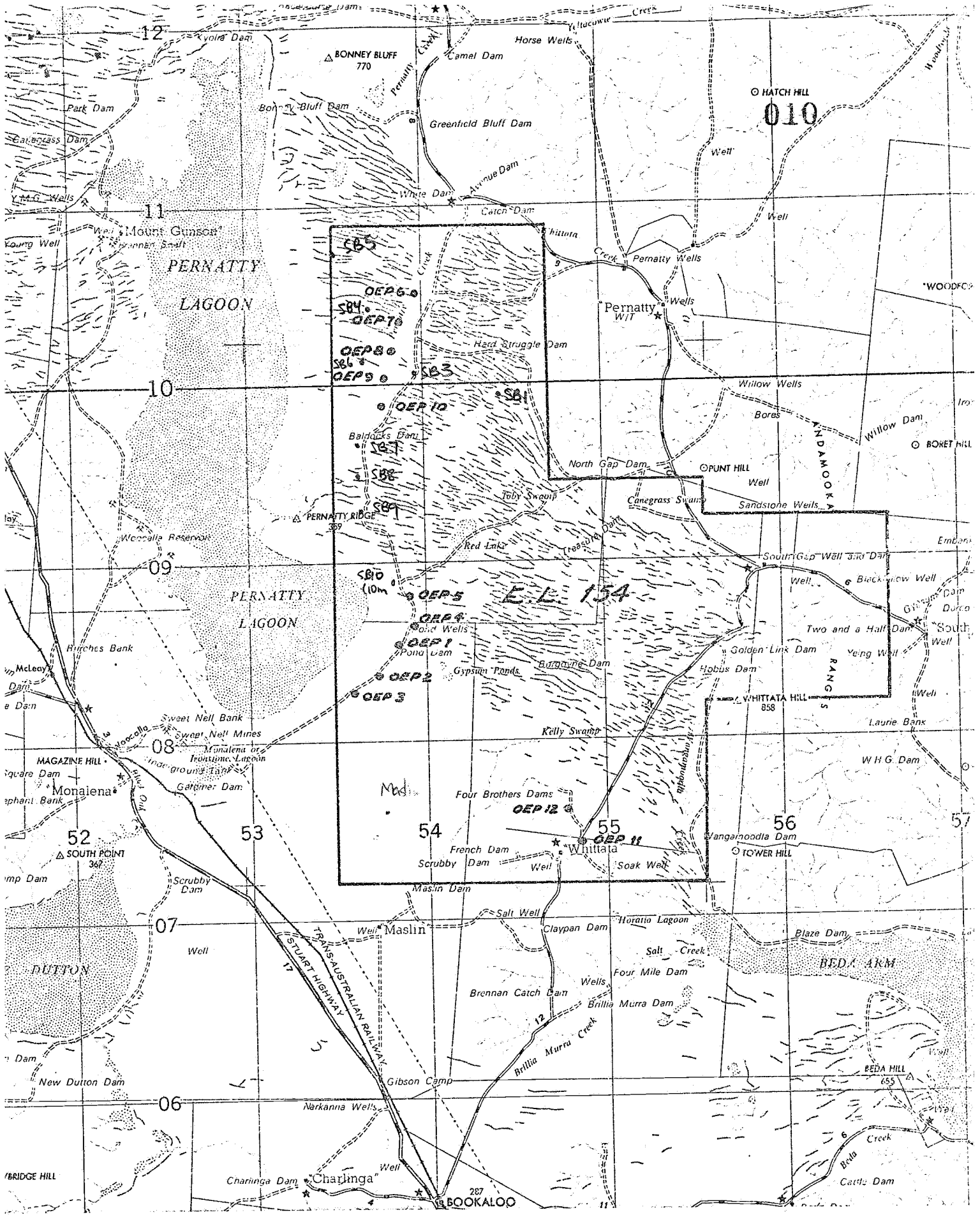
	$
Drilling costs	4,659
Field geologist and field labour costs	1,440
Travel and accommodation	681
Field expenses	346
Staff geological salaries	450
Vehicle costs	362
Maps, photographs, publications and supplies	48
Overheads at 15%	1,197
Total for period	9,183
Previously reported	7,270
TOTAL EXPENDITURE	$16,453

Respectfully submitted
OTTER EXPLORATION N.L.

H D Kennedy

(H.D. KENNEDY)
Exploration Manager



OTTER EXPLORATION N.L.

DRILL HOLE LOCATIONS. E.L. No. 154

Scale 1:250,000

EXPLORATION LICENCE NO. 154

PERNATTY, SOUTH AUSTRALIA

FINAL EXPLORATION REPORT

JULY, 1975

Otter Exploration N.L.

H.D. KENNEDY
Exploration Manager

CONTENTS

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INTRODUCTION

Exploration Licence No. 154 was granted to Otter Exploration N.L. for a period of one year commencing 5 September 1974. Exploration progress has been described in previous reports for quarters ending 5 December 1974, and 5 March and 5 June 1975.

This Final Report summarises the technical considerations and exploration results, and includes all technical data acquired during the licence term.

The target for exploration in EL 154 was a deposit of Mt. Gunson type i.e., a thin, flat lying, tabular body of relatively high grade copper ore exploitable by open pit methods.

REGIONAL GEOLOGY

The pertinent sedimentary section, of Upper Proterozoic (Adelaidean) age follows:

TENT HILL FORMATION	Corraberra sandstone member Tregolana Shale member Whyalla sandstone member
WOOCALLA DOLOMITE (locally absent)	
PANDURRA FORMATION	

The Pandurra formation consists of predominantly red coloured pebbly quartzite, grits and sandstones.

The Woocalla dolomite comprises dolomitic shales, dolomite and laminated black shales. It rests disconformably upon the Pandurra formation and appears to occupy depressions on the Pandurra surface.

The Whyalla sandstone member of the Tent Hill formation is a strongly cross bedded unit composed of white, well rounded quartz grains. It is believed disconformable upon the Woocalla and upon Pandurra formation where the Woocalla is absent.

The Tregolana (Woomera) shale member of the Tent Hill formation comprises laminated purple, brown and green shales.

Corraberra sandstone is not pertinent to this discussion.

Structurally, it is believed (Johns, 1974) that the base metals deposits situated west of Pernatty Lagoon overlie a topographic high resulting from post-Pandurra erosion. This positive feature has been termed the "Pernatty Culmination". Although

post-Pandurra erosion is no doubt the immediate cause of the positive feature, it seems probable that ultimately the Pernatty Culmination is in fact largely caused by "draping" of Pandurra sedimentation over yet older basement topographic features.

In the area of the Culmination the distribution of Woocalla formation and Whyalla and Tregolana member is sporadic. The Mt. Gunson copper deposit is situated at the contact between Pandurra formation and overlying Whyalla sandstone. Thus, the Woocalla dolomite is absent at Mt. Gunson although it is present in the immediate vicinity.

OPERATIONAL HYPOTHESES

Although mineralization at Mt. Gunson is probably of re-mobilised type it is believed that primary mineralization is penecontemporaneous with sedimentation, and the exploration model which was assumed for the district is that of the Zambian copperbelt.

To accord with this model, primary mineralization would have a facies association within the Proterozoic sediments of the area and should particularly be concentrated within, below or near a carbonate rich facies. Garlick (1964) has described the typical copper associated facies in some detail, Whyte and Green (1971) show very well the relationships which such facies can have with buried basement topography, and Renfro (1974) has stated a satisfactory genetic hypothesis.

On the Torrens 1:250,000 scale BMR gravity map it was noted that a pronounced positive gravity anomaly which encompasses the Mt. Gunson mine area and northern Pernatty Lagoon also extends southeasterly therefrom, along the east side of Pernatty Lagoon (figure 1). As this area was not covered by a current Exploration Licence, application was made in the belief that the gravity feature may reflect topographically positive pre Pandurra basement which in turn may control overlying Proterozoic sedimentation i.e., the Pernatty Culmination may extend into this area.

AEROMAGNETIC EVALUATION

Coincidentally with evaluation of the gravity data the published 1:250,000 scale aeromagnetic maps for Torrens and surrounding sheets were examined. The immediate vicinity of Pernatty Lagoon was found to be a magnetically active area, surrounded by a region of generally low magnetic "relief". This characteristic suggested that compositional differences in the basement could result in appreciable

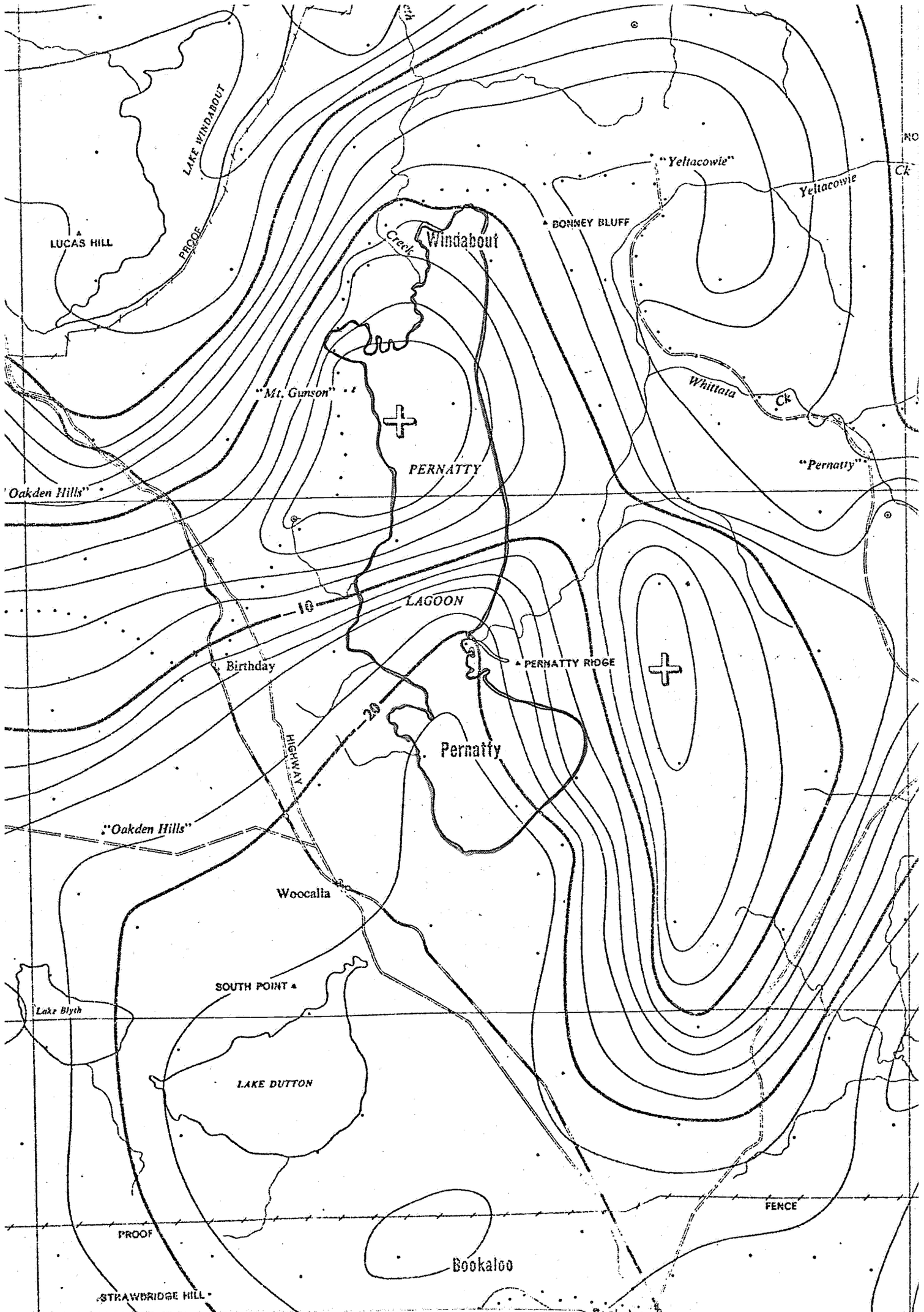

figure 1

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PERNATTY AREA, S.A.

BMR GRAVITY CONTOURS

SCALE 1:250,000

PERNATTY LAGOON

PERNATTY LAGOON

LAKE DUTTON

SB 5 (50 m)

OEP 6 (48 m) Tregolana

SB 4 (16·6 m) SB 4A (14 m)

OEP 7 (42 m) Tregolana

OEP 8 (48 m) Tregolana

SB 6 (40 m)

OEP 9 (30 m) Tregolana

SB 3 (10 m)

SB 1 (34·7 m)

OEP 10 (36 m) Tregolana

SB 7 (15·6 m)

SB 8 (18 m)

SB 9 (40 m)

Red Lake

SB 10 (18 m)

OEP 5 (48 m) Tregolana (?)

OEP 4 (42 m) Whyalla

OEP 1 (48 m) Whyalla

OEP 2 (48 m) Whyalla

OEP 3 (48 m) Whyalla

MASLIN BORE

OEP 12 (66 m) Whyalla

OEP 11 (66 m) Whyalla

"Whittata"

E. L. 154.

"Pernatty"

Whittata Hill

Tower Hill

TREGOLANA Sh

WHYALLA Ss

STUART HIGHWAY

TRANS-AUSTRALIAN RAILWAY

BOOKALOO

N

EXPLANATION

EL BOUNDARY

AREA OF POSSIBLE WOOCALLA ABSENCE AS INFERRED FROM STUARTS BLUFF MINERAL SEISMIC SURVEY

SB 10 (18 m) — LOCATION OF STUARTS BLUFF PERCUSSION DRILL HOLE WITH DEPTH IN METRES

OEP 5 (48 m) Whyalla — LOCATION OF OTTER PERCUSSION DRILL HOLE WITH DEPTH IN METRES AND BOTTOM OF HOLE FORMATION INDICATED

? — POSSIBLE TRACE OF TREGOLANA SHALE - WHYALLA SANDSTONE CONTACT

ENV2484-1

Cartoscope, Sydney

PLATE 1

OTTER EXPLORATION N.L.

COMPILATION PLAN

EXPLORATION LICENSE 154

PERNATTY, SOUTH AUSTRALIA

SCALE : 1 : 100,000

0 10000 20000 30000 40000 feet

HDK, August 1975

basement topographic relief, with implication that depth to source studies of published aeromagnetic data could be rewarding.

Accordingly, a limited depth to source study was commissioned with results as described in Appendix 1. In brief, this evaluation indicated that several magnetic anomalies at Mt. Gunson and elsewhere in the area of interest have relatively shallow depth sources (± 500 feet), and that depths to sources of anomalies in the surrounding region are greater (+ 1000 feet). These results encouraged further investigation.

PREVIOUS WORK

Review of Department of Mines records revealed that results of exploration by two previous operators are on open file.

An exploration program by Noranda, which was concentrated southwest of Pernatty Lagoon, is well documented in Departmental files and is summarised in the recently released Geological Survey of South Australia Report of Investigations No. 42.

The Noranda effort was apparently principally aimed at base metal concentrations within the Woocalla Dolomite, and nearly all of the work was concentrated south of Pernatty Lagoon, well outside the area of EL No. 154. However, the Noranda drilling demonstrated a marked increase in geochemical copper content in areas where Woocalla is very thin or essentially absent and a pronounced relative copper deficiency in thicker Woocalla sections. Additionally, the Noranda work demonstrated the pronounced variations in Woocalla thickness which can occur.

In 1969-70, under Special Mining Lease 315, Stuarts Bluff Minerals Ltd. carried out an exploration program within an area which included much of EL 154. The Stuarts Bluff program comprised a refraction seismic survey and limited follow up percussion drilling for geochemical evaluation.

The seismic results led to the inference that Woocalla Dolomite is absent in much of northern EL 154, as well as in most of the southwestern portion of the EL, despite the fact that Woocalla is present in Maslin bore in southwestern EL 154. Isopachs of the inferred Woocalla velocity set do indicate Woocalla to be present in the immediate vicinity of Maslin bore, but suggest that Woocalla may be absent in areas completely surrounding the bore.

Ten percussion holes were drilled by Stuarts Bluff. Of these holes, six were drilled to depths such that adequate tests were provided. Unfortunately there are no geological

logs of this drilling and attempts to secure geological information from the Mines Department and from Stuarts Bluff-associated companies met with failure. However, geochemical data (Cu-Pb-Zn) are available for all holes (Appendix II) except that data are not complete for one of the deeper holes. Several holes returned weakly anomalous zinc from limited sections and one (No. 6) encountered significantly anomalous lead, zinc and copper from a 50 feet section.

Further drilling was recommended and apparently planned by Stuarts Bluff however, for reasons unknown, such work was not carried out.

OTTER EXPLORATION PROGRAM

Several lines of reasoning thus led to the inference that the "Pernatty Culmination" -- a basement high which has influenced Proterozoic sedimentation at Mt. Gunson -- could extend easterly of Pernatty Lagoon and underlie overburden covered portions of EL 154. Indeed, in the absence of drill log data, it could be inferred that some of the Stuarts Bluff drilling actually intersected the appropriate Whyalla-Pandurra disconformity and that this interface contains anomalous metals content.

Otter staff decided upon an initially limited, widely spaced percussion drilling program with the following aims :

- Determine subsurface geology in the vicinity of earlier Stuarts Bluff drilling.
- Confirm and, if warranted, extend the anomalous geochemistry encountered in Stuarts Bluff drilling.
- Determine subsurface geology in those portions of southern EL 154 where seismic data imply absence of Woocalla Dolomite; and if possible determine whether a Woocalla-free Whyalla-Pandurra contact exists within open pit distance of surface in southern EL 154.

Drilling contractor Northbridge Pty. Ltd. provided a T64 Schramm machine equipped with 66 metres of rods. Drilling, under the direction of a geologist commenced 16 May 1975. Twelve vertical rotary/percussion holes were completed in this program which ended 26 May 1975. Drilling depths ranged from 30 to 66 metres and an aggregate of 570 metres was drilled.

Locations of the twelve completed rotary/percussion drill holes are indicated on the attached plan, and drill logs with geochemical data comprise Appendix III. Results are summarised as follows :-

HOLE NO.	TOTAL DEPTH	BOTTOM OF HOLE ROCK TYPE
OEP- 1	48 metres	Whyalla Sandstone
OEP- 2	48 "	" "
OEP- 3	48 "	" "
OEP- 4	42 "	" "
OEP- 5	48 "	Tregolana Shale (?)
OEP- 6	48 "	Tregolana Shale
OEP- 7	42 "	" "
OEP- 8	48 "	" "
OEP- 9	30 "	" "
OEP-10	36 "	" "
OEP-11	66 "	Whyalla Sandstone
OEP-12	66 "	" "

In the northwestern portion of EL 154 none of the five holes drilled succeeded in penetrating the Tregolana Shale member which overlies the Whyalla Sandstone; obviously the lower contact of the Whyalla Sandstone must be at prohibitive depth. Those holes drilled near anomalous Stuarts Bluff hole No. 6 did not return anomalous analyses, although Otter did not carry out complete geochemical analysis in view of the unfavourable stratigraphy.

In the southern portion of EL 154 none of the seven holes drilled succeeded in penetrating the Whyalla Sandstone, and one hole bottomed in Tregolana Shale (?). It is evident that the favourable Whyalla-Pandurra interface is beyond open pit depth in the southern portion of the Licence. None of the samples collected from the southern drill holes returned anomalous base metal values.

CONCLUSIONS AND RECOMMENDATIONS

Tregolana Shale very extensively underlies overburden in the northeastern 60% of EL 154, and it probably forms the bed of Red Lake, in the centre of the Licence. The Tregolana Shale-Whyalla Sandstone contact probably strikes northwesterly across the Licence from just east of Whitata homestead to just east of Pernatty Ridge on the east side of Pernatty Lagoon.

It is probable that interpretation placed upon the Stuarts Bluff seismic data is not a valid one, however we cannot claim to have definitely proved this because the Whyalla-Woocalla-Pandurra formations were never intersected.

It is doubtful that the "Pernatty Culmination" extends east of Pernatty Lagoon because of the extensive sections

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of Tregolana Shale and Whyalla Sandstone which were intersected. (On the Culmination in the Mt. Gunson area the entire section including Whyalla and Tregolana appears to thin markedly).

It is finally concluded that prohibitive depth considerations alone effectively eliminate the possibility that a viable copper deposit exists within EL 154, and it is recommended that no further exploration be undertaken by Otter Exploration N.L.

EXPENDITURES

Drilling costs	$ 4,659
Geological and technical field costs	2,990
Travel and accommodation	1,721
Staff research	2,650
Vehicle and field expenses	1,038
Geophysical consultation	1,200
Maps, photos, supplies	148
Sub-total	14,406
Overheads and supervision @ 15%	2,161
TOTAL	$16,567

Respectfully Submitted
OTTER EXPLORATION N.L.

H.D. KENNEDY
Exploration Manager

REFERENCES

Garlick, W.G. (1964) Association of Mineralization and Algal Reef Structures on Northern Rhodesian Copperbelt: Econ. Geol., V.59, p.416-427.

Johns, R.K. (1974) Base Metal Mineralization in the Pernatty Lagoon Region, Geol. Survey of S.A. Report of Investigations 42.

Renfro, A.R. (1974) Genesis of Evaporite-Associated Stratiform Metalliferous Deposits -- a Sabhka Process: Econ. Geol., V.69, p.33-45.

Whyte, R.J. and Green, M.E. (1971) Geology and Paleogeography of Chibuluma West Orebody, Zambian Copperbelt: Econ. Geol., V.66, p.400-424.

APPENDIX I

AN AEROMAGNETIC INTERPRETATION

OF

PERNATTY-WINDABOUT, S.A. AREA

FOR

OTTER EXPLORATION N.L.

BY

JOHN L. IRVINE, B.Sc.
Consulting Geophysicist

SUMMARY

A qualitative and quantitative interpretation of a portion of an aeromagnetic survey in South Australia revealed a complex basement structure that appears to be related to the known mineralization. No direct control of the mineralization by the Precambrian is suggested as the known mineralization is believed to be stratigraphically controlled from within the Pre-Cambrian sediments. From the minimum amount of quantitative results generated, no distinct basement-surface profile was determined but relative basement highs have been identified.

AN AEROMAGNETIC INTERPRETATION OF THE PERNATTY-WINDABOUT, S.A. AREA

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INTRODUCTION

At the request of Mr. D. Kennedy, Exploration Manager for Otter Exploration N.L., the author examined some aeromagnetic data published by the South Australian government in an attempt to :

I determine the direct magnetic relationship with known mineralization

II determine the Precambrian basement surface and identify all basement highs within a preselected area.

The aeromagnetic data was collected prior to 1965 and compiled by the South Australian government. The traverses were flown East-West at one mile spacing and a mean terrain clearance of 500 ft. Navigation was visual and aided by an uncontrolled photo-mosaic. The contour interval of the presented data was 10 gammas.

GEOLOGY

The geology of the area is poorly known as Tertiary cover predominates throughout the survey area. The composition and depth of burial of the Precambrian complex is unknown.

The younger Proterozoic rocks overlying the Precambrian exhibit three distinct units; the carbonaceous reef facies, an essentially grit unit overlain by undifferentiated sediments. The mineralization at Mt. Gunson occurs in the grit at the edge of reef facies with an associated basement high.

METHOD OF INTERPRETATION

Both qualitative and quantitative techniques were utilised for this presentation. Quantitative methods consisted of theoretical models generated mathematical equations presented by Grant and West - "Interpretation Theory in Applied Geophysics". The generated profile was altered by varying appropriate parameters until a first-order comparison was obtained with the field data. The theoretical profiles were generated on a programmable calculator.

Qualitative methods consisted of comparing published curves and models with the data in order to determine the approximate location of faults and shears plus the approximate location of contacts.

The interpretation derived from qualitative methods is presented on the one mile sheets. Whenever possible, relative movement has been indicated. Also, relative information from the quantitative study was also presented. No attempt has been made to differentiate the various rock units from within the Precambrian complex.

DISCUSSION OF RESULTS

Modelling of selected anomalies proved to be difficult as most anomalies were not pure anomalies in that all anomalies suffered from unwanted interference from nearby events. Anomaly A-A^1 was chosen to best represent an intrusive associated with the known mineralization. The profile generated was corrected for the immediate regional gradient and an acceptable model was generated. The discrepancy on the southwest flank is due to the presence of an additional event. An intrusive similar to a dipping prism is indicated. The calculated susceptibility would suggest an acid intrusive. The dip of 70^o SW is holding with the other models and a rough calculation from the qualitative results. The calculated depth of 500 ft. subsurface (1000 ft. subsensor) agrees very well with what geological information is known from the area.

Zone B-B^1 was chosen in an effort to identify the paramaters of this more basic intrusive. Theoretical results indicate the possibility of a fault within the body. Also, the parameters presented should be considered as a "calculated guess" as further development on this model is required in order that the theoretical results better fit the field results. The indicated depth is too shallow but a decrease in the theoretical thickness seriously alters the symmetry of the response as does an increase. A simple, thick dike geometry therefore cannot be utilised. The calculated susceptibility is of a much different character than the other six events and suggests a basic, rock type composition. The dip of 50^o SW is fitting with the general area. The indicated depth of burial as calculated is much greater than that of the other events and as the general strike is

similar to the other events, it could be part of an intrusive complex of the area.

Zone C-C^1. A sill model best describes this response. Although the comparison is only moderately good, it provides a superior comparison than with a thick dike. Essentially, the sill is infinitely thick and would better be described as a contact. The dip of the edge is 50^o - flatter than the other events investigated but compatible. Also, the susceptibility is greater than normal, but not as strong as B-B^1. If B-B^1 comprises part of the Precambrian surface, then C-C^1 presents a relative basement high.

Zone D-D^1. The profile was chosen in an attempt to determine the parameters of the Precambrian structure which may be related to the Mt. Gunson mine. A poor comparison was obtained by utilising a thick dike model. The calculated depth of 500 ft. compares with the known geology. A dip of 60^o to the north was obtained. Due to the possible presence of regional structural events in the immediate area, a "pure" profile was unobtainable. The qualitative interpretation may be more valid than the quantitative interpretation.

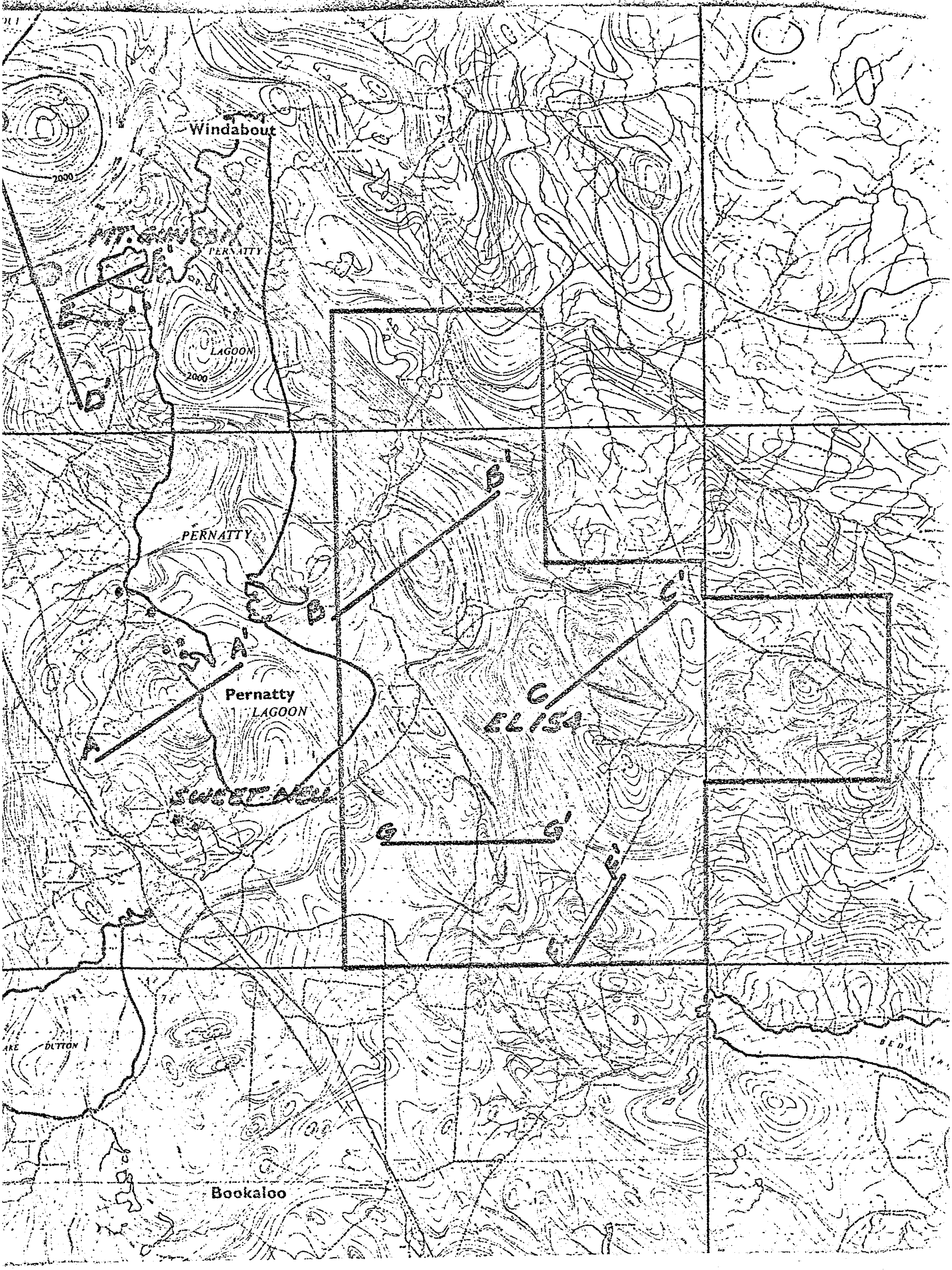
Zone E-E^1. This section is approximately perpendicular to D-D^1 and is specifically directed to a small intrusive that appears to be directly associated with known mineralization. A simple shape such as a simple dike approximates the field results but a limited depth extent is suspected.

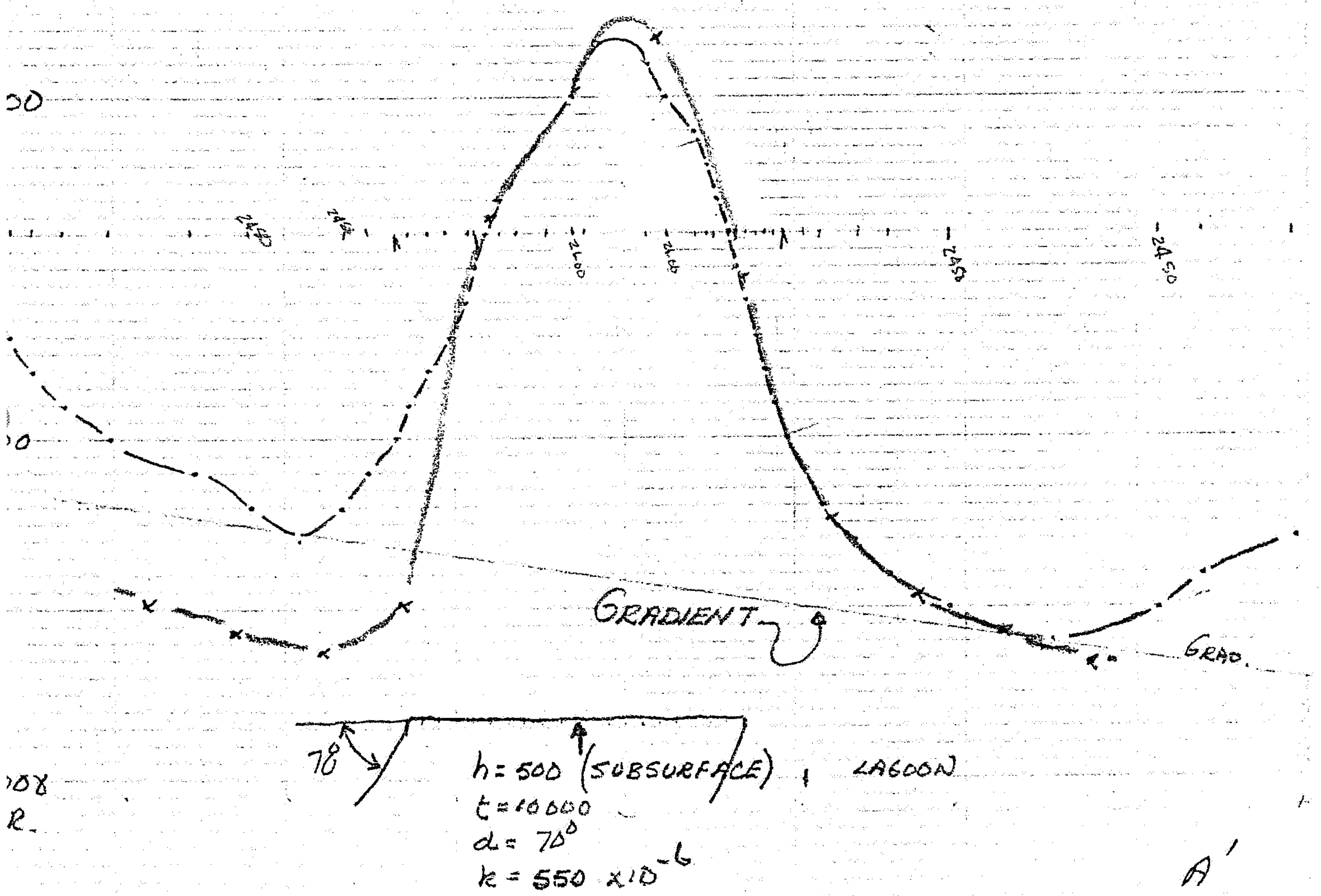
Zone F-F^{1}. This is one of the shallowest responses identified from within the area of interest. It is also one of the least magnetic. A dip of 60^{o} to the SW agrees with the other zones from the area.

Zone G-G^{1}. This zone presented extreme problems as no simple body provided a suitable comparison. The response to be analysed suggested a shallow response but the flanks indicate something much deeper than that suggested by the apex. A series of parallel bodies is the most likely source for this response.

Respectfully Submitted,

JOHN L. IRVINE, B.Sc.
Consulting Geophysicist


Windabout
2000
PERNATTY
LAGOON
2000
D'
B'
PERNATTY
B
A'
C'
C
ELISA
Pernatty
LAGOON
A
G
G'
E'
DUTTON
Bookaloo



ANOMALY A

$I_o' = -67.52$

$T_o' = 56{,}417\gamma$

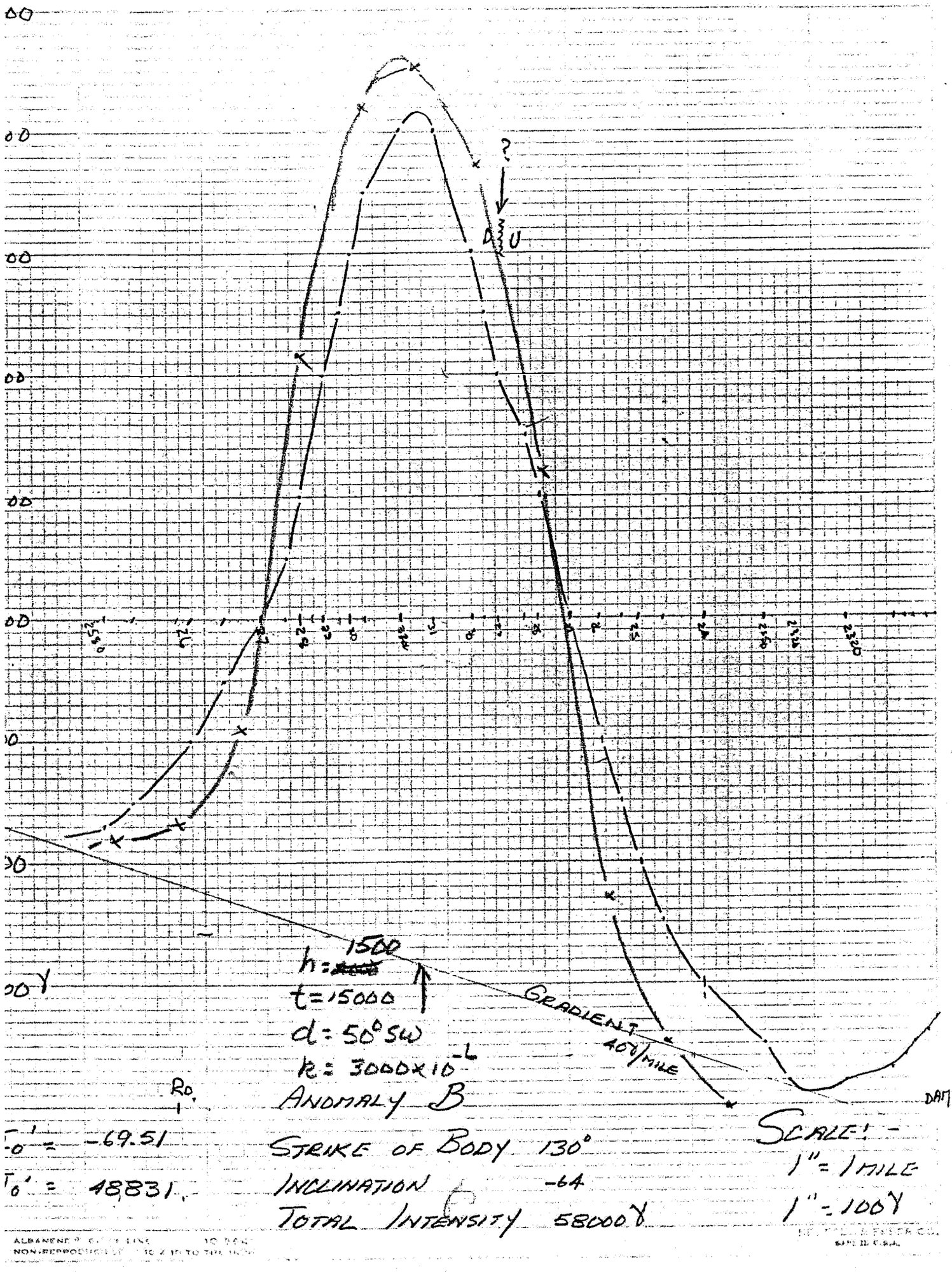
STRIKE OF BODY	122°
INCLINATION	-64°
TOTAL INTENSITY	58000γ

SCALE

1" = 1 MILE

1" = 50γ

A'



h: ~~1000~~ 1500

t = 15000

d = 50° SW

k = 3000 × 10⁻⁶

ANOMALY B

STRIKE OF BODY 130°

INCLINATION -64

TOTAL INTENSITY 58000γ

SCALE:-

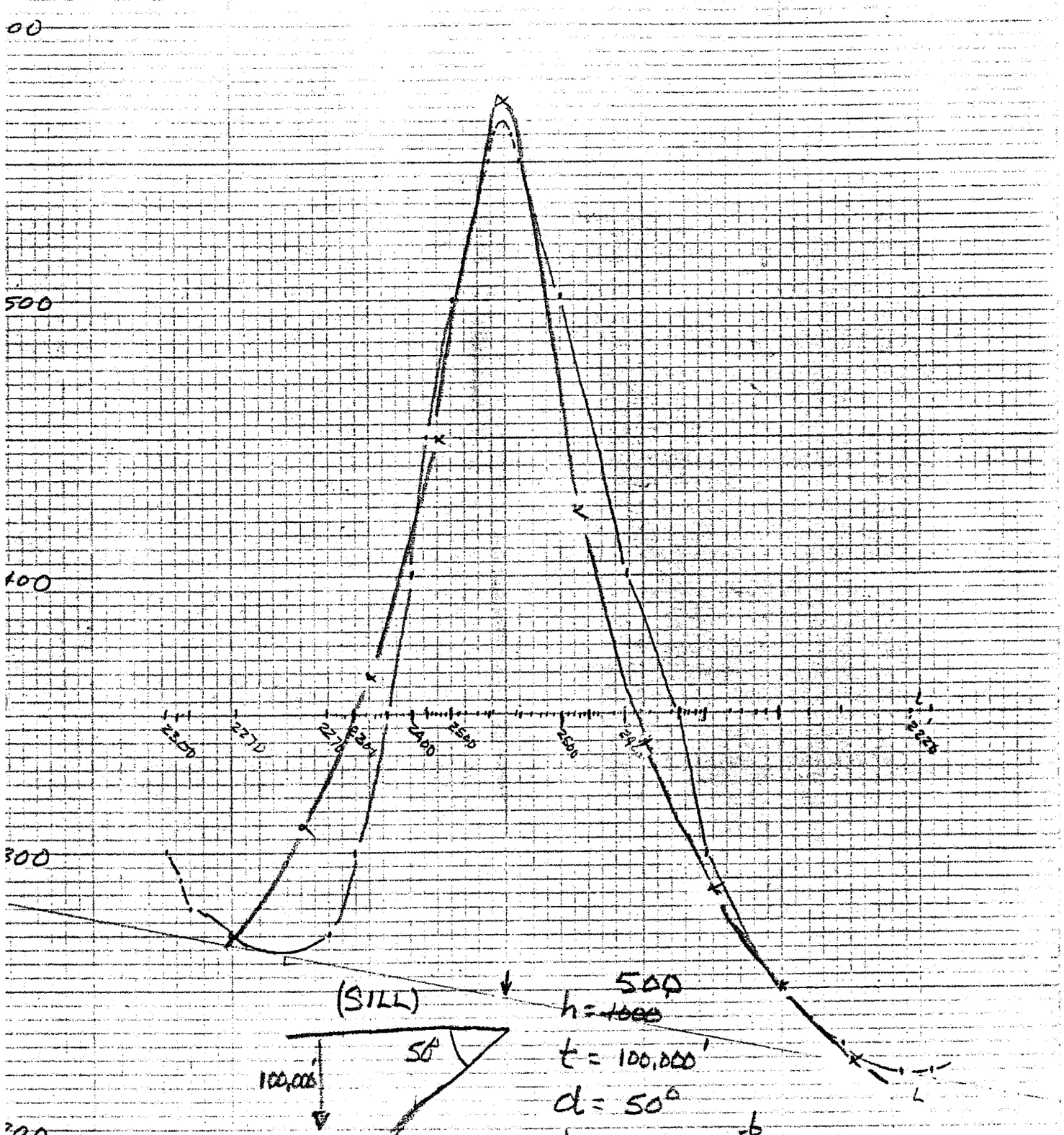
1" = 1 MILE

1" = 100γ

R_0

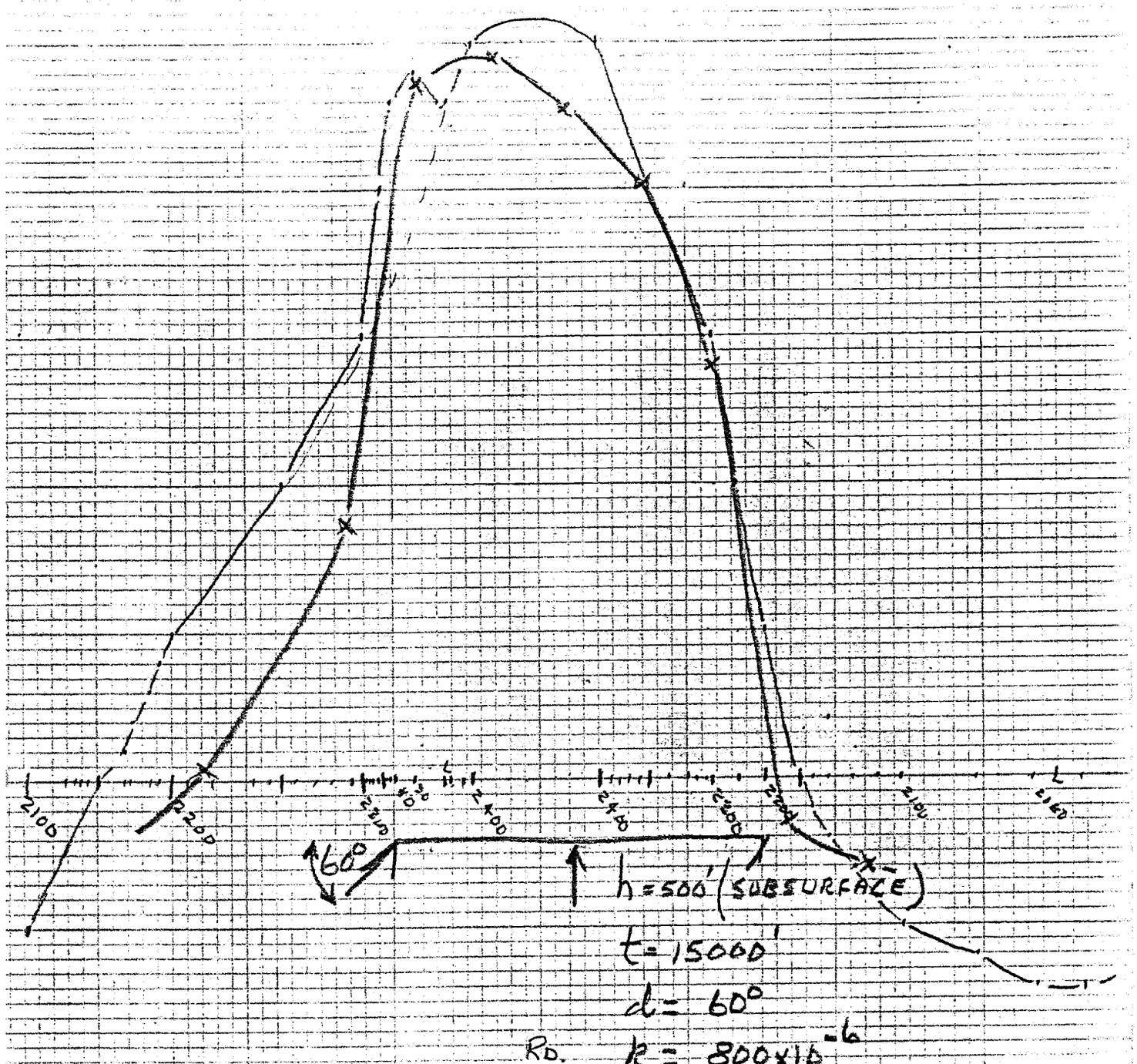
$T_0' = -69.51$

$T_0' = 48831$



$I_0' = -67.52°$

$I_0' = 56,417$



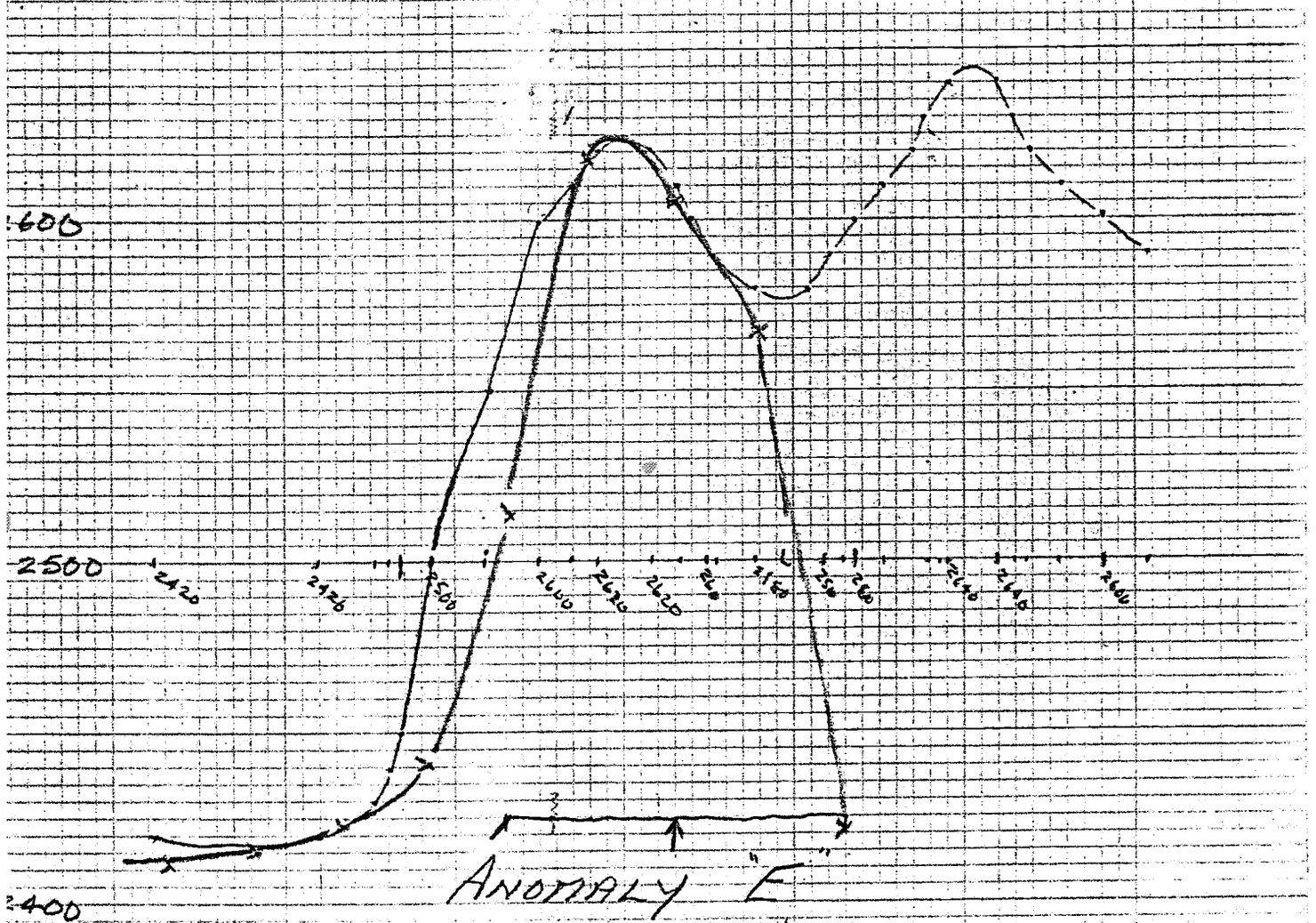
ANOMALY D-D'

STRIKE 068°

$I_o' = -65.66°$

$J_o' = 57,215$

SCALE:
1" = 1 MILE
1" = 500'



STRIKE 165°

$I_o' = -82.80°$

$T_o' = 52,544$

h = 500' (SUBSURFACE)

t = 10000'

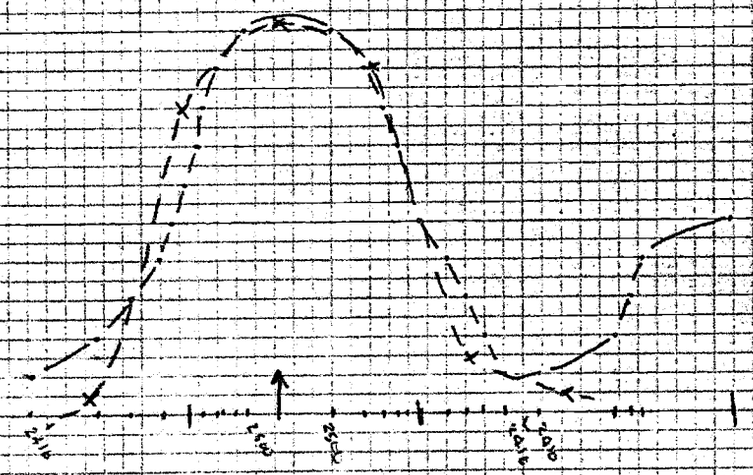
d = 60° SW

$K = 800 \times 10^{-6}$

SCALE

1" = 1 MILE

1" = 500'



h=200' (SUBSURFACE)
t=7920'
α = 60° SW
k = 300X10⁻⁶

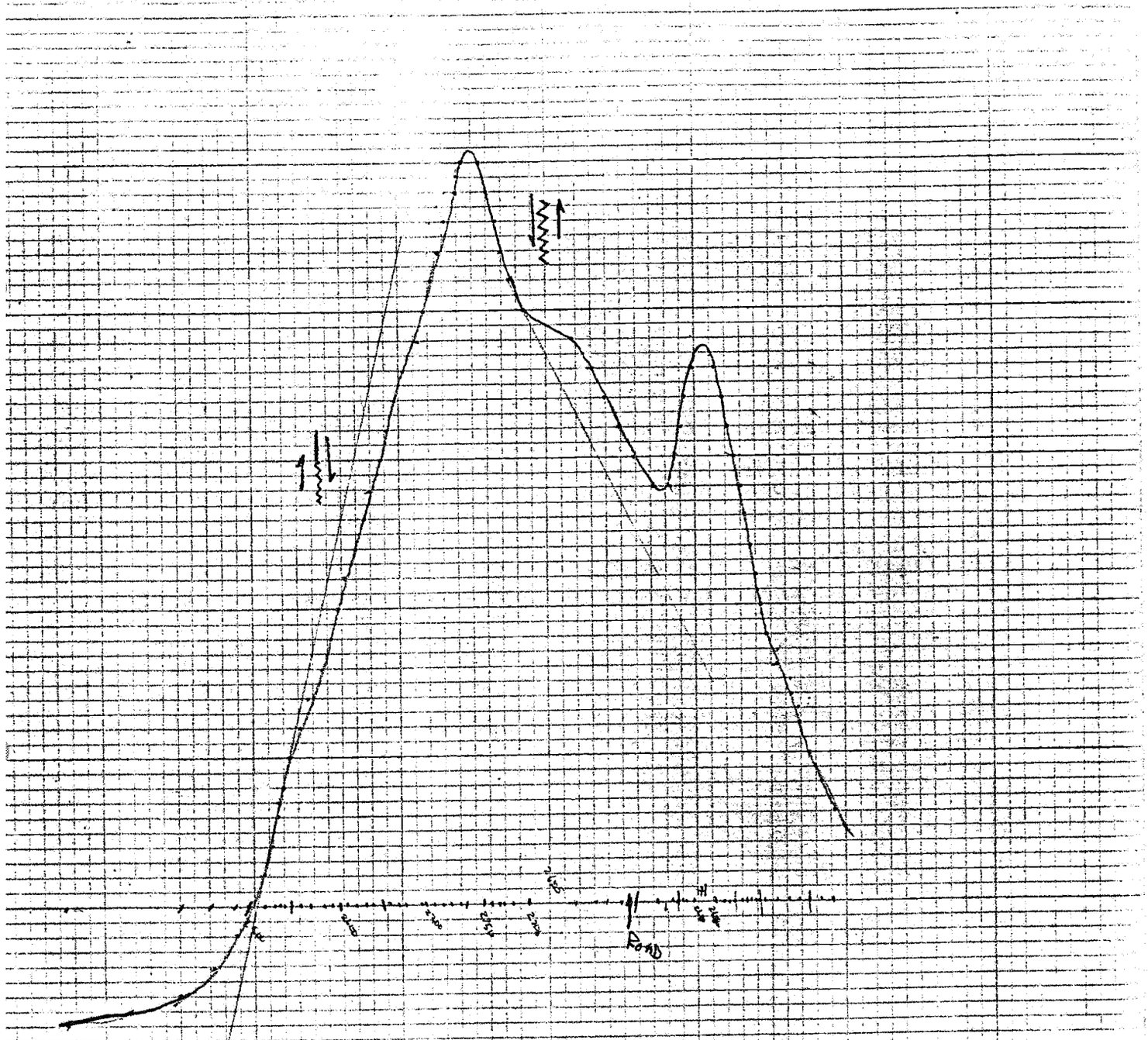
ANOMALY F-F'

STRIKE 122°
INCLINATION -64°
TOTAL INTENSITY 58000γ

SCALE
1" = 1 MILE
1" = 500'

$T_o' = -67.52$

$T_D' = 56,417\gamma$



ANOMALY G-G'

$I_o' = -89.51$

$J_o' = 52,138$

STRIKE 179°

INCLINATION -64°

TOTAL INTENSITY 58000γ

APPENDIX II

Stuarts Bluff Minerals Ltd. SML 315

Geochemical Drilling Data

PERNATTY LAGOON

CORE SAMPLES -80#

038

A.A.S. AQUA-REGIA HOT LEACH

BATCH NO. 1
HOLE NO. SB1/SB2

M.W.

T.T.	SAMPLE NUMBER	Cu	Pb	Zn	REMARKS
1	SB1				
2	0 - 5	10	25	35	
3	5 - 10	15	20	70	
4	10 - 15	10	25	20	
5	15 - 20	5	20	20	
6	20 - 25	5	20	10	
7	25 - 30	<5	20	5	
8	30 - 35	5	20	75	
9	35 - 40	10	20	160	
10	40 - 45	5	20	15	
11	45 - 50	10	20	45	
12	50 - 55	5	25	35	
13	55 - 60	10	20	250	
14	60 - 65	10	20	160	
15	65 - 70	5	25	65	
16	70 - 75	5	40	105	
17	75 - 80	5	25	60	
18	80 - 85	5	25	55	
19	85 - 90	10	25	230	
20	90 - 95	<5	25	40	
21	95 - 100	5	25	45	
22	100 - 105	5	40	70	
23	105 - 110	10	25	55	
24	110 - 115	5	25	65	
25	115 - 120	5	25	40	
26	120 - 125	5	25	25	
27	~~#95~~				
28	~~#50~~				
29					
30					
31					
32	SB2				
33					
34	0 - 5	10	25	30	
35	5 - 10	10	25	20	
36	10 - 15	15	40	40	
37	15 - 20	10	20	40	
38	20 - 25	5	20	50	
39	25 - 30	5	20	15	
40	30 - 35	5	20	25	

PERIVATTY CORE SAMPLES (CONT.)

HOLE NO. SB 2

BATCH NO. 2039

M.W.

T.T.	DEPTH	Cu	Pb	Zn	REMARKS
1	35 - 40	5	<20	25	
2	40 - 45	<5	<20	15	
3	45 - 50	<5	<20	15	
4	50 - 55	<5	<20	50	
5	55 - 60	<5	20	175	
6	60 - 65	<5	20	90	
7	65 - 70	<5	30	90	
8	70 - 75	5	50	155	
9	75 - 80	<5	30	90	
10	80 - 85	<5	30	80	
11	85 - 90	5	30	60	
12	90 - 95	5	30	50	
13	95 - 100	5	30	60	
14	100 - 105	5	30	70	
15	105 - 110	5	30	55	
16	110 - 115	5	30	60	
17	115 - 120	5	30	45	
18	120 - 125	<5	30	50	
19	125 - 130	<5	30	55	
20	130 - 135	<5	30	55	
21	135 - 140	5	30	60	
22	140 - 145	5	50	105	
23	145 - 150	<5	30	60	
24	150 - 155	<5	30	60	
25	155 - 160	<5	30	60	
26	160 - 165	<5	30	65	
27	165 - 170	<5	20	65	
28	170 - 175	5	20	60	
29	175 - 180	<5	30	55	
30	180 - 185	<5	30	55	
31	185 - 190	5	60	60	
32	190 - 195	<5	50	50	
33	195 - 200	<5	30	60	
34	200 - 205	5	30	80	
35	205 - 210	<5	30	50	
36	210 - 215	<5	30	60	
37	215 - 220	<5	30	55	
38	220 - 225	<5	30	45	
39					

PERMATTY CORE SAMPLES (CONT.)

HOLE NO. SB3/SBH

BATCH NO. 3

040

M.D.

T.T	DEPTH	Cu	Pb	Zn	REMARKS
1	0 - 5	10	20	15	
2	5 - 10	5	20	15	
3	10 - 15	5	20	20	
4	15 - 20	5	25	20	
5	20 - 25	10	25	15	
6	25 - 30	5	20	15	
7	30 - 35	5	20	10	
8	35 - 40	5	25	55	
9	40 - 45	<5	20	40	
10	45 - 50	5	25	40	
11	50 - 55	5	40	45	SB3
12	55 - 60	5	40	45	
13	60 - 65	5	25	50	* N.B. SEE 120'-140' BELOW
14	65 - 70	5	25	50	
15	70 - 75	5	40	55	
16	75 - 80	5	25	50	
17	80 - 85	5	25	50	
18	85 - 90	5	20	50	
19	90 - 95	5	40	50	
20	95 - 100	5	20	50	
21	100 - 105	5	25	50	
22	105 - 110	5	20	60	
23	110 - 115	5	25	55	
24					
25	0 - 5	10	20	30	
26	5 - 10	10	25	30	
27	10 - 15	5	25	60	
28	15 - 20	5	25	20	SBH
29	20 - 25	5	20	25	
30	25 - 30	5	20	15	
31	30 - 35	5	20	15	
32	35 - 40	5	40	25	
33	40 - 45	<5	20	25	
34	45 - 50	5	20	25	
35	50 - 55	5	25	25	
36	55 - 60	5	20	20	
37	120 - 125	5	25	15	SB3
38	125 - 130	5	20	15	
39	130 - 135	5	20	25	
		5		20	

HOLE NO. SB5

BATCH NO. H

041

M.W.

T.T.	DEPTH	Cu	Pb	Zn	REMARKS
1	0 - 5	10	20	15	
2	5 - 10	10	25	15	
3	10 - 15	10	40	20	
4	15 - 20	15	25	25	
5	20 - 25	5	25	30	
6	25 - 30	5	20	25	
7	30 - 35	<5	20	15	
8	35 - 40	@5	20	20	
9	40 - 45	#5	20	15	
10	45 - 50	<5	<20	15	
11	50 - 55	@5	25	30	
12	55 - 60	5	20	20	
13	60 - 65	10	20	10	
14	65 - 70	10	25	40	
15	70 - 75	10	<20	95	
16	75 - 80	10	30	80	
17	80 - 85	10	50	155	
18	85 - 90	10	30	120	
19	90 - 95	5	30	100	
20	95 - 100	5	30	90	
21	100 - 105	10	30	85	
22	105 - 110	5	40	65	
23	110 - 115	5	25	60	
24	115 - 120	5	30	50	
25	120 - 125	5	30	70	
26	125 - 130	5	30	90	
27	130 - 135	5	30	60	
28	135 - 140	5	30	80	
29	140 - 145	5	40	60	
30	145 - 150	5	30	65	
31	150 - 155	5	30	65	
32	155 - 160	5	30	65	
33	160 - 165	5	30	70	
34	165 - 170	10	300	100	*
35	170 - 175	5	120	100	*
36	175 - 180	5	50	85	

PERNATTY CORE SAMPLES (CONT.)

HOLE NO. SB6

BATCH NO. 042

M.N.

T.T.	DEPTH	Cu	Pb	Zn	REMARKS
	0 - 5	30	50	70	
	5 - 10	15	40	35	
	10 - 15	10	40	35	
	15 - 20	10	100	30	
	20 - 25	10	30	25	
	25 - 30	15	30	30	
	30 - 35	10	30	20	
	35 - 40	10	25	35	
	40 - 45	10	25	15	
	45 - 50	10	25	20	
	50 - 55	10	25	20	
	55 - 60	10	25	20	
	60 - 65	15	25	50	al. Sand clay [illegible]
	65 - 70	10	25	35	[illegible] clay
	70 - 75 —	10	25	50	
	75 - 80	10	40	55	
	80 - 90	95	30	70	
	90 - 95	230	50	65	
	95 - 100	305	50	75	
	100 - 105	255	30	70	
	105 - 110	55	30	70	
	110 - 115	60	50	55	— [illegible]
	115 - 120	75	390 *	75	
	120 - 125	45	50	55 75	* [illegible]
	125 - 130	50	50	55	
	130 - 135	40	30	45 75	
	135 - 140	20	30	45	—
	140 - 145	35	20	75	

PENWATTY CORE SAMPLES (CONT.)

HOLE NO. SB 7/8

BATCH NO. 043

M.W.

T.I.	DEPTH	Cu	Pb	Zn	REMARKS
1	0 - 5	15	30	~~65~~ 40	
2	5 - 10	10	20	~~45~~ 25	
3	10 - 15	15	20	~~40~~ 30	
4	15 - 20	15	20	~~40~~ 20	
5	20 - 25	15	20	~~35~~ 25	SB 7
6	25 - 30	10	20	~~35~~ 30	
7	30 - 35	10	20	~~25~~ 15	
8	35 - 40	10	20	~~35~~ 25	
9	40 - 45	10	20	~~45~~ 20	
10	45 - 50	5	30	~~4~~ 20	
11	50 - 55	10	30	20	
12	55 - 60	15	20	20	
13					
14					
15					
16					
17					
18					
19					
20	0 - 5	15	30	35	
21	5 - 10	10	50	25	
22	10 - 15	10	30	40	
23	15 - 20	10	20	35	
24	20 - 25	10	20	25	SB 8
25	25 - 30	15	20	25	
26	30 - 35	10	30	25	
27	35 - 40	10	30	25	
28	40 - 45	10	20	20	
29	45 - 50	10	20	40	
30	50 - 55	10	20	60	
31					
32					
33					
34					
35					
36					
37					
38					
39					

PERMATTY CORE SAMPLES (CONT.)

HOLE NO. SB 9/10

BATCH NO. J. 044

M.W.

T.T.	DEPTH	Cu	Pb	Zn	REMARKS
	0 - 5	10	20	30	
	5 - 10	10	20	25	
	10 - 15	10	20	20	
	15 - 20	10	20	25	
	20 - 25	10	20	20	
	25 - 30	5	30	10	
	30 - 35	10	20	25	SB 9
	35 - 40	10	30	45	
	40 - 45	10	30	35	want to 140 ✓
	45 - 50	10	20	50	
	50 - 55	10	20	70	
	55 - 60	10	30	80 ✓	
	60 - 65	10	30	65	
	65 - 70	10	30	95	
	0 - 5	15	20	40	
	5 - 10	15	20	35	
	10 - 15	15	30	40	
	15 - 20	10	20	65	
	20 - 25	10	30	65	SB 10
	25 - 30	10	20	50	
	30 - 35	10	40	95	
	35 - 40	10	20	70	
	40 - 45	15	90 ✗	115 ✗	

PERNATTI CORE SAMPLES (CONT.)

045

HOLE NO. SB6

BATCH NO.

M.W. -80#

ALL VALUES IN PPM

J.T.	DEPTH (FEET)	Cu	Pb	Zn	REMARKS
1	50 - 55	5	20	20	
2	55 - 60	5	20	10	
3	60 - 65	10	<20	40	Recheck of anomalous values.
4	65 - 70	10	20	30	
5	70 - 75	10	30	40	
6	75 - 80	10	20	60	
7	80 - 90	115	30	65	
8	90 - 95	270	40	65	
9	95 - 100	295	40	60	
10	100 - 105	250	30	55	
11	105 - 110	90	30	60	
12	110 - 115	60	20	65	
13	115 - 120	85	370	60	
14	120 - 125	45	30	70	
15	125 - 130	65	40	100	
16	130 - 135	30	30	60	
17	135 - 140	25	40	55	
18	140 - 145	30	20	60	
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					

APPENDIX III

OTTER EXPLORATION N.L.

Percussion Drill Logs with

Geochemical Data

OTTER EXPLORATION N. L.

PERCUSSION DRILLHOLE LOG SHEET

HOLE NUMBER OEP-1
LOCATION EL 154 At Pond Dam
HOLE AZIMUTH -
HOLE ANGLE Vertical
FINAL DEPTH 48.0 metres

DATE COMMENCED 16 May 1975
DATE COMPLETED 16 May 1975
DRILLED BY Northbridge
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
).	1.5				Red brown surface sandy clay					
1.5	3.0				" " " "					
3.0	4.5				" " " "					
4.5	6.0				" " " "					
6.0	7.5				" " " "					
7.5	9.0				Whyalla S.S.?? Pale brown. Rounded frosted siliceous grains. Some gypsum needles.					
					" " " " " " "					
9.0	10.5				" " " " " " "					
0.5	12.0				" " " " " " "					
2.0	13.5				Pale brown rounded frosty grains Whyalla S.S.?? and brown clay.					
3.5	15.0				" " " " " " "					
15.0	16.5				" " " " " " "					
16.5	18.0				" " " " " " "					
18.0	19.5				Pale grey clay					
19.5	21.0				Pale grey clay					
21.0	22.5									
22.5	24.0				Lost air return. No sample.					
24.0	25.5				Ran 20 ft. casing to					
25.5	27.0				regain return.					
27.0	28.5									

HOLE NUMBER OEP-1
LOCATION
HOLE AZIMUTH
HOLE ANGLE
FINAL DEPTH

OTTER EXPLORATION N. L.

PERCUSSION DRILLHOLE LOG SHEET

DATE COMMENCED 16 May 1975
DATE COMPLETED 16 May 1975
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
30.0	31.5		7036		Pale brown round frosted sand grains Whyalla S.S. Occasional lithified fragments.			5	<5	12
31.5	33.0		7037		" "	" " "		5	<5	10
33.0	34.5		7038		" "	" "		5	<5	12
34.5	36.0		7039		" "	" "		5	<5	12
36.0	37.5		7040		" "	" "		8	<5	15
37.5	39.0		7041		" "	" "		5	<5	15
39.0	40.5		7042		" "	" "		5	<5	12
40.5	42.0		7043		Pale brown frosted rounded quartz grains. Whyalla S.S.			5	<5	12
42.0	43.5		7044		" "	" "		5	<5	15
43.5	45.0		7045		" "	" "		8	<5	12
45.0	46.5		7046		" "	" "		8	<5	10
46.5	48.0		7047		Pale brown frosted rounded quartz grains. Whyalla S.S.			8	<5	10
						EOH				

HOLE NUMBER OEP-2
LOCATION 1 mile southwest Pond Dam
HOLE AZIMUTH
HOLE ANGLE Vertical
FINAL DEPTH 48.0 metres

OTTER EXPLORATION N. L.

PERCUSSION DRILLHOLE LOG SHEET

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
0	1.5				Calcrete and light brown sand					
1.5	3.0				Fine brown angular sand					
3.0	4.5				" "					
4.5	6.0				" "					
6.0	7.5				" "					
7.5	9.0				Brown clay					
9.0	10.5				Poorly lithified clayey sandstone - slightly rounded grains.					
10.5	12.0				" "	" "				
12.0	13.5				" "	" "				
13.5	15.0				" "	" "				
15.0	16.5				" "	" "				
16.5	18.0				" "	" "				
18.0	19.5				Red clay and rounded frosty "Whyalla" sand grains					
19.5	21.0				" "	" "				
21.0	22.5				" "	" "				
22.5	24.0		7019		Yellow brown clay and "Whyalla" sand grains			10	20	30
24.0	25.5		7020		" "	"		10	12	25
25.5	27.0		7021		" "	"		8	12	12
27.0	28.5		7022		" "	"		5	5	10
28.5	30.0		7023		" "	"		5	12	10
30.0	31.5		7024		" "	"		8	10	15

HOLE NUMBER OEP-2
LOCATION 1 mile southwest Pond Dam
HOLE AZIMUTH
HOLE ANGLE Vertical
FINAL DEPTH 48.0 metres

OTTER EXPLORATION N. L.

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY %	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
31.5	33.0		7025		Yellow brown clay and "Whyalla" sand grains			5	10	8
33.0	34.5		7026		" "	"		2	5	8
34.5	36.0		7027		" "	"		5	10	10
36.0	37.5		7028		" "	"		5	10	12
37.5	39.0		7029		" "	"		5	5	10
39.0	40.5		7030		"Whyalla" sand grains and clay			2	5	12
40.5	42.0		7031		" "	"		<2	<5	10
42.0	43.5		7032		" "	"		2	<5	8
43.5	45.0		7033		" "	"		2	<5	8
45.0	46.5		7034		" "	"		2	<5	10
46.5	48.0		7035		"Whyalla" sand grains and clay			<2	<5	10
						EOH				

OTTER EXPLORATION N. L.

PERCUSSION DRILLHOLE LOG SHEET

HOLE NUMBER OEP-3
LOCATION 2 miles southwest Pond Dam
HOLE AZIMUTH
HOLE ANGLE Vertical
FINAL DEPTH 48.0 metres

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
0	1.5				Clayey sand					
1.5	3.0				Fine angular sand					
3.0	4.5				" "					
4.5	6.0				" "					
6.0	7.5				" "					
7.5	9.0				" "					
9.0	10.5				" "					
10.5	12.5				" "					
12.0	13.5				Brown clayey sand some rounded grains					
13.5	15.0				" " "					
15.0	16.5				" " "					
16.5	18.0				Whyalla sand grains					
18.0	19.5				" "					
19.5	21.0				" "					
21.0	22.5		7001		Whyalla sand grains and clay			10	<5	15
22.5	24.0		7002		" "			10	<5	15
24.0	25.5		7003		" "			25	8	10
25.5	27.0		7004		" "			10	8	18
27.0	28.5		7005		" "			12	<5	22
28.5	30.0		7006		" "			15	15	25
30.0	31.5		7007		" "			12	5	18

HOLE NUMBER OEP-3
LOCATION 2 miles southwest Pond Dam
HOLE AZIMUTH
HOLE ANGLE Vertical
FINAL DEPTH 48.0 metres

OTTER EXPLORATION N. L.

PERCUSSION DRILLHOLE LOG SHEET

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M.Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
33.0	34.5		7009		Whyalla sand grains and clay			10	12	15
34.5	36.0		7010		" "			65	5	15
36.0	37.5		7011		" "			10	<5	12
37.5	39.0		7012		" "			8	10	12
39.0	40.5		7013		" "			5	10	8
40.5	42.0		7014		" "			5	<5	8
42.0	43.5		7015		" "			5	10	12
43.5	45.0		7016		" "			5	8	12
45.0	46.5		7017		" "			5	<5	8
46.5	48.0		7018		" "			5	<5	8
					EOH					
					This hole caved at about 26 m.					

HOLE NUMBER OEP-4

LOCATION 1 mile NE along track from Pond Dam

HOLE AZIMUTH

HOLE ANGLE Vertical

FINAL DEPTH 42.0 metres

OTTER EXPLORATION N. L.

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMMENCED

DATE COMPLETED

DRILLED BY Northbridge

LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
0	1.5				Brown clayey sand					
1.5	3.0				" "					
3.0	4.5				Clayey calcrete					
4.5	6.0				Brown clayey sand					
6.0	7.5				" "					
7.5	9.0				Off white clayey "Whyalla" sand					
9.0	10.5				" "	"				
0.5	12.0				" "	"				
2.0	13.5				" "	"				
3.5	15.0			Wet	Clayey "Whyalla" sand					
5.0	16.5		7048		" "			15	10	28
6.5	18.0		7049		" "			8	<5	15
8.0	19.5		7050		" "			8	<5	10
9.5	21.0		7051		" "			8	<5	15
1.0	22.5		7052		" "			10	<5	15
2.5	24.0		7053		" "			8	<5	15
4.0	25.5		7054		" "			8	<5	18
5.5	27.0		7055		" "			5	<5	25
7.0	28.5		7056		" "			10	<5	22
8.5	30.0		7057		" "			8	<5	25
0.0	31.5		7058		" "			8	<5	18

HOLE NUMBER OEP-4

LOCATION 1 mile NE along track from Pond Dam

HOLE AZIMUTH

HOLE ANGLE Vertical

FINAL DEPTH 42.0 metres

OTTER EXPLORATION N. L.

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMMENCED

DATE COMPLETED

DRILLED BY

LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
33.0	34.5		7060		Clayey "Whyalla" sand			5.	<5	15
34.5	36.0		7061		" "			8	<5	20
36.0	37.5		7062		" "			8	<5	22
37.5	39.0		7063		" "			10	<5	25
39.0	40.5		7064		" "			8	<5	22
40.5	42.0		7065		" "			8	<5	20
					EOH					
					Hole caved, unable to change rod.					

HOLE NUMBER OEP-5
LOCATION 2 miles NE Pond Dam
HOLE AZIMUTH
HOLE ANGLE Vertical
FINAL DEPTH 48.0 metres

OTTER EXPLORATION N. L.

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY %	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
0	1.5				Pale brown clayey sand					
1.5	3.0				" "					
3.0	4.5				Brown clayey sand					
4.5	6.0				" "					
6.0	7.5				" "					
7.5	9.0				Clayey Whyalla sand grains + mica??					
9.0	10.5				" "	"				
10.5	12.0				" "	"				
12.0	13.5				" "	"				
13.5	15.0			Wet	" "	"				
15.0	16.5				" "	"				
16.5	18.0				" "	"				
18.0	19.5				" "	"				
19.5	21.0				" "	"				
21.0	22.5		7066		Clayey Whyalla sand grains + red clay			8	<5	18
22.5	24.0		7067		" "	"		5	<5	20
24.0	25.5		7068		" "	"		8	<5	32
25.5	27.0		7069		Clayey Whyalla sand grains and gypsum + red clay			5	<5	22
27.0	28.5		7070		" "	"	"	5	<5	38
28.5	30.0		7071		" "	"	"	8	<5	32
30.0	31.5		7072		" "	"	"	8	5	40

OTTER EXPLORATION N. L.

PERCUSSION DRILLHOLE LOG SHEET

HOLE NUMBER OEP-5
LOCATION 2 miles NE Pond Dam
HOLE AZIMUTH
HOLE ANGLE Vertical
FINAL DEPTH 48.0 metres

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
33.0	34.5		7074		Clayey Whyalla sand grains and gypsum + red clay + some dark green chips poss basic			5	<5	35
34.5	36.0		7075		Clayey Whyalla sand and gypsum and dark green chips + clay			5	10	42
36.0	37.5		7076		" "	" "		5	20	45
37.5	39.0		7077		" "	" "		5	12	35
39.0	40.5		7078		Gypsum, green chips and chocolate clay shale			5	<5	32
40.5	42.0		7079		" "	"		5	8	45
42.0	43.5		7080		Chocolate shale and gypsum			5	22	50
43.5	45.0		7081		" "			5	10	45
45.0	46.5		7082		" "			5	20	42
46.5	48.0		7083		Chocolate shale and gypsum			5	15	45
					EOH					

The "Whyalla" sand in upper part of this hole may be retransported. The chocolate clay and shale + gypsum is possibly an ancient lake surface and may correlate with the Woomera shales? of hole OEP-6.

HOLE NUMBER OEP-6
LOCATION At Ruins - Cattle yard Dam North Area
HOLE AZIMUTH
HOLE ANGLE Vertical
FINAL DEPTH 38.0 metres

OTTER EXPLORATION N. L.

PERCUSSION DRILLHOLE LOG SHEET

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
0	1.5				Brown sandy clay					
1.5	3.0				" "					
3.0	4.5				Fine brown sand					
4.5	6.0				Magnesite and sand					
6.0	7.5				Fine brown sand					
7.5	9.0				Fine brown sand and magnesite					
9.0	10.5				Chocolate shale					
10.5	12.0				" "					
12.0	13.5				Grey silty shale					
13.5	15.0				" "					
15.0	16.5				" "					
16.5	18.0				" "					
18.0	19.5				" "					
19.5	21.0				" "					
21.0	22.5				Chocolate and pale blue shale					
22.5	24.0				" "					
24.0	25.5				" "					
25.5	27.0				" "					
27.0	28.5				" "					
28.5	30.0				" "					
30.0	31.5				" "					

HOLE NUMBER OEP-6
LOCATION At ruins - Cattleyard Dam North area
HOLE AZIMUTH
HOLE ANGLE Vertical
FINAL DEPTH 48.0 metres

OTTER EXPLORATION N. L.

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
33.0	34.5				Chocolate and pale blue shale					
34.5	36.0				" "					
36.0	37.5				" "					
37.5	39.0				" "					
39.0	40.5				" "					
40.5	42.0				" "					
42.0	43.5				" "					
43.5	45.0				" "					
45.0	46.5		7084		" "			2	10	42
46.5	48.0		7085		" "			2	5	38
					Drag bit kept plugging up with clay. Unable to change rod. Hole abandoned.					
					EOH					
					This rock is the Woomera shale i.e. area is stratigraphically above the Whyalla Sandstone.					

HOLE NUMBER OEP-7
LOCATION 1 Mile south of Old Pernatty
HOLE AZIMUTH (1m south of OEP-6)
HOLE ANGLE Vertical
FINAL DEPTH 42.0 metres

OTTER EXPLORATION N. L.

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
0	1.5				Brown clay and sand					
1.5	3.0				" "					
3.0	4.5				Rounded and angular sand					
4.5	6.0				" "					
6.0	7.5				Brown clay and sand					
7.5	9.0				" "					
9.0	10.5				" "					
10.5	12.-				Chocolate clay and green shale					
12.0	13.5				" "					
13.5	15.0				" "					
15.0	16.5				" "					
16.5	18.0				Chocolate clay					
18.0	19.5				Chcolate clay and green shale					
19.5	21.0				" "					
21.0	22.5				" "					
22.5	24.0				" "					
24.0	25.5				" "					
25.5	27.0				" "					
27.0	28.5				Chcolate clay and blue-green shale					
28.5	30.0				Chocolate clay and shale and blue-green shale					
30.0	31.5				" " "					

HOLE NUMBER OEP-7
LOCATION 1 mile south of Old Pernatty
HOLE AZIMUTH (1m south of OEP-6)
HOLE ANGLE Vertical
FINAL DEPTH 42.0 metres

OTTER EXPLORATION N. L.

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
33.0	34.5				Chocolate clay and shale and blue-green shale					
34.5	36.0				" " "					
36.0	37.5				" " "					
37.5	39.0				" " "					
39.0	40.5		7086		" " "			5	10	60
40.5	42.0		7087		Chocolate clay and shale and blue-green shale			5	5	55
					Woomera shales.					

HOLE NUMBER OEP-8
LOCATION 2 m south of Old Pernatty ruins
HOLE AZIMUTH
HOLE ANGLE Vertical
FINAL DEPTH 48.0 metres

OTTER EXPLORATION N. L.

PERCUSSION DRILLHOLE LOG SHEET

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
0	1.5				Brown angular sand					
1.5	3.0				Off white angular sand					
3.0	4.5				" "					
4.5	6.0				" "					
6.0	7.5				Clayey brown sand angular					
7.5	9.0				" "					
9.0	10.5				Red and off white clay					
10.5	12.0				" "					
12.0	13.5				Grey shale					
13.5	15.0				"					
15.0	16.5				Chocolate brown silty clayey rock flour - after fine -grained sed.					
16.5	18.0				" "	" "				
18.0	19.5				" "	" "				
19.5	21.0				" "	" "				
21.0	22.5				Chocolate brown - purple silty clayey rock flour after fine grained sed.					
22.5	24.0				Blue - purple clay					
24.0	25.5				Brown - purple clay					
25.5	27.0				" "					
27.0	28.5				" "					
28.5	30.0				" "					

062

OTTER EXPLORATION N. L.

PERCUSSION

DRILLHOLE LOG SHEET

HOLE NUMBER OEP-8

LOCATION 2 m south of Old Pernatty ruins

HOLE AZIMUTH

HOLE ANGLE Vertical

FINAL DEPTH 48.0 metres

DATE COMMENCED

DATE COMPLETED

DRILLED BY

LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
33.0	34.5				Brown - purple clay					
34.5	36.0				" "					
36.0	37.5		7088		Purple and blue shale			5	5	60
37.5	39.0		7089		" "			5	12	65
39.0	40.5		7090		" "			5	5	50
40.5	42.0		7091		" "			5	<5	50
42.0	43.5		7092		" "			5	<5	18
43.5	45.0		7093		" "			5	5	20
45.0	46.5		7094		" "			5	5	32
46.5	48.0		7095		" "	"		8	22	40
					EOH - Woomera shale					
					Bit became plugged, unable to change rod.					

HOLE NUMBER OEP-09

LOCATION 3 m south Old Pernatty ruins

HOLE AZIMUTH

HOLE ANGLE Vertical

FINAL DEPTH 30.0 metres

OTTER EXPLORATION N. L.

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMMENCED

DATE COMPLETED

DRILLED BY

LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
0	1.5				Sandy clay					
1.5	3.0				Brown rounded and angular sand grains					
3.0	4.5				" "	"				
4.5	6.0				" "	"				
6.0	7.5				" "	"				
7.5	9.0				" "	"				
9.0	10.5				Purple brown and grey shale and clay					
10.5	12.0				" " "	"				
12.0	13.5				" "	"				
13.5	15.0				" "	"				
15.0	16.5				Purple brown and blue shale and clay					
16.5	18.0				" "	"				
18.0	19.5				" "	"				
21.0	22.5				" "	"				
22.5	24.0		7096		" "	"		5	5	65
24.0	25.5		7097		" "	"		10	5	42
25.5	27.0		7098		" "	"		5	12	35
27.0	28.5		7099		" "	"		5	8	45
28.5	30.0		7100		" "	"		5	10	55
					EOH					
					Unable to change rod.					

HOLE NUMBER OEP-10
LOCATION 4 miles south of Old Pernatty
HOLE AZIMUTH
HOLE ANGLE Vertical
FINAL DEPTH 36.0 metres

OTTER EXPLORATION N. L.

PERCUSSION DRILLHOLE LOG SHEET

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
0	1.5				Clayey brown rounded and angular sand					
1.5	3.0				" "	"				
3.0	4.5				" "	"				
4.5	6.0				" "	"				
6.0	7.5				" "	"				
7.5	9.0				" "	"				
9.0	10.5				Blue grey and brown shale					
10.5	12.0				" "					
12.0	13.5				" "					
13.5	15.0				" "					
15.0	16.5				" "					
16.5	18.0				" "					
18.0	19.5				" "					
19.5	21.0				" "					
21.0	22.5				" "					
22.5	24.0				" "					
24.0	25.5				" "					
25.5	27.0				" "					
27.0	28.5				" "					
28.5	30.0				" "					

HOLE NUMBER OEP-10
LOCATION 4 miles south of Old Pernatty
HOLE AZIMUTH
HOLE ANGLE Vertical
FINAL DEPTH 36.0 metres

OTTER EXPLORATION N. L.

PERCUSSION DRILLHOLE LOG SHEET

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
33.0	34.5		7101		Blue grey and brown shale			5	10	50
34.5	36.0		7102		" "	- Woomera shale		5	10	50
					Bit plugged EOH					

HOLE NUMBER OEP-11

LOCATION ½ mile north-east "Whitata" H.S.

HOLE AZIMUTH

HOLE ANGLE Vertical

FINAL DEPTH 66.0 metres

OTTER EXPLORATION N. L.

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMMENCED

DATE COMPLETED

DRILLED BY

LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn			
0	1.5				Rounded frosty Whyalla sandstone								
1.5	3.0				" "	"							
3.0	4.5				" "	"							
4.5	6.0				" "	"							
6.0	7.5				" "	"							
7.5	9.0				" "	"							
9.0	10.5				" "	"							
10.5	12.0				" "	"							
12.0	13.5				" "	"							
13.5	15.0				" "	"							
15.0	16.5				" "	"							
16.5	18.0				" "	"							
18.0	19.5				" "	"							
19.5	21.0				" "	"							
21.0	22.5				" "	"							
22.5	24.0				" "	"							
24.0	25.5				" "	"							
25.5	27.0				" "	"							
27.0	28.5				" "	"							
28.5	30.0				" "	"							
30.0	31.5				" "	"							

HOLE NUMBER OEP-11
LOCATION ½ mile north-east "Whitata" H.S.
HOLE AZIMUTH
HOLE ANGLE Vertical
FINAL DEPTH 66.0 metres

OTTER EXPLORATION N. L.

PERCUSSION DRILLHOLE LOG SHEET

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
33.0	34.5				Rounded frosty Whyalla sandstone					
34.5	36.0				" "	"				
36.0	37.5		7143		" "	"		2	<5	8
37.5	39.0		7144		" "	"		2	8	5
39.0	40.5		7145		" "	"		<2	<5	2
40.5	42.0		7146		" "	"		5	<5	5
42.0	43.5		7147		" "	"		2	5	5
43.5	45.0		7148		Rounded frosty Whyalla sandstone with pyrite encasing grains and filling fractures			5	5	5
45.0	46.5		7149		" "	" "		5	12	18
46.5	48.0		7150		" "	" "		2	<5	10
48.0	49.5		7151		" "	" "		2	<5	10
49.5	51.0		7152		" "	" "		<2	5	10
51.0	52.5		7153		Mostly fine grained Whyalla Sandstone, red and grey with disseminated fine steely coloured grains			2	<5	12
52.5	54.0		7154		" "	" "		2	<5	10
54.0	55.5		7155		" "	" "		2	<5	12
55.5	57.0		7156		" "	" "		2	<5	10
57.0	58.5		7157		" "	" "		<2	5	12
58.5	60.0		7158		" "	" "		<2	<5	12
60.0	61.5		7159		" "	" "		8	65	40
61.5	63.0		7160		" "					

OTTER EXPLORATION N. L.

PERCUSSION

DRILLHOLE LOG SHEET

HOLE NUMBER OEP-11
LOCATION ½ mile north-east "Whitata" H.S.
HOLE AZIMUTH
HOLE ANGLE Vertical
FINAL DEPTH 66.0 metres

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
63.0	64.5		7161		Fine red and grey Whyalla S	S. with disseminated steely	coloured grains	2	5	15
64.5	66.0		7162		" "	" "		5	38	25
					EOH					
					(No more rods)					

HOLE NUMBER OEP-12
LOCATION 1½ miles north Whitata H.S.
HOLE AZIMUTH
HOLE ANGLE Vertical
FINAL DEPTH 66.0 metres

OTTER EXPLORATION N. L.

PERCUSSION DRILLHOLE LOG SHEET

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY %	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
0	1.5				Brown sand and clay					
1.5	3.0				Gypsum and cream sandy clay					
3.0	4.5				Cream sandy clay and gypsum					
4.5	6.0				" "					
6.0	7.5		7103		Whyalla Sand grains and disseminated pyrite = 1%			12	<5	5
7.5	9.0		7104		" "	" "		5	<5	2
9.0	10.5		7105		" "	" "		5	<5	<2
10.5	12.0		7106		Whyalla Sandstone with <1% disseminated pyrite			18	<5	2
12.0	13.5		7107		" "	" "		8	<5	2
13.5	15.0		7108		" "	" "		8	<5	8
15.0	16.5		7109		" with trace pyrite			10	<5	5
16.5	18.0		7110		" "	"		10	<5	5
18.0	19.5		7111		" "	"		18	<5	8
19.5	21.0		7112		" "	"		22	<5	5
21.0	22.5		7113		" "	"		12	<5	5
22.5	24.0		7114		" "	"		12	<5	5
24.0	25.5		7115		" "	"		5	<5	2
25.5	27.0		7116		" "	"		2	<5	5
27.0	28.5		7117		" "	"		2	<5	5
28.5	30.0		7118		" "	"		<2	<5	12
30.0	31.5		7119		Whyalla Sandstone with occasional trace pyrite			2	<5	8

HOLE NUMBER OEP-12
LOCATION 1½ miles north Whitata H.S.
HOLE AZIMUTH
HOLE ANGLE Vertical
FINAL DEPTH 66.0 metres

OTTER EXPLORATION N. L.

PERCUSSION DRILLHOLE LOG SHEET

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M.Cowan

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
33.0	34.5		7121		Whyalla sandstone with occasional traee pyrite			2	<5	2
34.5	36.0		7122		" "	"		2	<5	5
36.0	37.5		7123		" "	"		2	<5	5
37.5	39.0		7124		" "	"		2	<5	2
39.0	40.5		7125		" "	"		2	<5	2
40.5	42.0		7126		" "	"		2	<5	2
42.0	43.5		7127		Whyalla sandstone - occasional specks of pyrite			2	<5	8
43.5	45.0		7128		" "	"	"	<2	<5	5
45.0	46.5		7129		" "	"	"	5	<5	5
46.5	48.0		7130		" "	"	"	5	<5	5
48.0	49.5		7131		" "	"	"	8	<5	5
49.5	51.0		7132		" "	"	"	8	5	5
51.0	52.5		7133		" "	"	"	5	<5	5
52.5	54.0		7134		" "	"	"	2	<5	5
54.0	55.5		7135		" "	"	"	10	<5	8
55.5	57.0		7136		" "	"	"	2	<5	5
57.0	58.5		7137		" "	"	"	2	5	5
58.5	60.0		7138		" "	"	"	5	5	8
60.0	61.5		7139		" "	"	"	5	<5	8
61.5	63.0		7140		" "	"	"	2	8	10

OTTER EXPLORATION N. L.

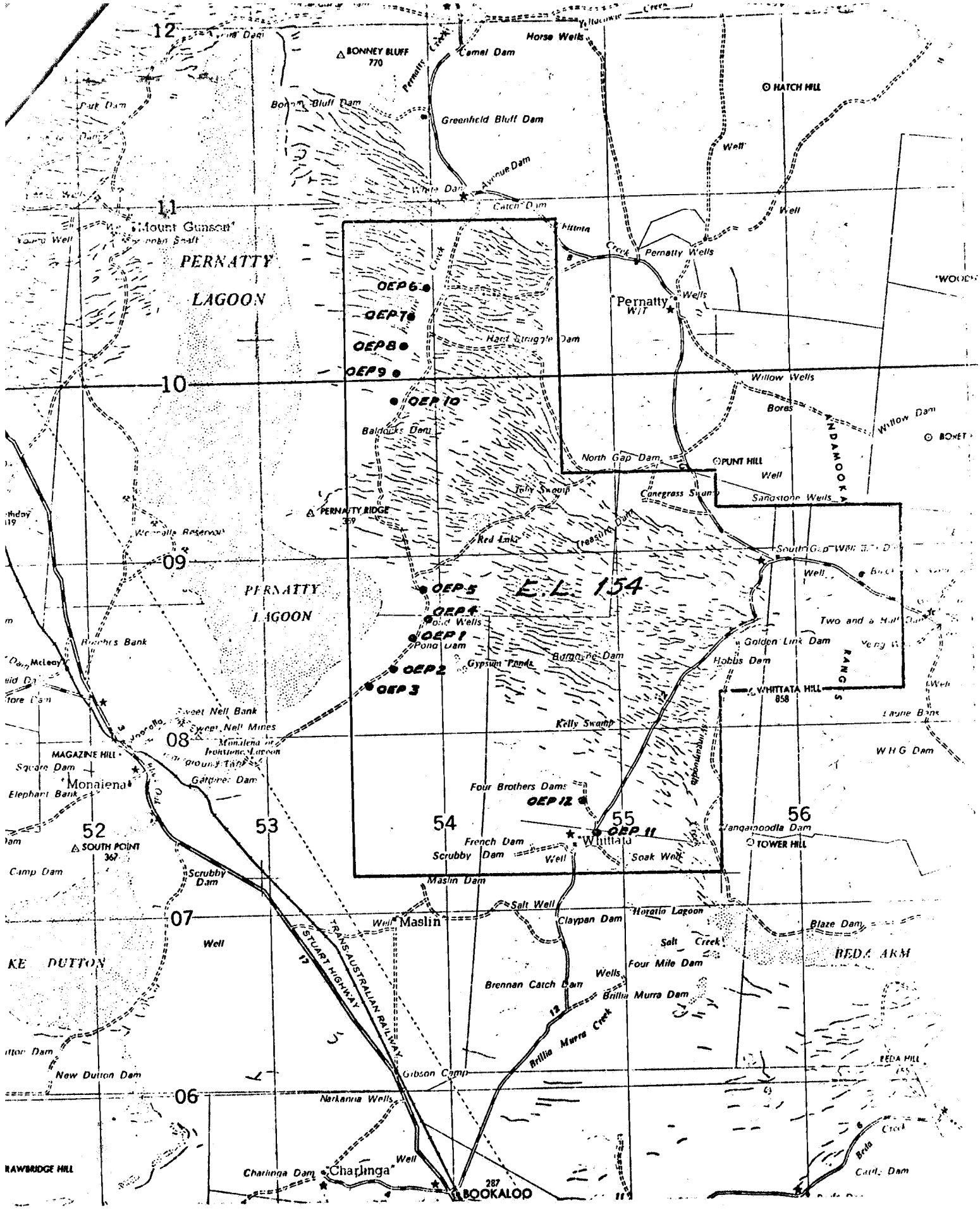
PERCUSSION DRILLHOLE LOG SHEET

LE NUMBER OEP-12
CATION 1½ miles north Whitata H.S.
LE AZIMUTH
LE ANGLE Vertical
AL DEPTH 66.0 metres

DATE COMMENCED
DATE COMPLETED
DRILLED BY
LOGGED BY B.M. Cowan

M	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYSES Cu	Pb	Zn
0	64.5		7141		Whyalla sandstone with 3% pyrite			8	<5	8
5	66.0		7142		" " "			2	<5	8
					EOH					
					Limit of rods					

The Whyalla Sandstone becomes finer down the hole. The pyrite fills veins and fractures and wraps around the rounded frosty Whyalla grains.



OTTER EXPLORATION N.L.

DRILL HOLE LOCATIONS. E.L. No. 154

Scale 1:250,000

ENV 2484

OPEN FILE

LOCATION EL 154 At Pond Dam

HOLE AZIMUTH -

HOLE ANGLE Vertical

FINAL DEPTH 48.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMPLETED 10

DRILLED BY Nor

LOGGED BY B.M

OEP - 1

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALY Cu	Pb	Zn
0.	1.5				Red brown surface sandy clay					
1.5	3.0				" " " "					
3.0	4.5				" " " "					
4.5	6.0				" " " "					
6.0	7.5				" " " "					
7.5	9.0				Whyalla S.S.?? Pale brown. Rounded frosted siliceous grains. Some gypsum needles.					
9.0	10.5				" " " "	" " "				
10.5	12.0				" " " "	" " "				
12.0	13.5				" " " "	" " "				
13.5	15.0				Pale brown rounded frosty grains Whyalla S.S.?? and brown clay.					
15.0	16.5				" " " "	" " "				
16.5	18.0				" " " "	" " "				
18.0	19.5				" " " "	" " "				
19.5	21.0				Pale grey clay					
21.0	22.5				Pale grey clay					
22.5	24.0				Lost air return. No sample.					
24.0	25.5				Ran 20 ft. casing to					
25.5	27.0				regain return.					
27.0	28.5									
28.5	30.0									

LOCATION _____

HOLE AZIMUTH _____

HOLE ANGLE _____

FINAL DEPTH _____

PERCUSSION **DRILLHOLE LOG SHEET**

DRILLED BY _____

LOGGED BY B.I

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 — 80	ROCK TYPE	STRUCTURE	MINERALIZATION	ANA Cu	Pb	Zn
30.0	31.5		7036		Pale brown round frosted sand grains Whyalla S.S. Occasional lithified fragments.			5	<5	12
31.5	33.0		7037		" "	" " "		5	<5	10
33.0	34.5		7038		" "	" "		5	<5	12
34.5	36.0		7039		" "	" "		5	<5	12
36.0	37.5		7040		" "	" "		8	<5	15
37.5	39.0		7041		" "	" "		5	<5	15
39.0	40.5		7042		" "	" "		5	<5	12
40.5	42.0		7043		Pale brown frosted rounded quartz grains. Whyalla S.S.			5	<5	12
42.0	43.5		7044		" "	" "		5	<5	15
43.5	45.0		7045		" "	" "		8	<5	12
45.0	46.5		7046		" "	" "		8	<5	10
46.5	48.0		7047		Pale brown frosted rounded quartz grains. Whyalla S.S.			8	<5	10

EOH

LOCATION: 1 mile Southwest of Pond Dam

HOLE AZIMUTH _____

HOLE ANGLE Vertical

FINAL DEPTH 48.0 metres

PERCUSSION DRILLHOLE LOG SHEET

OEP-2

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANAL Cu	Pb	Zn
0	1.5				Calcrete and light brown sand					
1.5	3.0				Fine brown angular sand					
3.0	4.5				" "					
4.5	6.0				" "					
6.0	7.5				" "					
7.5	9.0				Brown clay					
9.0	10.5				Poorly lithified clayey sandstone - slightly rounded grains.					
10.5	12.0				" "	" "				
12.0	13.5				" "	" "				
13.5	15.0				" "	" "				
15.0	16.5				" "	" "				
16.5	18.0				" "	" "				
18.0	19.5				Red clay and rounded frosty "Whyalla" sand grains					
19.5	21.0				" "	" "				
21.0	22.5				" "	" "				
22.5	24.0		7019		Yellow brown clay and "Whyalla" sand grains			10	20	30
24.0	25.5		7020		" "	"		10	12	25
25.5	27.0		7021		" "	"		8	12	12
27.0	28.5		7022		" "	"		5	5	10
28.5	30.0		7023		" "	"		5	12	10
30.0	31.5		7024		" "	"		8	10	15

HOLE ANGLE Vertical

FINAL DEPTH 48.0 metres

PERCUSSION DRILLHOLE LOG SHEET

LOGGED BY

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 100	ROCK TYPE	STRUCTURE	MINERALIZATION	AN Cu	Pb	Zn
31.5	33.0		7025		Yellow brown clay and "Whyalla" sand grains			5	10	8
33.0	34.5		7026		" "	"		2	5	8
34.5	36.0		7027		" "	"		5	10	10
36.0	37.5		7028		" "	"		5	10	12
37.5	39.0		7029		" "	"		5	5	10
39.0	40.5		7030		"Whyalla" sand grains and clay			2	5	12
40.5	42.0		7031		" "	"		<2	<5	10
42.0	43.5		7032		" "	"		2	<5	8
43.5	45.0		7033		" "	"		2	<5	8
45.0	46.5		7034		" "	"		2	<5	10
46.5	48.0		7035		"Whyalla" sand grains and clay			<2	<5	10
						EOH				

LOCATION 2 miles southwest Pond Dam

HOLE AZIMUTH _____

HOLE ANGLE Vertical

FINAL DEPTH 48.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMPLETED _____

DRILLED BY _____

LOGGED BY B.M

OEP - 3

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY %	ROCK TYPE	STRUCTURE	MINERALIZATION	ANA Cu	Pb	Zn
0	1.5				Clayey sand					
1.5	3.0				Fine angular sand					
3.0	4.5				" "					
4.5	6.0				" "					
6.0	7.5				" "					
7.5	9.0				" "					
9.0	10.5				" "					
10.5	12.5				" "					
12.0	13.5				Brown clayey sand some rounded grains					
13.5	15.0				" "	"				
15.0	16.5				" "	"				
16.5	18.0				Whyalla sand grains					
18.0	19.5				" "					
19.5	21.0				" "					
21.0	22.5		7001		Whyalla sand grains and clay			10	<5	15
22.5	24.0		7002		" "			10	<5	15
24.0	25.5		7003		" "			25	8	10
25.5	27.0		7004		" "			10	8	18
27.0	28.5		7005		" "			12	<5	22
28.5	30.0		7006		" "			15	15	25
30.0	31.5		7007		" "			12	5	18
31.5	33.0		7008		" "			10	30	18

ENV 2484 OPEN FILE

HOLE AZIMUTH _____

HOLE ANGLE Vertical

FINAL DEPTH 48.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DRILLED BY _____

LOGGED BY B.M.C

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANAL Cu	Pb	Zn
33.0	34.5		7009		Whyalla sand grains and clay			10	12	15
34.5	36.0		7010		" "			65	5	15
36.0	37.5		7011		" "			10	<5	12
37.5	39.0		7012		" "			8	10	12
39.0	40.5		7013		" "			5	10	8
40.5	42.0		7014		" "			5	<5	8
42.0	43.5		7015		" "			5	10	12
43.5	45.0		7016		" "			5	8	12
45.0	46.5		7017		" "			5	<5	8
46.5	48.0		7018		" "			5	<5	8
					EOH					
					This hole caved at about 26 m.					

1 mile ME along track from Pond Dam

HOLE AZIMUTH _____

HOLE ANGLE Vertical

FINAL DEPTH 42.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMPLETED ___

DRILLED BY Northbr

LOGGED BY B.M. Co

OEP -4

FROM (m).	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANA Cu	Pb	Zn
0	1.5				Brown clayey sand					
1.5	3.0				" "					
3.0	4.5				Clayey calcrete					
4.5	6.0				Brown clayey sand					
6.0	7.5				" "					
7.5	9.0				Off white clayey "Whyalla" sand					
9.0	10.5				" "	"				
10.5	12.0				" "	"				
12.0	13.5				" "	"				
13.5	15.0			Wet	Clayey "Whyalla" sand					
15.0	16.5		7048		" "			15	10	28
16.5	18.0		7049		" "			8	<5	15
18.0	19.5		7050		" "			8	<5	10
19.5	21.0		7051		" "			8	<5	15
21.0	22.5		7052		" "			10	<5	15
22.5	24.0		7053		" "			8	<5	15
24.0	25.5		7054		" "			8	<5	18
25.5	27.0		7055		" "			5	<5	25
27.0	28.5		7056		" "			10	<5	22
28.5	30.0		7057		" "			8	<5	25
30.0	31.5		7058		" "			8	<5	18
31.5	33.0		7059		" "			5	<5	18

ENU 2484 OPEN FILE

HOLE AZIMUTH _____

HOLE ANGLE Vertical

FINAL DEPTH 42.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMPLETED _____

DRILLED BY _____

LOGGED BY B.M. Co

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALY Cu	Pb	Zn
33.0	34.5		7060		Clayey "Whyalla" sand			5.	<5	15
34.5	36.0		7061		" "			8	<5	20
36.0	37.5		7062		" "			8	<5	22
37.5	39.0		7063		" "			10	<5	25
39.0	40.5		7064		" "			8	<5	22
40.5	42.0		7065		" "			8	<5	20
					EOH					
					Hole caved, unable to change rod.					

2 miles NE Pond Dam

HOLE AZIMUTH

HOLE ANGLE Vertical

FINAL DEPTH 48.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DRILLED BY

LOGGED BY B.M. Co

OEP -5

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALY Cu	Pb	Zn
0	1.5				Pale brown clayey sand					
1.5	3.0				" "					
3.0	4.5				Brown clayey sand					
4.5	6.0				" "					
6.0	7.5				" "					
7.5	9.0				Clayey Whyalla sand grains + mica??					
9.0	10.5				" "	"				
10.5	12.0				" "	"				
12.0	13.5				" "	"				
13.5	15.0			Wet	" "	"				
15.0	16.5				" "	"				
16.5	18.0				" "	"				
18.0	19.5				" "	"				
19.5	21.0				" "	"				
21.0	22.5		7066		Clayey Whyalla sand grains + red clay			8	<5	18
22.5	24.0		7067		" "	"		5	<5	20
24.0	25.5		7068		" "	"		8	<5	32
25.5	27.0		7069		Clayey Whyalla sand grains and gypsum + red clay			5	<5	22
27.0	28.5		7070		" "	"	"	5	<5	38
28.5	30.0		7071		" "	"	"	8	<5	32
30.0	31.5		7072		" "	"	"	8	5	40
31.5	33.0		7073		" "	"	"	5	12	42

ENV 2484 OPEN FILE

Pond Dam

HOLE AZIMUTH

HOLE ANGLE Vertical

FINAL DEPTH 48.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DRILLED BY

LOGGED BY B.M. Cow

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALYS Cu	Pb	Zn
33.0	34.5		7074		Clayey Whyalla sand grains and gypsum + red clay + some dark green chips poss basic			5	<5	35
34.5	36.0		7075		Clayey Whyalla sand and gypsum and dark green chips + clay			5	10	42
36.0	37.5		7076		" "	" "		5	20	45
37.5	39.0		7077		" "	" "		5	12	35
39.0	40.5		7078		Gypsum, green chips and chocolate clay shale			5	<5	32
40.5	42.0		7079		" "	"		5	8	45
42.0	43.5		7080		Chocolate shale and gypsum			5	22	50
43.5	45.0		7081		" "			5	10	45
45.0	46.5		7082		" "			5	20	42
46.5	48.0		7083		Chocolate shale and gypsum			5	15	45
					EOH					

The "Whyalla" sand in upper part of this hole may be retransported. The chocolate clay and shale + gypsum is possibly an ancient lake surface and may correlate with the Woomera shales? of hole OEP-6.

At Ruins - Cattleyard Dam
North Area

HOLE AZIMUTH _____

HOLE ANGLE ___Vertical_____

FINAL DEPTH ____38.0 metres_____

PERCUSSION

DRILLHOLE LOG SHEET

DRILLED BY _____

LOGGED BY __B.M._Co

OEP-6

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANAL Cu	Pb	Zn
0	1.5				Brown sandy clay					
1.5	3.0				" "					
3.0	4.5				Fine brown sand					
4.5	6.0				Magnesite and sand					
6.0	7.5				Fine brown sand					
7.5	9.0				Fine brown sand and magnesite					
9.0	10.5				Chocolate shale					
10.5	12.0				" "					
12.0	13.5				Grey silty shale					
13.5	15.0				" "					
15.0	16.5				" "					
16.5	18.0				" "					
18.0	19.5				" "					
19.5	21.0				" "					
21.0	22.5				Chocolate and pale blue shale					
22.5	24.0				" "					
24.0	25.5				" "					
25.5	27.0				" "					
27.0	28.5				" "					
28.5	30.0				" "					
30.0	31.5				" "					
31.5	33.0				" "					

HOLE AZIMUTH North area

HOLE ANGLE Vertical

FINAL DEPTH 48.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DRILLED BY

LOGGED BY B.M.

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANA Cu	Pb	Zn
33.0	34.5				Chocolate and pale blue shale					
34.5	36.0				" "					
36.0	37.5				" "					
37.5	39.0				" "					
39.0	40.5				" "					
40.5	42.0				" "					
42.0	43.5				" "					
43.5	45.0				" "					
45.0	46.5		7084		" "			2	10	42
46.5	48.0		7085		" "			2	5	38
					Drag bit kept plugging up with clay. Unable to change rod. Hole abandoned.					
					EOH					
					This rock is the Woomera shale i.e. area is stratigraphically above the Whyalla Sandstone.					

LOCATION 1 Mile South of Old Fernatty

HOLE AZIMUTH (1m south of OEP-6)

HOLE ANGLE Vertical

FINAL DEPTH 42.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMPLETED

DRILLED BY

LOGGED BY B.M. Cov

OEP -7

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALY Cu	Pb	Zn
0	1.5				Brown clay and sand					
1.5	3.0				" "					
3.0	4.5				Rounded and angular sand					
4.5	6.0				" "					
6.0	7.5				Brown clay and sand					
7.5	9.0				" "					
9.0	10.5				" "					
10.5	12.-				Chocolate clay and green shale					
12.0	13.5				" "					
13.5	15.0				" "					
15.0	16.5				" "					
16.5	18.0				Chocolate clay					
18.0	19.5				Chcolate clay and green shale					
19.5	21.0				" "					
21.0	22.5				" "					
22.5	24.0				" "					
24.0	25.5				" "					
25.5	27.0				" "					
27.0	28.5				Chcolate clay and blue-green shale					
28.5	30.0				Chocolate clay and shale and blue-green shale					
30.0	31.5				" "	"				
31.5	33.0				" "	"				

LOCATION 1 mile south of Old Pernatty

HOLE AZIMUTH (1m south of OEP-6)

HOLE ANGLE Vertical

FINAL DEPTH 42.0 metres

PERCUSSION DRILLHOLE LOG SHEET

DATE COMPLETED

DRILLED BY

LOGGED BY B.M. Co

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 80	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALY Cu	Pb	Zn
33.0	34.5				Chocolate clay and shale and blue-green shale					
34.5	36.0				" "	"				
36.0	37.5				" "	"				
37.5	39.0				" "	"				
39.0	40.5		7086		" "	"		5	10	.60
40.5	42.0		7087		Chocolate clay and shale and blue-green shale			5	5	55
					Woomera shales.					

LOCATION 2 m South of Old Pumping Room

HOLE AZIMUTH _____

HOLE ANGLE Vertical

FINAL DEPTH 48.0 metres

PERCUSSION **DRILLHOLE LOG SHEET**

DRILLED BY _____

LOGGED BY B.M. Co

OEP-8

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANAL Cu	Pb	Zn
0	1.5				Brown angular sand					
1.5	3.0				Off white angular sand					
3.0	4.5				" "					
4.5	6.0				" "					
6.0	7.5				Clayey brown sand angular					
7.5	9.0				" "					
9.0	10.5				Red and off white clay					
10.5	12.0				" "					
12.0	13.5				Grey shale					
13.5	15.0				"					
15.0	16.5				Chocolate brown silty clayey rock flour - after fine -grained sed.					
16.5	18.0				" "	" "				
18.0	19.5				" "	" "				
19.5	21.0				" "	" "				
21.0	22.5				Chocolate brown - purple silty clayey rock flour after fine grained sed.					
22.5	24.0				Blue - purple clay					
24.0	25.5				Brown - purple clay					
25.5	27.0				" "					
27.0	28.5				" "					
28.5	30.0				" "					
30.0	31.5				" "					
31.5	33.0				" "					

LOCATION 2 m south of Old Pernatty ruins

HOLE AZIMUTH ---

HOLE ANGLE Vertical

FINAL DEPTH 48.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DRILLED BY ---

LOGGED BY B.M.

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANA Cu	Pb	Zn
33.0	34.5				Brown - purple clay					
34.5	36.0				" "					
36.0	37.5		7088		Purple and blue shale			5	5	60
37.5	39.0		7089		" "			5	12	65
39.0	40.5		7090		" "			5	5	50
40.5	42.0		7091		" "			5	<5	50
42.0	43.5		7092		" "			5	<5	18
43.5	45.0		7093		" "			5	5	20
45.0	46.5		7094		" "			5	5	32
46.5	48.0		7095		" "	"		8	22	40
					EOH - Woomera shale					
					Bit became plugged, unable to change rod.					

LOCATION 3 m South Old Pernatty Ruins

HOLE AZIMUTH

HOLE ANGLE Vertical

FINAL DEPTH 30.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DRILLED BY

LOGGED BY B.M. Co

OEP-9

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANAL Cu	Pb	Zn
0	1.5				Sandy clay					
1.5	3.0				Brown rounded and angular sand grains					
3.0	4.5				" "	"				
4.5	6.0				" "	"				
6.0	7.5				" "	"				
7.5	9.0				" "	"				
9.0	10.5				Purple brown and grey shale and clay					
10.5	12.0				" " "	"				
12.0	13.5				" "	"				
13.5	15.0				" "	"				
15.0	16.5				Purple brown and blue shale and clay					
16.5	18.0				" "	"				
18.0	19.5				" "	"				
21.0	22.5				" "	"				
22.5	24.0		7096		" "	"		5	5	65
24.0	25.5		7097		" "	"		10	5	42
25.5	27.0		7098		" "	"		5	12	35
27.0	28.5		7099		" "	"		5	8	45
28.5	30.0		7100		" "	"		5	10	55
					EOH					
					Unable to change rod.					

ENV 2484 . OPEN FILE

LOCATION 4 miles south of Old Formatty

HOLE AZIMUTH ---

HOLE ANGLE Vertical

FINAL DEPTH 36.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DRILLED BY ---

LOGGED BY B.M. Cow

OEP-10

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALY Cu	Pb	Zn
0	1.5				Clayey brown rounded and angular sand	"				
1.5	3.0				" "	"				
3.0	4.5				" "	"				
4.5	6.0				" "	"				
6.0	7.5				" "	"				
7.5	9.0				" "	"				
9.0	10.5				Blue grey and brown shale					
10.5	12.0				" "					
12.0	13.5				" "					
13.5	15.0				" "					
15.0	16.5				" "					
16.5	18.0				" "					
18.0	19.5				" "					
19.5	21.0				" "					
21.0	22.5				" "					
22.5	24.0				" "					
24.0	25.5				" "					
25.5	27.0				" "					
27.0	28.5				" "					
28.5	30.0				" "					
30.0	31.5				" "					
31.5	33.0									

ENV 2484 OPEN FILE

LOCATION 4 miles South of Old Fernatty

HOLE AZIMUTH

HOLE ANGLE Vertical

FINAL DEPTH 36.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DRILLED BY

LOGGED BY B.M. C

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANA Cu	Pb	Zn
33.0	34.5		7101		Blue grey and brown shale			5	10	50
34.5	36.0		7102		" "	- Woomera shale		5	10	50
					Bit plugged EOH					

LOCATION 15 miles north Whitata H.S.

HOLE AZIMUTH _____

HOLE ANGLE Vertical

FINAL DEPTH 66.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMPLETED _____

DRILLED BY _____

LOGGED BY B.M.

OEP -12

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANAL Cu	Pb	Zn
0	1.5				Brown sand and clay					
1.5	3.0				Gypsum and cream sandy clay					
3.0	4.5				Cream sandy clay and gypsum					
4.5	6.0				" "					
6.0	7.5		7103		Whyalla Sand grains and disseminated pyrite = 1%			12	<5	5
7.5	9.0		7104		" "	" "		5	<5	2
9.0	10.5		7105		" "	" "		5	<5	<2
10.5	12.0		7106		Whyalla Sandstone with <1% disseminated pyrite			18	<5	2
12.0	13.5		7107		" "	" "		8	<5	2
13.5	15.0		7108		" "	" "		8	<5	8
15.0	16.5		7109		" with trace pyrite			10	<5	5
16.5	18.0		7110		" "	"		10	<5	5
18.0	19.5		7111		" "	"		18	<5	8
19.5	21.0		7112		" "	"		22	<5	5
21.0	22.5		7113		" "	"		12	<5	5
22.5	24.0		7114		" "	"		12	<5	5
24.0	25.5		7115		" "	"		5	<5	2
25.5	27.0		7116		" "	"		2	<5	5
27.0	28.5		7117		" "	"		2	<5	5
28.5	30.0		7118		" "	"		<2	<5	12
30.0	31.5		7119		Whyalla Sandstone with occasional trace pyrite			2	<5	8
31.5	33.0		7120		" "	" "		2	5	5

LOCATION 1½ miles north Whitata H.S.

HOLE AZIMUTH _____

HOLE ANGLE Vertical

FINAL DEPTH 66.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMPLETED _____

DRILLED BY _____

LOGGED BY B.M.Cowa

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANAL Cu	Pb	Zn
33.0	34.5		7121		Whyalla sandstone with occasional traee pyrite			2	<5	2
34.5	36.0		7122		" "	"		2	<5	5
36.0	37.5		7123		" "	"		2	<5	5
37.5	39.0		7124		" "	"		2	<5	2
39.0	40.5		7125		" "	"		2	<5	2
40.5	42.0		7126		" "	"		2	<5	2
42.0	43.5		7127		Whyalla sandstone - occasional specks of pyrite			2	<5	8
43.5	45.0		7128		" "	" "		<2	<5	5
45.0	46.5		7129		" "	" "		5	<5	5
46.5	48.0		7130		" "	" "		5	<5	5
48.0	49.5		7131		" "	" "		8	<5	5
49.5	51.0		7132		" "	" "		8	5	5
51.0	52.5		7133		" "	" "		5	<5	5
52.5	54.0		7134		" "	" "		2	<5	5
54.0	55.5		7135		" "	" "		10	<5	8
55.5	57.0		7136		" "	" "		2	<5	5
57.0	58.5		7137		" "	" "		2	5	5
58.5	60.0		7138		" "	" "		5	5	8
60.0	61.5		7139		" "	" "		5	<5	8
61.5	63.0		7140		" "	" "		2	8	10

LOCATION 1½ miles north Whitata M.S.

HOLE AZIMUTH

HOLE ANGLE Vertical

FINAL DEPTH 66.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMPLETED

DRILLED BY

LOGGED BY B.M. Co

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANA Cu	Pb	Zn
63.0	64.5		7141		Whyalla sandstone with 3% pyrite			8	<5	8
64.5	66.0		7142		" " "			2	<5	8
					EOH					
					Limit of rods					
					The Whyalla Sandstone becomes finer down the hole. The pyrite fills veins and fractures and wraps around the rounded frosty Whyalla grains.					

LOCATION ½ mile north-east "Whitara" H.S.

HOLE AZIMUTH _____

HOLE ANGLE Vertical

FINAL DEPTH 66.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DRILLED BY _____

LOGGED BY B.M. [illegible]

OEP-11

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0–100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANA Cu	Pb	Zn
0	1.5				Rounded frosty Whyalla sandstone					
1.5	3.0				" "	"				
3.0	4.5				" "	"				
4.5	6.0				" "	"				
6.0	7.5				" "	"				
7.5	9.0				" "	"				
9.0	10.5				" "	"				
10.5	12.0				" "	"				
12.0	13.5				" "	"				
13.5	15.0				" "	"				
15.0	16.5				" "	"				
16.5	18.0				" "	"				
18.0	19.5				" "	"				
19.5	21.0				" "	"				
21.0	22.5				" "	"				
22.5	24.0				" "	"				
24.0	25.5				" "	"				
25.5	27.0				" "	"				
27.0	28.5				" "	"				
28.5	30.0				" "	"				
30.0	31.5				" "	"				
31.5	33.0				" "	"				

LOCATION ½ mile north-east "Whitata" M.S.

HOLE AZIMUTH _____

HOLE ANGLE Vertical

FINAL DEPTH 66.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DRILLED BY _____

LOGGED BY B.M.

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 — 100	ROCK TYPE	STRUCTURE	MINERALIZATION	AN Cu	Pb	Zn
33.0	34.5				Rounded frosty Whyalla sandstone					
34.5	36.0				" "	"				
36.0	37.5		7143		" "	"		2	<5	8
37.5	39.0		7144		" "	"		2	8	5
39.0	40.5		7145		" "	"		<2	<5	2
40.5	42.0		7146		" "	"		5	<5	5
42.0	43.5		7147		" "	"		2	5	5
43.5	45.0		7148		Rounded frosty Whyalla sandstone with pyrite encasing grains and filling fractures			5	5	5
45.0	46.5		7149		" "	" "		5	12	18
46.5	48.0		7150		" "	" "		2	<5	10
48.0	49.5		7151		" "	" "		2	<5	10
49.5	51.0		7152		" "	" "		<2	5	10
51.0	52.5		7153		Mostly fine grained Whyalla Sandstone, red and grey with disseminated fine steely coloured grains			2	<5	12
52.5	54.0		7154		" "	" "		2	<5	10
54.0	55.5		7155		" "	" "		2	<5	12
55.5	57.0		7156		" "	" "		2	<5	10
57.0	58.5		7157		" "	" "		<2	5	12
58.5	60.0		7158		" "	" "		<2	<5	12
60.0	61.5		7159		" "	" "		8	65	40
61.5	63.0		7160		" "	" "		<2	<5	15

LOCATION ½ mile north-east "Whitula" H.S.

HOLE AZIMUTH _____

HOLE ANGLE Vertical

FINAL DEPTH 66.0 metres

PERCUSSION

DRILLHOLE LOG SHEET

DATE COMPLETED _____

DRILLED BY _____

LOGGED BY B.M. Cow

FROM (m)	TO (m)	ADVANCE (m)	Sample No	RECOVERY % 0 100	ROCK TYPE	STRUCTURE	MINERALIZATION	ANALY Cu	Pb	Zn
63.0	64.5		7161		Fine red and grey Whyalla S	S. with disseminated steely	coloured grains	2	5	15
64.5	66.0		7162		" "	" "		5	38	25
					EOH					
					(No more rods)					