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EL 40

STARVATION LAKE

FINAL REPORT TO LICENCE SURRENDER FOR THE PERIOD 22/5/72 TO 22/5/73

Submitted by
Chevron Exploration Corp.
1973

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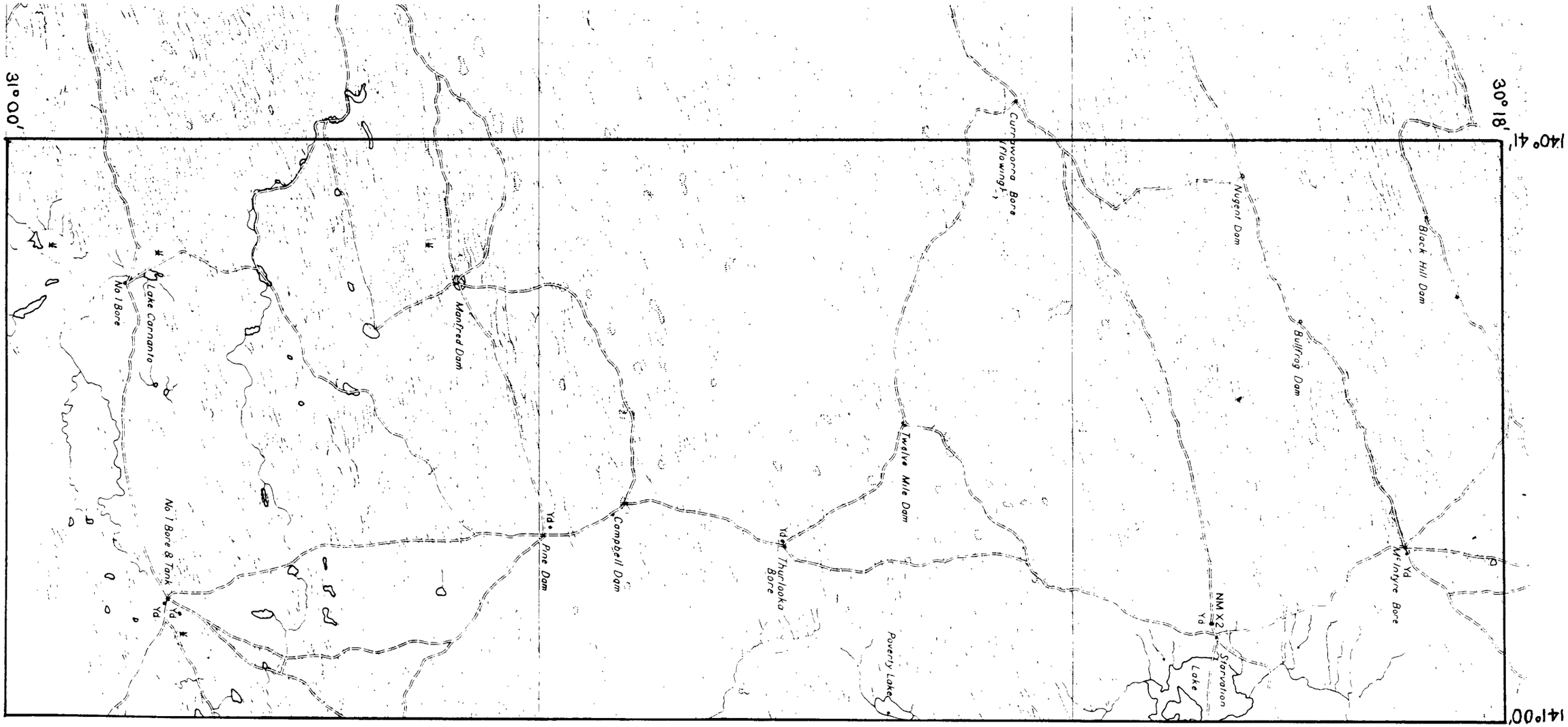
PRIMARY INDUSTRIES AND RESOURCES SA

CONTENTS ENVELOPE 2257

TENEMENT: E.L. 40 - Starvation Lake.

TENEMENT HOLDER: Chevrons Exploration Corporation.



CHEVRON EXPLORATION CORPORATION

DOCKET DM 899/72 AREA 2357 km²

1:250,000 PLANS . FROME

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LOCALITY STARVATION LAKE — APPROX. 80 km. E. OF LAKE FROME

EL No. 40 EXPIRY DATE 21·5·73

SCHEDULE 'A'

FINAL REPORT

E.L. 40

QUINYAMBIE PROSPECT S.A.

P.J.Morgan,
May 1973.

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CONCLUSIONS

1. The anomaly encountered in QDH 2A was reflected in holes QDH 204, 200, 203, 205, 206 but not in holes QDH 201, 202.

2. The anomaly encountered in the area QDH 2 decreased in intensity and magnitude towards both ends of the section QDH 204, 200, 203, 205, 206

3. The anomaly encountered in QDH 3A. was not reflected in the surrounding holes QDH 301, 302, 303, 304.

4. No other anomalous areas of sufficient magnitude to warrant further investigations were encountered in E.L. 40.

RECOMMENDATIONS

It is recommended that E.L. 40 be relinquished.

SECTION I - GENERAL

1. INTRODUCTION.

The exploration programme on the Quinyambie Prospect (SML 663) South Australia was completed on 31.7.72. A full report setting out in some detail the results of this programme was submitted in October 1972, viz :" Report on Regional Exploration Programme SML 663 Quinyambie Prospect, South Australia".

On the 22nd. February 1973 SML 663 was relinquished and E.L.40 was acquired over the same area.

Detailed analysis of drill cuttings from the Tertiary section was carried out in the office. The results of this study together with the results of the 1972 exploration programme lead to a limited "follow-up" drilling programme on two anomalous areas in the south of the E.L.

This report sets out in some detail the results of the work carried out on E.L. 40.

2. LOCATION AND ACCESS

Exploration Licence (EL) 40 of 2355 square kilometers (see Fig.1A.) is located between 30°18' - 31°S and 140°41' - 141°E, being some 77.3 kilometers north to south and 30.6 kilometers east to west, on Quinyambie Station, South Australia, 177 kilometers north-northwest of Broken Hill. The eastern boundary of the EL parallels the South Australia-New South Wales border fence some 65 kilometers to the east of Lake Frome.

The nearest major commercial centre is Broken Hill (pop. 30,000) 109 kilometers southeast of the southeastern corner of the area. The shortest practical road route from Broken Hill is some 177 kilometers via Stephen's Creek, Yanco Glen, Corona Station, Lynray Station, Teilta Station, Avenel Station and Broughams Gate.

The area is serviced weekly by Mr.E.B.G. Shoobridge, Mail Contractor of Broken Hill. Although a number of stations are interconnected by telephone, no link exists to a major network and Mr.E.B.G.Shoobridge provides the only serviced link with Broken Hill.

Most stations, including Quinyambie, Avenel and Pine View, have outpost radios that are connected via regular schedules to the Flying Doctor Radio Base in Broken Hill. Mt.Westwood Station and Floods Creek Station, some 95 road kilometers to the east of the E.L, have radio-telephone links.

All stations have airstrips suitable for light aircraft.

Access throughout the area is good via graded station roads and access roads. These roads were graded by George Johnson Pty.Ltd., to provide access for the drilling contractor.

3. TOPOGRAPHY AND CLIMATE

The E.L.is flat and largely covered by sand dunes. The bedrock surface beneath the dunes has a slight regional fall to the west towards Lake Frome. The dunes are of the longitudinal type, asymetric with the steep side towards the north. They trend east-northeast to west-southwest, with a height of up to 12 meters. Some bifurcation of the longitudinal dunes occurs. Transverse dunes are also present. Generally, the dunes are stabilised by vegetation, although a number of ripple marked, reddish-brown, well sorted migratory sand dunes are present.

The EL is in the 15 cm. annual average rainfall belt.

Permanent water is very scarce in the area. The EL has a number of dams and artesian and subartesian water bores. The bores are usually equipped with large tanks, which are permanently filled.

The summer temperature (January) ranges from 21°C to 38°C while the winter temperature (July) varies from about 4°C to 24°C. Generally the climate is pleasant in winter and unbearably hot in summer, when dust storms and insect plagues are common.

4. SCOPE OF THE INVESTIGATION

From the results of the 1972 Exploration Programme it was apparent that : 1. suitable geological environments for uranium deposition exist within the area and

2. anomalous radioactivity occurred in a number of drill holes.

On this basis it was decided to :

a) Carry out detailed analysis of drill cuttings from the Tertiary section with the object of identifying and mapping oxidation and reduction indicators and

b) From 1. and the results of the 1972 project carry out a limited "follow-up" core and open hole drilling project to test the anomalous areas and to determine the magnitude of the anomaly.

A. The aim of the detailed analysis of the drill cuttings-Laboratory Study- was to determine :-

1.- if substantial variations in the lithologies of the bore holes occurred throughout the area and

2.- if these variations were in any way related to the radioactivity encountered in the bore holes.

For this purpose it was decided to use the following parameters during the study :

1. The presence and abundance of pyrite,
2. The presence and abundance of limonite,
3. The heavy mineral content,
4. The presence and abundance of feldspar,
5. The content of carbonaceous material,
6. The degree of sorting of the sands,
7. The sand-clay ratios,
8. The lateral radioactivity distribution

All the drill holes were examined in the field during the regional drilling programme by P.J.Morgan and the following holes were examined in some detail by W.R.Hunter :

QDH 1, 2A,2C, 2E, 3, 3A, 3C, 4, 6, 9, 10, 11, 12, 13, 14, 16, 20, 23, 27, 29, 30, 34, 38, 41, 44, 45.

The results of the examination using the above parameters have been summarised below.

B. The aim of the "follow-up" drilling project was to determine :-

1.- if the radioactivity encountered in the 1972 project was due to uranium, and if so then what concentrations of uranium were present and

2.- if there are extensions to the anomalies.

For this part of the project 3010 feet of open hole drilling and 20 feet of coring was carried out on EL.40.

The results are summarised below.

SECTION II - LABORATORY STUDY

I. INTRODUCTION

During the 1972 drilling project :-

a) Each 5 foot sample collected during the project was examined in the field with a hand lens and described in as much detail as possible.

b) Holes QDH 1-6 were examined in the field with a binocular microscope and described in as much detail as possible. Individual samples were sieved. Heavy minerals were panned from individual samples.

During the laboratory studies the following holes were examined in some detail :

QDH 1, 2A, 2C, 2E, 3, 3A, 3C, 4, 6, 9, 10, 11, 12, 13, 14, 16 20, 23, 27, 29, 30, 34, 37, 38, 41, 44, 45.

a) Each sample from the holes itemised above was examined under a binocular microscope and then re-examined after the sample had been disaggregated in a concentrated Calgon solution.

b) Due to the lack of variation within each Formation and the poor quality of the samples each 5 foot interval was examined and the results summarised using 50 foot intervals.

The results of the studies have been summarised below and in the figures 1 - 7 attached.

2. STRUCTURE TOP OF THE MURNPEOWIE SAND

EYRE FORMATION

Before discussing the results of the studies it is necessary to comment on the controlling structure surrounding the mineralised areas i.e. the top of the Murnpeowie Sands (Fig. 1).

In the Quinyambie Prospect two distinct sediment boundaries occur :

(i) The top of the Murnpeowie Sand Member,
(ii) The base of the Murnpeowie Sand Member.

Structural contour maps were constructed on both of these boundaries and were presented in an earlier report.

It appears that the top of the Murnpeowie (Fig. 1) may exercise some control over the deposition and related to this, nature of the subsequent sediments, which may in turn be responsible for the position and concentrations of radioactive materials. Consequently this map has been included with the report. However, to view the structure in its right perspective a number of qualifications have been set out below.

The problem with the structural contour map is that the rotary drill holes were levelled with an altimeter giving a topographic map with an accuracy in the order of ± 7 m. This gives a maximum possible variation of 14 m. between adjacent drill holes. Consequently the structural contour map can only be considered to be a generalisation.

In general the central, northern and southern parts of the prospect are high and a low (channel) bisects the prospect in the central south running NE-SW to almost E-W.

3. SUMMARY OF RESULTS

A. PYRITE

QUATERNARY (DUNE SAND)

- *No pyrite observed.*

ETADUNNA SAND

- *Transition from aggregated pyrite in the southern area below ADH 11 to discrete grains in the northern area.*

ETADUNNA - MURNPEOWIE SAND

- *No significant variation between the northern and southern areas.*
- *Pyrite forms - Fig. 5*
  Studies of the shapes of the pyrite grains in the unnamed unit above the Murnpeowie sand showed that to the north of a line through QDH 10, 11, 12 the pyrite occurred as discrete fine grained euhedral to subhedral crystals. To the south of this line the pyrite occurred as masses of aggregated euhedral to subhedral crystals.

MURNPEOWIE SAND

- *increase in aggregate pyrite content in holes north of QDH 12.*
- *Areas devoid of pyrite - Fig. 3*
  This map shows the areas where no pyrite was identified in the rotary drilling project. This does not necessarily mean that there was no pyrite present - the pyrite may have been too fine grained to be seen with a hand lens. In any event if pyrite did occur in those areas it is rare and very fine grained.

Pyrite was not found in the areas contained by the following holes :-

a) QDH 3C, 6, 43

b) QDH 14, 15

c) QDH 17, 40

d) QDH 24, 25, 28, 29

e) QDH 34, 35, 38

B. LIMONITE

Limonite occurs throughout the sequence and shows no significant variations.

C. HEAVY MINERALS

Magnetite occurs throughout the sequence and is present as small discrete crystals. The magnetite content does show a slight increase in the southern areas, south of QDH 10 (Fig.6).

D. FELDSPAR

Absent from most of the holes studied.

E. CARBONACEOUS MATERIAL

Displays a definite trend to increase in the areas north of QDH 10. This trend is displayed by the Etadunna-Murnpeowie and Murnpeowie sand. Carbonaceous material is generally absent from the well-sorted Etadunna sand.

Carbonaceous content - includes lignite - Fig. 2

This map represents the Eyre Formation below the Etadunna clays. It includes the sand-clay unnamed unit above the Murnpeowie sand and the Murnpeowie sand.

It was not possible to separate these units as lignitic sands frequently occurred in the unnamed sand-clay unit and this contaminated

the Murnpeowie sands below.

Carbonaceous material (lignite generally) increased from :

a) QDH 5 and QDH 6 to QDH 4

b) (i) QDH 13, through QDH 14, to QDH 15.
(ii) QDH 13, through QDH 14, and QDH 16 to QDH 17
(iii) QDH 42 to QDH 17

c) QDH 24 through QDH 25 to QDH 29

d) QDH 36 and QDH 35 to QDH 37.

Except from the area surrounding QDH 4, 5 and 6 the amount of carbonaceous material increased in structural lows at the top of the Murnpeowie sand (Fig. 1).

As a general comment - the areas rich in carbonaceous material were generally devoid of pyrite (Compare Fig.2 and Fig.3).

F. SAND SIZE -SORTING

QUATERNARY

- Poorly sorted, red-brown dune sand.

ETADUNNA SAND

- Well sorted, fine-grained light brown sand.

ETADUNNA - MURNPEOWIE SAND

- Reasonably well sorted, coarser grained than the Etadunna sand, brown-grey colouration.

Sorting - Fig. 4.
Visual estimates of the degree of sorting in the unnamed unit above the Murnpeowie sand showed that the area to the north of a line through QDH 10, 11, 12 was better sorted than the area to the south.

This may indicate a "dumping-ground" in the south by influx of sediments from the south and south-east.

MURNPEOWIE SAND

- Poorly sorted, coarser grained, brown-grey colouration.

G. *SAND-CLAY RATIO* - *Fig. 6*

Figure 6 was constructed by taking a 50 metres slice of the sediments above the top of the Murnpeowie Member and calculating the amount of sand and clay in this section. The results are shown in Fig.6.

The sand to clay ratio was generally less than 1.0 although large quantities of sand were encountered in QDH 13 and QDH 29.

In QDH 29, the high sand-clay ratio is due to a very large thickness of Quaternary sand, in the area.

The southern half of the map is in reasonably close agreement with the structural map on the top of the Murnpeowie Member (Fig. 1) indicating that the source of the sediments is probably from the north-east or east (Compare Fig. 1 and 6).

H. *MINERALISATION* - *Fig. 7*

Fig.7 shows the relative amounts of radioactivity encountered in the drill holes calculated relative to the gamma probe calibration (i.e. 1.76 lb/ton U_3O_8) in increments of 0.25 lbs/ton U_3O_8. The map is not based on the position in the sequence where the radioactivity was encountered but on the basis of whether or not the hole contained radioactivity.

From the results two holes QDH 2A, 3A, contained more than 1 lb/ton U_3O_8 (relative) and it appears that there is a "radioactivity cell" in the southern area surrounding QDH 2A, 3A, 5 and 44 (possibly including QDH 10, 11, 45).

SECTION III - DRILLING PROGRAMME

1. *INTRODUCTION*

From the results of the laboratory studies and the 1972 drilling programme it was decided that the only effective way to evaluate the two anomalous areas (around QDH 2A. and QDH 3A.), in the southern part of the E.L.,was to undertake a limited programme of infill drilling (45 m. spacing). A minimum of 10 holes and maximum of 23 holes to a depth of 300' was proposed. It was also proposed that the anomalous holes be "twinned" and the anomalous zone cored assayed and spectroscopically analysed to determine the amount and type of radio elements present.

The programme was executed using a Mayhew 1000 operated by W.L.Sides and Sons Pty.Ltd., of Wellington Rd., Clayton, Melbourne, Victoria.

Twelve holes were drilled between 1.5.73 and 7.5.73 for a total footage of 3,010 feet of open hole and 20 feet of core.

A summary of the results of the investigation appear below.

2. *GEOLOGY*

The target horizons in the drilling programme were the lower sections of the Etadunna Formation and the upper sections of Murnpeowie sand Member. A geological log of each of the bore holes is included in the Appendix.

Etadunna Formation - Tertiary- Eocene to Miocene

The Etadunna Formation varies between 48 metres (157.5') and 121 metres (397') but averages 88 metres (289') in thickness. It is almost flat lying and disconformably overlies the Eyre Formation.

The Formation consists of light-grey to grey unstratified clays to clayey silts and lenses of pale-brown, fine-grained, well sorted sand. Minor dark-grey to charcoal-grey often carbonaceous clays occur in the upper sections, grading into dark-grey to charcoal-grey carbonaceous clays with pale-brown fine-grained well sorted sand lenses and minor light-grey to grey clay and bright blue pyritiferous clays and silts towards the base of the section. Dark-brown to grey, thinly bedded, sandy clays, sandy silts, clayey sands and clayey silts are haphazardly distributed throughout the section.

Murnpeowie Sand Member.- Tertiary-Paleocene to Eocene.

The upper sections of the Murnpeowie Sand Member consists of pale-brown to pale-grey, very fine-grained, well sorted, subangular to subrounded quartz sands, or charcoal-grey medium-grained, well sorted, subrounded highly polished, lignitic quartz sands with interbedded dark-grey to charcoal-grey, carbonaceous clays.

The middle and lower sections of the Murnpeowie Sand Member consists of light-grey to grey-brown, very coarse to very fine-grained, poorly sorted, subangular to rounded quartz sand, with very minor interbedded dark-grey clays. The sand varies from hole to hole, but is characterised by containing medium-grained, subrounded, highly polished, clear quartz grains. The grain size varies from a pebbly gravel to a very fine silt and clay. Medium-grained, euhedral fine-grained pyrite crystal aggregates are present in most sections. Fine muscovite flakes and occasional gypsum crystals also occur.

3. STRUCTURE

In general terms, the regional picture is rather simple with a gently dipping basin of Tertiary and Mesozoic rocks. The detailed picture is very complex.

In the area QDH 2 (for details see Section I.) holes QDH 202, 203, 205, 206 have a continuous sand unit in the upper section of the Etadunna Formation while in the lower section of the Etadunna Formation a clayey-sand containing anomalous radioactivity is continuous along the line of section QDH 204, 200, 203, 205, 206. Offset holes QDH 201, 202 do not contain this lithological unit. In general the beds dip gently to the south-east.

In the area QDH 3 (for details see Section II.) the lithological units are continuous showing a very gently dip to the west.

4. *MINERALIZATION*

(a) *Area QDH 2*

Anomalous radioactivity occurred along the line of section QDH 204 to 206 at approximately 45 m. in the Etadunna Formation. The intensity and thickness of the radioactive anomaly decreased towards both ends of the section.

Hole QDH 200 was cored from 43.6 m. to 44.4 m. through an anomalous radioactive peak above the main anomaly. No core was recovered through the main anomaly. The core assayed 240 ppm. U_3O_8 over .8 m.

(c) *Area QDH 3*

Anomalous radioactivity occurred in hole QDH 300 at 85 m. at the top of the Murnpeowie Sand Member. This radioactivity did not occur in the surrounding holes QDH 301, 302, 303, 304.

Hole QDH 300 was cored from 84.9 m. to 85.2 m. through the anomalous radioactive zone. The core assayed 400 ppm U_3O_8 over .3 m.

STRATIGRAPHIC COLUMN

AGE			LITHOLOGY
MESOZOIC	LOWER CRETACEOUS	ALBIAN?	OODNADATTA FORMATION and BULLDOG SHALE (MAREE FORMATION EQUIVALENT):- Monotonous sequence of micaceous dull g grey soft shale and siltstone, grey sha intraformational breccia and minor fine with thin ironstone beds. Plant leaf an stem impressions. Upper part may includ WINTON FORMATION (recorded from bores).
		APTIAN?	CADNA-OWIE FORMATION:- Micaceous dull green-grey shale interbedded with micaceous medium to coarse sand, pebbly limestone and pebble to boulder beds (record from bores).
			UNCONFORMITY
PROTEROZOIC	ADELAIDEAN	POOLAMACCA GROUP	LADY DON QUARTZITE (? PARALANA QUARTZITE EQUIVALENT) (Pcp):- Cross-bedded purplish-grey quartzite with granule-lenses.

STRATIGRAPHIC COLUMN

AGE			LITHOLOGY
CAINOZOIC	QUATERNARY	RECENT	Stream bedload and lake deposits (Qrl):- Thin gypsum salt, silty red-brown clay, and sand. (?) Simpson Sand Equivalent (Qrs):- Reddish brown medium sand of seif dunes, clayey sand with carbonate rhizonodules of dune cores. Yellow-brown gypsiferous dune sand of lake shores. ----------DISCONFORMITY---------- Undifferentiated Pleistocene:- 1. Undifferentiated sands and clays (Qp5). Light-brown and reddish-orange medium-grained well sorted often gypsiferous sand; sandy limestone, fossiliferous limestone, gypsum and diatomite beds; well laminated in the upper part, very weak stratification in the lower part. 2. Undifferentiated silicified poorly sorted clays, sands and gravels (Qp8). Light-brown, dark-brown medium to very coarse-grained poorly sorted sands and clays with gravel lenses; minor small and medium-scale cross stratification; minor graded bedding. 3. Undifferentiated silicified dune sands (Qp9). Light-brown, yellow-brown, red medium-grained well sorted silicified dune sands; minor poorly developed medium-scale stratification; solution effects.
		PLEISTOCENE	

STRATIGRAPHIC COLUMN

0020

AGE			LITHOLOGY
CAINOZOIC	TERTIARY	EOCENE - MIOCENE	ETADUNNA FORMATION (Tmd):- Light grey to dark-grey clay with lamellae of silt to very fine sand. Interbeds of fine angular sand and sandy clays. Olive to light-green and grey-clay, often sandy. Vertebrates, ostracods, gastropods, plant remains. Contains hiatus, marked by yellow silicified limestone nodules (in the type section - east of Lake Frome).
			----------DISCONFORMITY----------
		PALEOCENE - EOCENE	EYRE FORMATION. (With MURNPEOWIE MEMBER at base):- Polished mature fine to coarse quartz sand and dark-grey clay. Milky quartz and jasper pebbles at base, minor lignited and micaceous silt. Silicified coniferous wood, leaf and stem impressions, spores. Minor burrows. Strong palynological hiatus in basal sands of Cootabarlow No. 2 Bore. Upper sand silicified in outcrop. Ferruginous cement and calcrete of younger soil profiles and superimposed in some localities. Murnpeowie Member typified by highly polished medium clear quartz grains and honey-yellow very coarse quartz grains.
			----------UNCONFORMITY----------

TO SMITHVILLE

TO MOONEE DAM

TO QUINYAMBIE HOMESTEAD

ADH 77 · ADH 78 · ADH 76 · ADH 75 · ADH 74

QDH 34 · QDH 35 · QDH 37 · BLACK HILL DAM (dry) · QDH 36

McINTYRES BORE · ADH 66 · QDH 38 · ADH 65 · ADH 62 · ADH 63 · ADH 67 · ADH 68 · ADH 69

QDH 33 · ADH 70 · BULLFROG DAM · QDH 32 · ADH 71 · ADH 72 · NUGENTS DAM · ADH 73 · QDH 31 · QDH 30

TURLEYS HOUSE · ADH 60 · STARVATION DAM · ADH 61 · ADH 62 · STARVATION LAKE (dry) · QDH 28 · ADH 59 · ADH 58 · QDH 29 · ADH 57 · ADH 56 · ADH 55 · ADH 54 · ADH 53 · QDH 27 · QDH 26 · ADH 52

(Lake filled with water) · CURRAWORRA BORE · QDH 25 · QDH 24 · ADH 42 · ADH 45 · ADH 44 · ADH 43

ADH 46 · ADH 47 · QDH 23 · ADH 48 · TWELVE MILE DAM · ADH 49 · ADH 50 · ADH 51 · QDH 39 · QDH 22A · QDH 22 · POVERTY LAKE · QDH 21 · QDH 20

(partially filled) · ADH 40 · ADH 41 · THURLOOKA BORE · ADH 39 · ADH 38 · QDH 41B · FLOODS LAKE · ADH 37 · QDH 40 · ADH 36 · QDH 41 · QDH 41A · FLOODS CREEK · SAWTELL GATE · TO PINEVIEW HOMESTEAD · QDH 19A · QDH 19 · ADH 35 · ADH 34 · ADH 33 · ADH 32 · QDH 18

TO FINLAYS DAM · QDH 17 · CAMPBELLS DAM · QDH 16 · QDH 15 · ADH 22 · ADH 23 · ADH 21 · PINE DAM · ADH 24 · ADH 25 · ADH 26 · ADH 27 · QDH 10 · ADH 28 · QDH 14 · MANFRED'S DAM · ADH 29 · ADH 30 · ADH 31 · TO GLENMANYIE BORE · QDH 11 · QDH 9 · ADH 20 · ADH 18 · ADH 19 · WALLY'S BORE · QDH 12 · ADH 17 · ADH 16 · ADH 15 · QDH 13 · ADH 12 · ADH 13 · ADH 14 · ADH 11 · BROUGHAMS GATE · TO AVENEL HOMESTEAD · QDH 45 · QDH 44 · NEW SITE · QDH 8 · DICKSONS SWAMP (filled with water) · QDH 7 · QDH 6 · ADH 1 · QDH 1 · ADH 2 · QDH 5 · LAKE CARNANTO (dry) · KIDMANS N°1 BORE · ADH 3 · ADH 4A · ADH 4 · QDH 3C · ADH 10 · ADH 9 · KIDMANS N°2 BORE · ADH 8 · ADH 7 · QDH 3 · QDH 303 · QDH 3A · QDH 3B · QDH 301 · QDH 302 · ADH 6 · QDH 304 · QDH 3D · ADH 5 · QDH 43 · AREA QDH 3 (FOR DETAILS SEE CROSS SECTION AREA QDH 3) · QDH 3E · QDH 4 · TO WYCALPA DAM · AREA QDH2 (FOR DETAILS SEE CROSS SECTION AREA QDH 2) · QDH 2C · QDH 202 · QDH 2 · QDH 206 · QDH 203 · QDH 205 · QDH 2A · QDH 2D · QDH 204 · QDH 2B · QDH 201 · QDH 2E · TO COCKBURN

N

LEGEND

- QDH 5 — Rotary drill hole
- ADH 8 — Auger drill hole
- Water bore with windmill
- Water bore (artesian)
- Water bore (sub artesian)
- Water dam
- Fence
- Border fence (dog proof)
- Border fence gate
- Graded tracks
- Lake

0 1 2 3 4 5 10km.

CHEVRON EXPLORATION CORPORATION

E.L. 40

QUINYAMBIE PROSPECT

SOUTH AUSTRALIA

DRILL HOLE LOCATION MAP

AUTHOR: P. J. MORGAN

DRAWN	DATE	SCALE	REVISED	DRAWING NUMBER
K. Sargeant	Aug 72			

RECEIVED 3 JUL 1973 DEPT. OF MINES SECURITY 2257

FIGURE 1A

5/A1-7/000 - 030

2257-1

2257-1

PROJECT : Quingambie

DESCRIBED : P.J.M.

DATE : 4-5-73

HOLE NUMBER : QOH. 200.

0021

DEPTH – metres	LITHOLOGY	SAND SIZE F	SAND SIZE M	SAND SIZE C	PYRITE R	PYRITE C	PYRITE A	LIM. HEM. R	LIM. HEM. C	LIM. HEM. A	H.M. R	H.M. C	H.M. A	FELDSP. R	FELDSP. C	FELDSP. A	CARBON MAT'L. R	CARBON MAT'L. C	CARBON MAT'L. A	COMMENTS
2	Yellow brown Red brown				NO PYRITE			HAEMATITE AND LIMONITE STAINING			TRACE MAGNETITE									Dune sand – some calcareous fragments
4																				
6																				
8																				
10	Yellow brown Light grey			SUBROUNDED WELL SORTED				Lim 5%	Lim 25%											10% coarse gypsum crystals.
12								Lim 5%	Lim 25%											
14								Lim 5%	Lim 25%											
16								Lim 5%	Lim 25%								Carb 5%			
18								Lim 5%									Carb 5%			
20								Lim 5%									Carb 5%			
22								Lim 5%									Carb 5%			
24								Lim 5%									Carb 5%			
26								Lim 5%									Carb 5%			
28								Lim 5%									Carb 5%			
30								Lim 5%									Carb 5%	Carb 5%		
32	Light grey							Lim 5%									Carb 5%	Carb 15%		
34								Lim 5%									Carb 5%			
36								Lim 5%									Carb 5%			
38								Lim 5%									Carb 5%			
40								Lim 5%									Carb 5%			
42								Lim 5%									Carb 5%			core taken from 43.6m to
T.D. 43.6																				

PROJECT : Quinyambie

DESCRIBED : P.S.M.

DATE : 4-5-73

HOLE NUMBER : QDH. 201.

0025

DEPTH - metres	LITHOLOGY	SAND SIZE F	SAND SIZE M	SAND SIZE C	PYRITE R	PYRITE C	PYRITE A	LIM. HEM. R	LIM. HEM. C	LIM. HEM. A	H.M. R	H.M. C	H.M. A	FELDSP. R	FELDSP. C	FELDSP. A	CARBON MAT'L. R	CARBON MAT'L. C	CARBON MAT'L. A	COMMENTS
0																				NOTE. 0-2m SAMPLE WAS NOT COLLECTED - SAMPLE DESCRIPTION ABSTRACTED ACCORDINGLY - SAMPLES COLLECTED 2m THEREAFTER.
2	Red brown																			Red brown dune sand - minor small calcareous fragments.
4																				
6																				
8																				
10	Yellow brown																			
12	Light grey clay																			Contains up to 25% coarse gypsum crystals.
14																				
16																				
18																				
20																				
22																				
24																				
26																				
28																				
30																				
32																				
34																				
36																				
38																				
40																				
42																				
44																				
46																				
48																				Textural change from clay to claystone
50																				Change back to clay.
52	Pale brown																			
54	Light grey clay with minor interbedded dark grey clay																			
56																				
58																				
60																				
62																				
64																				
66	Light grey clay with dark grey clay																			
68																				
70																				
72																				
74																				
76																				
78																				
80																				
82																				

LIMONITE - HAEMATITE STAINING

TRACE MAGNETITE

Mainly fine grained subrounded moderately to well sorted

PROJECT : Quinyambie

DESCRIBED : P.J.M.

DATE : 4-6-73

HOLE NUMBER :

QDH. 201 (cont.)

0025

DEPTH	LITHOLOGY	SAND SIZE			PYRITE			LIM. HEM.			H.M.			FELDSP.			CARBON MAT'L.			COMMENTS
		F	M	C	R	C	A	R	C	A	R	C	A	R	C	A	R	C	A	
84	GREY LTD. BLACK GRY SECONDARY ALUMITE WITH GROWTH							Lim 5%	Lim 25%								Carb 5%	Carb 25%		
86								Lim 5%	Lim 25%								Carb 5%	Carb 25%		
88								Lim 5%	Lim 25%								Carb 5%	Carb 25%		
90								Lim 5%	Lim 25%								Carb 5%	Carb 25%		
T.D. 92								Lim 5%	Lim 25%								Carb 5%	Carb 25%		

PROJECT : Quingambie

DESCRIBED : P.J.M.

DATE : 4-5-73.

HOLE NUMBER :

QDH.202.

0024

DEPTH - metres	GEOLOGY	SAND SIZE (F M C)	PYRITE (R C A)	LIM. HEM. (R C A)	H.M. (R C A)	FELDSP. (R C A)	CARBON MAT'L. (R C A)	COMMENTS
0–2	RED BROWN			HAEMATITE STAINING	1% MAGNETITE			Contains up to 5% small gypsum crystals - Dune Sand.
2–8	YELLOW BROWN							
8–20	LIGHT GREY	SUBANGULAR WELL SORTED	NO PYRITE		NO HEAVY MINERALS (CLEAN SAND)	NO FELDSPAR		Contains up to 5% small and large gypsum crystals
20–34	LIGHT BROWN TO LIGHT GREY	SUBANGULAR TO SUBROUNDED WELL SORTED						
34–48	LIGHT GREY CLAY							Light grey clay - no sign claiming on sand.
48–58	LIGHT GREY TO GREY FINE SAND	SUBROUNDED WELL SORTED						
58–70	LIGHT GREY MOTTLED DARK GREEN CLAY							
70–82	LIGHT GREY TO GREY							

PROJECT : Quinyambie

DESCRIBED : P.J.M.

DATE : 4-5-73.

HOLE NUMBER :

QDH. 202 (cont)

0025

DEPTH	LITHOLOGY	SAND SIZE F	SAND SIZE M	SAND SIZE C	PYRITE R	PYRITE C	PYRITE A	LIM. HEM. R	LIM. HEM. C	LIM. HEM. A	H.M. R	H.M. C	H.M. A	FELDSP. R	FELDSP. C	FELDSP. A	CARBON MAT'L. R	CARBON MAT'L. C	CARBON MAT'L. A	COMMENTS
84								Lim 5%	Lim 25%								cm 5%	cm 25%		
86								Lim 5%	Lim 25%								cm 5%	cm 25%		
88	ELIZABETHA FORMATION - MOUNT ISA GROUP FORMATION							Lim 5%	Lim 25%								cm 5%	cm 25%		
90					M 1%	M 5%		Lim 5%			<1% mag.			NO FELD			cm 5%			Quartz grains lightly polished.
92					M 1%	M 5%		Lim 5%									cm 5%			

PROJECT : Quinyambie

DESCRIBED : P.J.M.

DATE : 4-5-73

HOLE NUMBER : QOH 203

0826

DEPTH metres	LITHOLOGY	SAND SIZE F	SAND SIZE M	SAND SIZE C	PYRITE R	PYRITE C	PYRITE A	LIM. HEM. R	LIM. HEM. C	LIM. HEM. A	H.M. R	H.M. C	H.M. A	FELDSP. R	FELDSP. C	FELDSP. A	CARBON MAT'L. R	CARBON MAT'L. C	CARBON MAT'L. A	COMMENTS
2	RED BROWN				NO PYRITE			LIMONITE - HAEMATITE STAINING			TRACE MAGNETITE									Red brown dune sand - minor small gypsum crystals.
4																				
6																				
8																				
10	LIGHT GREY TO GREY			SUBROUNDED TO ROUNDED WELL SORTED																Numerous (5%) small gypsum crystals.
12																				
14																				
16											NO HEAVY MINERALS (CLEAN SAND)			NO FELDSPAR						
18																				
20																				
22																				
24	LIGHT GREY TO GREY			SUBROUNDED REASONABLY WELL SORTED																
26																				
28																				
30																				
32																				
34																				
36																				
38																				
40	LIGHT GREY TO GREY																			Textural change from semi-consolidated clays to claystones
42																				
44																				
46																				
48																				
50																				
52																				
54																				
56																				
58																				
60	LIGHT GREY TO GREY WITH SOME GREEN AND GREY CLAY																			Textural change to clays.
62																				
64																				
66																				
68																				
70																				
72	GREY TO DARK GREY CLAY																			
74																				
76																				
78																				
80																				
82																				

PROJECT : Quinyambie

DESCRIBED : P.S.M.

DATE : 4-5-73

HOLE NUMBER : QDH 203 (cont)

002

DEPTH	LITHOLOGY	SAND SIZE			PYRITE			LIM. HEM.			H.M.			FELDSP.			CARBON MAT'L.			COMMENTS
		F	M	C	R	C	A	R	C	A	R	C	A	R	C	A	R	C	A	
84								Lim 5%	Lim 15%	Lim 5%										
86								Lim 5%	Lim 15%	Lim 5%										
88								Lim 5%	Lim 15%	Lim 5%										
90								Lim 5%	Lim 15%	Lim 5%										
T.D. 92								Lim 5%	Lim 15%	Lim 5%										

PROJECT : Quinyambie

DESCRIBED : P.J.M.

DATE : 4-5-73

HOLE NUMBER : QDH.204

0020

DEPTH	LITHOLOGY	SAND SIZE F	SAND SIZE M	SAND SIZE C	PYRITE R	PYRITE C	PYRITE A	LIM. HEM. R	LIM. HEM. C	LIM. HEM. A	H.M. R	H.M. C	H.M. A	FELDSP. R	FELDSP. C	FELDSP. A	CARBON MAT'L. R	CARBON MAT'L. C	CARBON MAT'L. A	COMMENTS
2	Red Brown clayey silt				NO PYRITE			HAEMATITE AND LIMONITE STAINING			TRACE OF MAGNETITE									Dune sand
4																				
6																				
8	Yellow Brown clayey silt																			
10	Light grey clay																			
12																				25% coarse gypsum crystals
14	Dark grey clay																			
16																				
18																				
20																				
22																				
24	Light grey clay																			
26	Green mottled grey clay																			
28																				
30																				
32																				
34																				
36																				
38																				Fairly salty
40																				
42																				
44																				
46																				
48																				
50																				
52																				
54																				
56																				
58																				
60																				
62																				
64																				
66	Brown sandy clay																			
68																				
70																				
72																				
74																				
76																				
78																				
80																				

Sidewall well sorted

PROJECT : Quinyambie

DESCRIBED : P.J.M.

DATE : 4-5-73

HOLE NUMBER :

QDH.204. (cont)

0029

DEPTH	LITHOLOGY	SAND SIZE F	SAND SIZE M	SAND SIZE C	PYRITE R	PYRITE C	PYRITE A	LIM. HEM. R	LIM. HEM. C	LIM. HEM. A	H.M. R	H.M. C	H.M. A	FELDSP. R	FELDSP. C	FELDSP. A	CARBON MAT'L. R	CARBON MAT'L. C	CARBON MAT'L. A	COMMENTS
84					PYRITE			Lim/Sil									Lim/Sil			
86								Lim/Sil									Lim/Sil			
88								Lim/Hem	Lim/Hem											
90								Lim/Hem	Lim/Hem											
92								Lim/Hem	Lim/Hem											

MUD, Boulders, TO. Soapstone

Subangular well sorted SAND

No obvious

PROJECT : Quinyambie

DESCRIBED : P.S.M.

DATE : 5-5-73

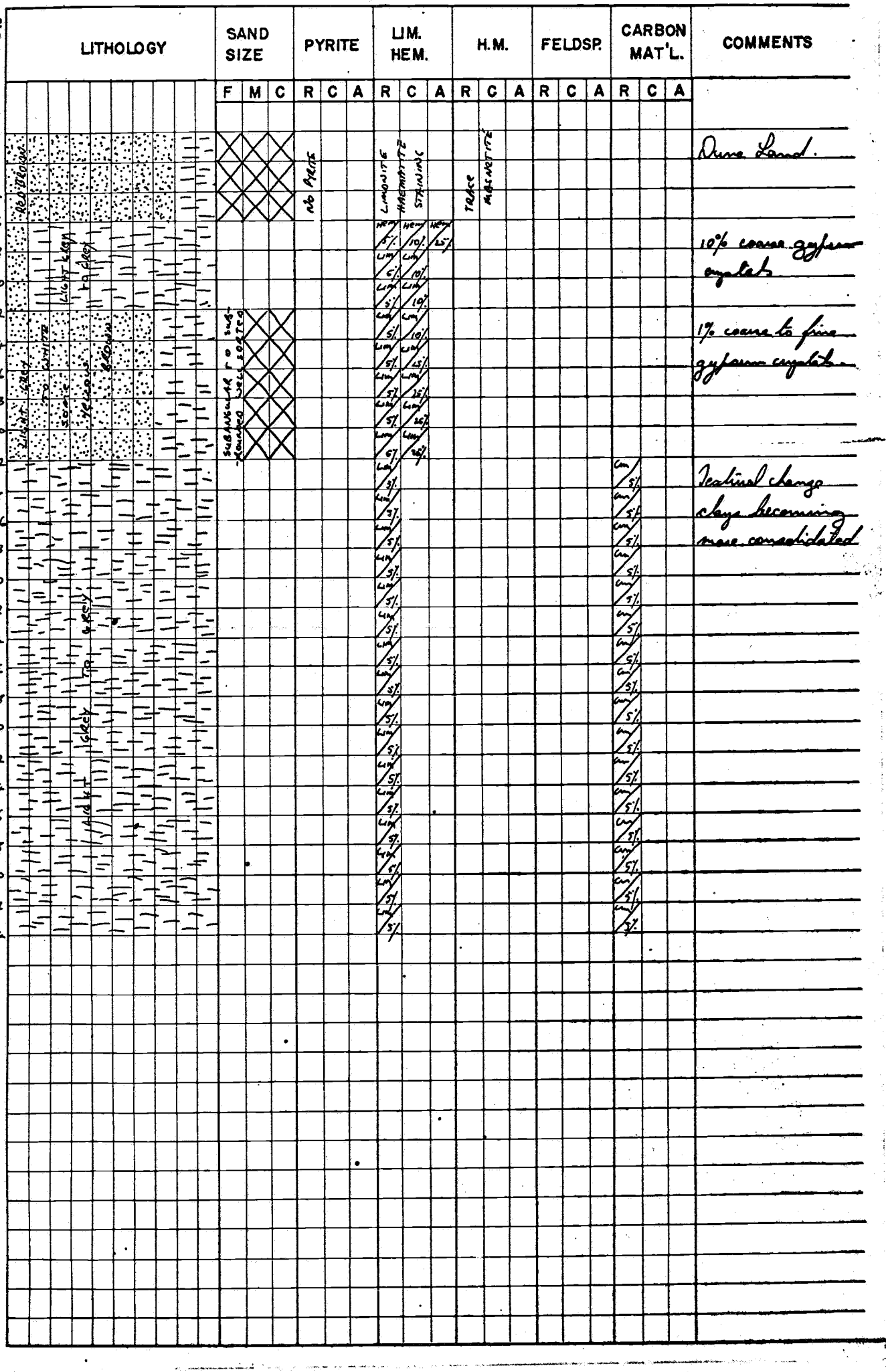
HOLE NUMBER : QDH .205

0865

DEPTH-metres	LITHOLOGY	SAND SIZE F	SAND SIZE M	SAND SIZE C	PYRITE R	PYRITE C	PYRITE A	LIM. HEM. R	LIM. HEM. C	LIM. HEM. A	H.M. R	H.M. C	H.M. A	FELDSP. R	FELDSP. C	FELDSP. A	CARBON MAT'L. R	CARBON MAT'L. C	CARBON MAT'L. A	COMMENTS
0																				Dune sand
2	RED BROWN TO YELLOW BROWN SILTY CLAY																			
4					NO PYRITE			LIMONITE AND HAEMATITE STAINING			TRACE MAGNETITE									
6								Lim 5%												
8								Lim 5%												
10								Lim 5%	Lim											
12								Lim 5%	Lim 25%											
14								Lim 5%	Lim 25%											
16								Lim 5%	Lim 25%											
18								Lim 5%	Lim 25%											
20								Lim 5%	Lim 25%											
22								Lim 5%	Lim 25%		NO HEAVY MINERALS (CLEAR SAND)						Lim 5%			
24								Lim 5%	Lim 25%								Lim 5%			
26								Lim 5%	Lim 25%								Lim 5%			
28								Lim 5%	Lim 25%								Lim 5%			
30	GREY CLAY							Lim 5%	Lim 25%								Lim 5%			Reduced - hole reamed - flaker mud to last circulation
32								Lim 5%	Lim 25%								Lim 5%			
34								Lim 5%												Clays becoming more consolidated
36								Lim 5%												
38								Lim 5%												
40								Lim 5%												
42								Lim 5%												
44								Lim 5%												
46								Lim 5%												
48								Lim 5%												
50								Lim 5%												
52								Lim 5%												
T.D. 54								Lim 5%												

SUBROUNDED SAME ANIT LEADING COMMUNITY WELL SEATING

SAND ASSAY RECOVERED HEAVIER THE SECTION



PROJECT : Quinyambie

DESCRIBED : P.J.M.

DATE : 5-5-73

HOLE NUMBER : QDH.206.

0031

DEPTH - METERS	LITHOLOGY	SAND SIZE			PYRITE			LIM. HEM.			H.M.			FELDSP.			CARBON MAT'L.			COMMENTS
		F	M	C	R	C	A	R	C	A	R	C	A	R	C	A	R	C	A	
2	RED BROWN	X	X	X	NO PYRITE			LIMONITE HAEMATITE STAINING			TRACE MAGNETITE									Dune Sand.
4		X	X	X																
6		X	X	X																
8	LIGHT GREY TO GREY							HEM 5%	HEM 10%	HEM 25%										10% coarse gypsum
10								LIM 6%	LIM 10%											crystals
12								LIM 5%	LIM 10%											
14	LIGHT GREY TO WHITE SOME YELLOW BROWN	SUBANGULAR TO SUB-ROUNDED WELL SORTED	X	X				LIM 5%	LIM 10%											1% coarse to fine
16			X	X				LIM 5%	LIM 25%											gypsum crystals.
18			X	X				LIM 5%	LIM 25%											
20			X	X				LIM 5%	LIM 25%											
22			X	X				LIM 6%	LIM 25%											
24	LIGHT GREY TO GREY							LIM 3%									Cm 5%			Textural change
26								LIM 3%									Cm 5%			clays becoming
28								LIM 5%									Cm 5%			more consolidated
30								LIM 5%									Cm 5%			
32								LIM 5%									Cm 5%			
34								LIM 5%									Cm 5%			
36								LIM 5%									Cm 5%			
38								LIM 5%									Cm 5%			
40								LIM 5%									Cm 5%			
42								LIM 5%									Cm 5%			
44								LIM 5%									Cm 5%			
46								LIM 5%									Cm 5%			
48								LIM 5%									Cm 5%			
50								LIM 5%									Cm 5%			
52								LIM 5%									Cm 5%			
.54								LIM 5%									Cm 5%			

PROJECT : Quinyambie

DESCRIBED : P.S.M.

DATE : 6-5-73

HOLE NUMBER : QDH. 300.

0032

DEPTH-metres	LITHOLOGY	SAND SIZE F	SAND SIZE M	SAND SIZE C	PYRITE R	PYRITE C	PYRITE A	LIM. HEM. R	LIM. HEM. C	LIM. HEM. A	H.M. R	H.M. C	H.M. A	FELDSP. R	FELDSP. C	FELDSP. A	CARBON MAT'L. R	CARBON MAT'L. C	CARBON MAT'L. A	COMMENTS
1																				
2	Red brown light grey							LIMONITE AND HAEMATITE STAINING												Dune sand
4																				
6											TRACE MAGNETITE									
8					NO PYRITE															
10																				5% gypsum crystals
12	Light grey clay							Lim 5%												
14								Lim 5%												
16								Lim 5%												
18								Lim 5%												
20								Lim 5%												
22								Lim 5%									Lim 5%	Lim 25%		
24								Lim 5%									Lim 5%	Lim 25%		
26								Lim 5%									Lim 5%	Lim 25%		
28								Lim 5%									Lim 5%	Lim 25%		
30								Lim 5%									Lim 5%	Lim 25%		
32								Lim 5%									Lim 5%	Lim 25%		
34								Lim 5%									Lim 5%	Lim 25%		
36								Lim 5%									Lim 5%	Lim 25%		
38								Lim 5%									Lim 5%	Lim 25%		
40								Lim 5%									Lim 5%	Lim 25%		
42								Lim 5%									Lim 5%	Lim 25%		
44								Lim 5%									Lim 5%	Lim 25%		
46								Lim 5%									Lim 5%	Lim 25%		
48								Lim 5%									Lim 5%	Lim 25%		
50								Lim 5%									Lim 5%	Lim 25%		
52								Lim 5%									Lim 5%	Lim 25%		
54	Light grey clay and grey to black sandy clay							Lim 5%	Lim 25%								Lim 5%			
56								Lim 5%	Lim 25%								Lim 5%			
58								Lim 5%	Lim 25%								Lim 5%			
60								Lim 5%	Lim 25%								Lim 5%			
62								Lim 5%	Lim 25%								Lim 5%			
64								Lim 5%	Lim 25%								Lim 5%			
66								Lim 5%	Lim 25%								Lim 5%			
68								Lim 5%	Lim 25%								Lim 5%			
70								Lim 5%	Lim 25%								Lim 5%			
72								Lim 5%	Lim 25%								Lim 5%			
74								Lim 5%	Lim 25%								Lim 5%			
76								Lim 5%	Lim 25%								Lim 5%			
78								Lim 5%	Lim 25%								Lim 5%			
80																				
82																				

SUGARWOOD WELL 20 GPM SAND LENSE

PROJECT : Quingambie

DESCRIBED : P.S.M.

DATE : 3-5-73.

HOLE NUMBER : QDH.301.

0036

DEPTH-metres.	LITHOLOGY	SAND SIZE F	SAND SIZE M	SAND SIZE C	PYRITE R	PYRITE C	PYRITE A	LIM. HEM. R	LIM. HEM. C	LIM. HEM. A	H.M. R	H.M. C	H.M. A	FELDSP. R	FELDSP. C	FELDSP. A	CARBON MAT'L. R	CARBON MAT'L. C	CARBON MAT'L. A	COMMENTS
2	RED BROWN				NO PYRITE						TRACE mag.									Red brown dune sand.
4																				
6																				
8								Lim / Si.									Carb / Si.			
10								Lim / Si.									Carb / Si.			
12								Lim / Si.									Carb / Si.			
14								Lim / Si.									Carb / Si.			
16								Lim / Si.									Carb / Si.			
18								Lim / Si.									Carb / Si.			
20								Lim / Si.									Carb / Si.			
22								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%	Carb 50%	
24								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%	Carb 50%	
26								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%	Carb 50%	
28								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%	Carb 50%	
30								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%	Carb 50%	
32								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%	Carb 50%	
34								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%	Carb 50%	
36								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%	Carb 50%	
38								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%	Carb 50%	
40	PALE BROWN TO LIGHT GREY TO DARK GREY							Lim / Si.									Carb / Si.			Minor fine gypsum veinlets
42								Lim / Si.									Carb / Si.			
44								Lim / Si.									Carb / Si.			
46								Lim / Si.									Carb / Si.			
48								Lim / Si.									Carb / Si.			
50								Lim / Si.									Carb / Si.			
52								Lim / Si.									Carb / Si.			
54								Lim / Si.									Carb / Si.			
56								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%	Carb 50%	
58								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%		
60								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%		
62								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%		
64								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%		
66								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%		
68								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%		
70								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%		
72								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%		
74								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%		
76								Lim / Si.	Lim 10%								Carb / Si.	Carb 25%	Carb 50%	
78								Lim / Si.									Carb / Si.			
80								Lim / Si.									Carb / Si.	Carb 25%		
82								Lim / Si.									Carb / Si.	Carb 25%		

PALE BROWN TO LIGHT GREY TO DARK GREY

LIGHT GREY TO GREY

PALE BROWN TO LIGHT GREY TO DARK GREY

SUBROUNDED TO ROUNDED WELL SORTED

NO PYRITE

SUBROUNDED TO ROUNDED WELL SORTED

NO PYRITE

NO HEAVY MINERALS.

PROJECT : Quinyambie

DESCRIBED : P.S.M.

DATE : 3-5-73.

HOLE NUMBER : QDH. 301 (cont)

0034

DEPTH	LITHOLOGY	SAND SIZE F	SAND SIZE M	SAND SIZE C	PYRITE R	PYRITE C	PYRITE A	LIM. HEM. R	LIM. HEM. C	LIM. HEM. A	H.M. R	H.M. C	H.M. A	FELDSP. R	FELDSP. C	FELDSP. A	CARBON MAT'L. R	CARBON MAT'L. C	CARBON MAT'L. A	COMMENTS
84		X						Lm/Si									Cm/Si	Cm/Si		
86		X						Lm/Si									Cm/Si	Cm/Si		
88		X						Lm/Si									Cm/Si	Cm/Si		
90	STRATIFIED FORMATION MICACEOUS FORMATION	X						Lm/Si									Cm/Si	Cm/Si		
92		X	X	X	RARE SUBHEDRAL CRYSTALS < 1%			Lm/Si	LIMONITE STAINING IN THE CLAYS		TRACE MAGNETITE						Cm/Si			Poorly sorted/foliated gravity grains
94		X	X	X				Lm/Si									Cm/Si			
96		X	X	X				Lm/Si									Cm/Si			
T.D. 98		X	X	X				Lm/Si									Cm/Si			

PROJECT : Quingambic

DESCRIBED : P.S.M.

DATE : 3-5-73.

HOLE NUMBER :

QDH. 302.

0035

DEPTH - METERS.	LITHOLOGY	SAND SIZE (F M C)	PYRITE (R C A)	LIM. HEM. (R C A)	H.M. (R C A)	FELDSP. (R C A)	CARBON MAT'L. (R C A)	COMMENTS
0								
2			NO PYRITE		TRACE			Red brown poorly sorted dune sand
4								
6								
8	Red brown dune sand							
10								
12								
14	WHITE SILTY CLAY							
16				Lim 5% Lim 25%			cm 5% cm 25%	
18	LIGHT GREY CLAYEY SILT			Lim 5% Lim 25%			cm 5% cm 25%	
20				Lim 5%			cm 5% cm 25%	
22				Lim 5%			cm 5% cm 25%	Small rare gypsum crystals.
24				Lim 5%			cm 5% cm 25%	
26				Lim 5%			cm 5% cm 25%	
28				Lim 5%			cm 5% cm 25%	
30	LIGHT GREY TO DARK GREY			Lim 5% Lim 25%			cm 5%	
32				Lim 5% Lim 25%			cm 5%	Subrounded reasonably well sorted sand - light brown.
34	LIGHT GREY TO DARK GREY			Lim 5%			cm 5%	
36				Lim 5%			cm 5%	
38				Lim 5%			cm 5% cm 15% cm 50%	
40	DARK GREY			Lim 5%			cm 5% cm 15% cm 50%	
42				Lim 5% Lim 25%			cm 5%	
44				Lim 5% Lim 25%			cm 5%	
46				Lim 5% Lim 25%			cm 5%	
48				Lim 5% Lim 25%			cm 5%	
50				Lim 5% Lim 25%			cm 5%	
52	LIGHT GREY TO DARK GREY			Lim 5% Lim 25%			cm 5%	
54				Lim 5% Lim 25%			cm 5%	
56				Lim 5%			cm 5%	
58							cm 5%	
60							cm 5%	
62							cm 5%	
64							cm 5%	
66							cm 5%	
68							cm 5%	
70							cm 5%	
72							cm 5%	
74							cm 5%	
76							cm 5%	
78							cm 5%	
80	DARK GREY						cm 5% cm 25%	
82								

SUBANGULAR WELL SORTED

SUBANGULAR REASONABLY WELL SORTED

NO PYRITE

SOME MINOR LIMONITE AND HAEMATITE STAINING.

PROJECT : Quingambie

DESCRIBED : P.S.M.

DATE : 3-5-73.

HOLE NUMBER : ODH 302 (cont)

0036

DEPTH	LITHOLOGY	SAND SIZE F	SAND SIZE M	SAND SIZE C	PYRITE R	PYRITE C	PYRITE A	LIM. HEM. R	LIM. HEM. C	LIM. HEM. A	H.M. R	H.M. C	H.M. A	FELDSP. R	FELDSP. C	FELDSP. A	CARBON MAT'L. R	CARBON MAT'L. C	CARBON MAT'L. A	COMMENTS
84	LIGHT BROWN TO LIGHT GREY ETADUNNA FORMATION			SUBANGULAR REMAINED WELL SORTED	NO PYRITE			MINOR LIM. HEM.												
86																				
88																				
90	MURNPEOWIE FORMATION																			
92																				Subrounded polished quartz grains — poorly sorted.
94	LIGHT GREY TO LIGHT BROWN				NO OBVIOUS PYRITE									NO FELDSP.						
96																				
T.D. 98																				

PROJECT : Quinyambie

DESCRIBED : P.S.M

DATE : 3-5-73

HOLE NUMBER : QDH. 303.

0037

DEPTH - metres	LITHOLOGY	SAND SIZE F	SAND SIZE M	SAND SIZE C	PYRITE R	PYRITE C	PYRITE A	LIM. HEM. R	LIM. HEM. C	LIM. HEM. A	H.M. R	H.M. C	H.M. A	FELDSP. R	FELDSP. C	FELDSP. A	CARBON MAT'L. R	CARBON MAT'L. C	CARBON MAT'L. A	COMMENTS
2	Red brown																			Poorly sorted dune sand.
4					NO PYRITE															
6																				
8																				
10																				Minor small gypsum crystals.
12																				
14																				
16																				
18																				
20	Light Brown				NO PYRITE															Minor small gypsum crystals
22																				Minor small gypsum crystals
24																				
26																				
28																				
30																				
32																				
34																				
36																				
38																				
40																				
42																				
44																				
46																				
48																				
50																				Minor gypsum xtals
52																				
54																				
56																				
58																				
60																				
62																				Minor small gypsum crystals
64					NO PYRITE															
66																				
68																				
70																				
72	White to light grey				NO PYRITE															Minor light tabular rounded fine to coarse gypsum
74																				
76																				
78																				
80	Light Brown to White																			
82																				

Light grey Dark grey Light green Dark grey Light grey Minor clays

Submounded well sorted

Submounded to rounded well sorted

Possibly as much as 10% limonite staining in some samples

PROJECT : Quinyambie

DESCRIBED : P.S.M.

DATE : 3-5-73.

HOLE NUMBER :

QDH. 203 (cont.)

DEPTH	LITHOLOGY	SAND SIZE F	SAND SIZE M	SAND SIZE C	PYRITE R	PYRITE C	PYRITE A	LIM. HEM. R	LIM. HEM. C	LIM. HEM. A	H.M. R	H.M. C	H.M. A	FELDSP. R	FELDSP. C	FELDSP. A	CARBON MAT'L. R	CARBON MAT'L. C	CARBON MAT'L. A	COMMENTS
84	LIGHT-BROWN TO LIGHT-GREY BROWN FORMATION		SUBROUNDED TO ROUNDED		NO PYRITE			LIM/S/ LIM/S/ HEM LIM/HEM			TRACE MAG.						CAR/S/ CAR/S/ CAR/S/ CAR/S/			Some minor green clays
86																				
88																				
90	MURNPEOOTE FORMATION			WELL SORTED																Textural change in clays from unconsolidated to semiconsolidated
92	WAVERLY BEDS LIGHT-GREY MOTTLED BLUE GREEN			SUBROUNDED	NO OBVIOUS PYRITE						1% mag.			NO FELDSPAR						
94																				
TD 96																				

PROJECT : Quingambie

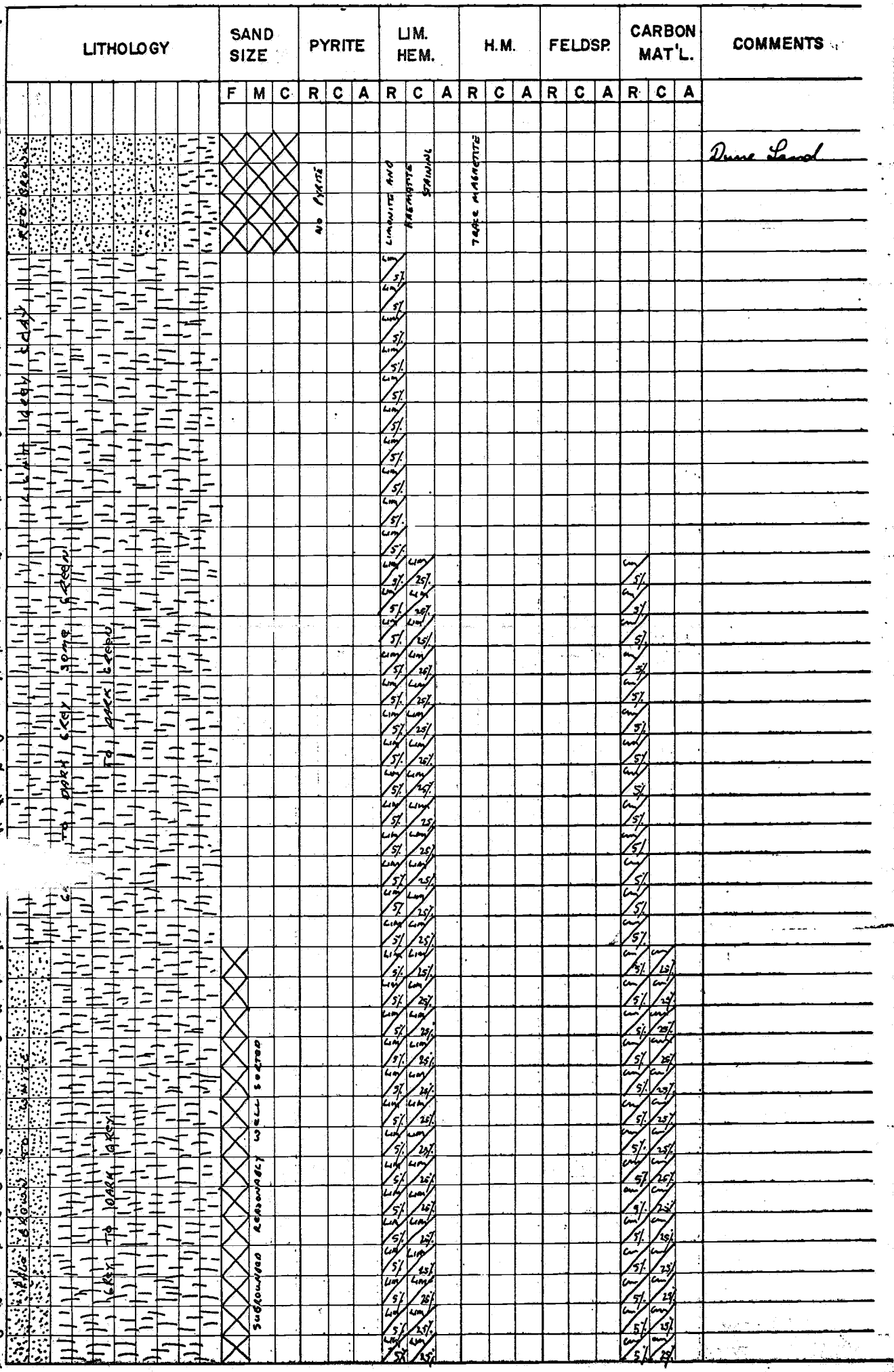
DESCRIBED : P.S.M.

DATE : 3-5-73.

HOLE NUMBER :

QDH. 304.

0939



PROJECT : Quinyambie

DESCRIBED : P.S.M.

DATE : 3-6-73

HOLE NUMBER :

QDH 304 (cont)

0040

DEPTH	LITHOLOGY	SAND SIZE F	SAND SIZE M	SAND SIZE C	PYRITE R	PYRITE C	PYRITE A	LIM. HEM. R	LIM. HEM. C	LIM. HEM. A	H.M. R	H.M. C	H.M. A	FELDSP. R	FELDSP. C	FELDSP. A	CARBON MAT'L. R	CARBON MAT'L. C	CARBON MAT'L. A	COMMENTS
84		X	X					Lim 5% / Lim 25%	Lim 5% / Lim 25%								Cm 5% / Cm 25%	Cm 5% / Cm 25%		
86		X	X					Lim 5% / Lim 25%	Lim 5% / Lim 25%								Cm 5% / Cm 25%	Cm 5% / Cm 25%		
88		X	X					Lim 5% / Lim 25%	Lim 5% / Lim 25%								Cm 5% / Cm 25%	Cm 5% / Cm 25%		
90	Quinya Formation	X	X					Lim 5% / Lim 25%	Lim 5% / Lim 25%								Cm 5% / Cm 25%	Cm 5% / Cm 25%		
92	Precipice Sandstone	X	X	X	No obvious Pyrite															Subangular to subrounded lightly feldsted
TD. 94	Leaf Clay	X	X	X																

SOUTH AUSTRALIAN DEPARTMENT OF MINES

GEOLOGICAL SURVEY

YPE OF LOG (S): GAMMA-RAY, SELF POTENTIAL, POINT RESISTIVITY.

ATE: 5-5-73 TIME: 1145/ 1115 / 1115 /

REA: QUINYAMBIE LOCATION: Lat. Lo

ELL: QDH 200

LEVATION G.L.: Log from 0 metres above G.L. Depth Scale: 1cm re

UN NUMBER: 1 / 1 / 1 / 1 /

ASING SHOE DEPTH (cm): LOG metres DRILL metres TOTAL DEPTH: LOG
DRI

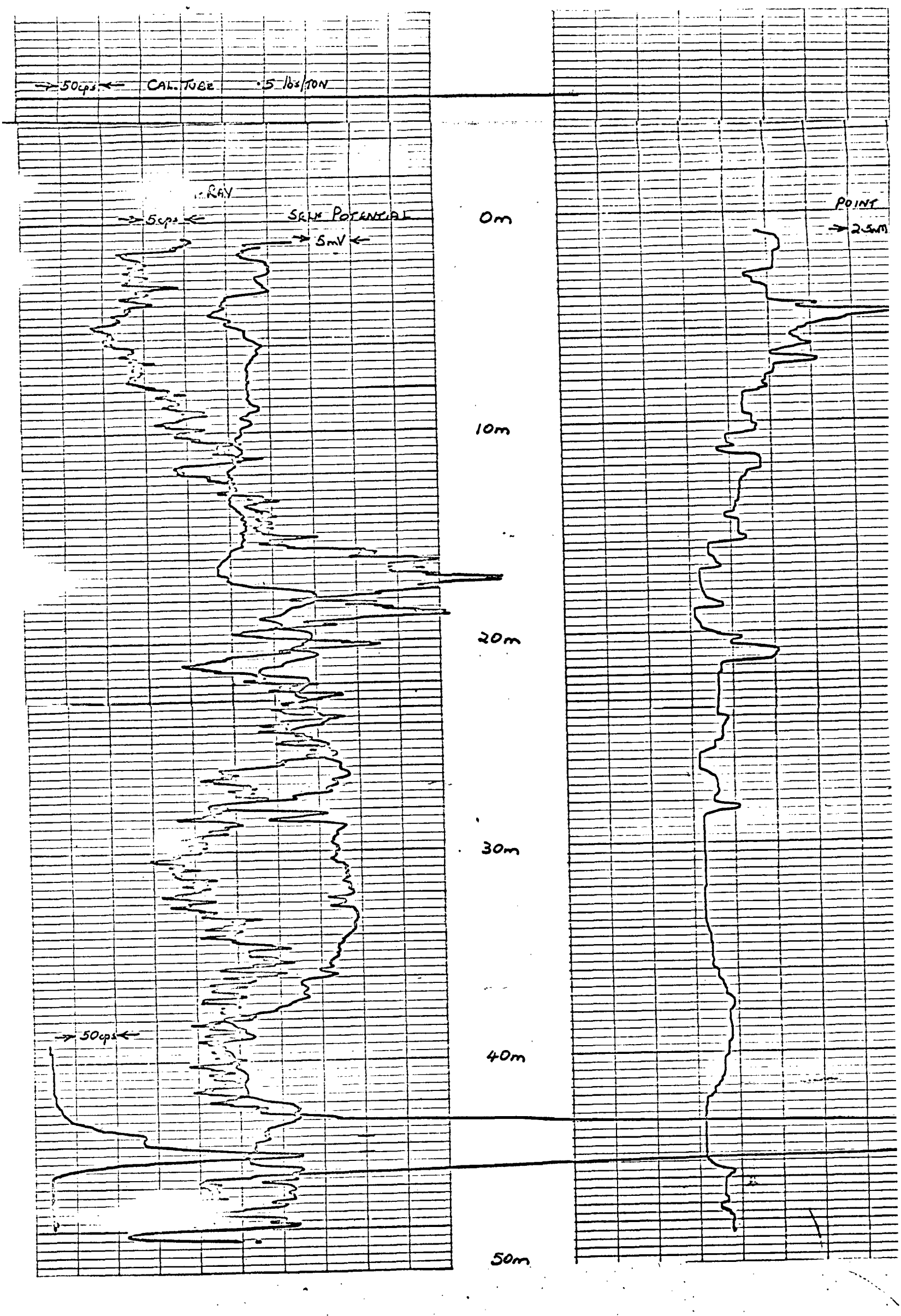
UD: Type RESISTIVITY: Ohm metres @ °C

PERATING TIME: 20mins/ 15mins/ 15mins/ /

ECORDED BY: LK West

2257-11

EMARKS:



SOUTH AUSTRALIAN DEPARTMENT OF MINES

GEOLOGICAL SURVEY

OF LOG (S): Gamma-Ray, Self Potential, Point Resistivity

ATE: 4-5-73 TIME: 1140/ 1120 / 1120 /

REA: Quinyambie LOCATION: Lat.

ELL: QDH 201

LEVATION G.L.: Log from 0 metres above G.L. Depth Scale: 1cm

UN NUMBER: / / / / / /

ASING SHOE DEPTH (cm): LOG metres DRILL metres TOTAL DEPTH: LC
DR

UD: Type RESISTIVITY: Ohm metres @ °C

PERATING TIME: 25mins/20mins/20mins/ /

ECORDED BY: LKWest

EMARKS:

2257-12

SOUTH AUSTRALIAN DEPARTMENT OF MINES

GEOLOGICAL SURVEY

TYPE OF LOG (S): GAMMA-RAY, SELF POTENTIAL, [illegible] RESISTIVITY.

DATE: 3-5-73 TIME: 1925/ 1900 / 1900 /

AREA: QUINYAMBIE LOCATION: Lat.

WELL: QDH 202

ELEVATION G.L.: Log from 0 metres above G.L. Depth Scale: 1cm

RUN NUMBER: / / / / /

CASING SHOE DEPTH (cm): LOG metres DRILL metres TOTAL DEPTH: LO DR

MUD: Type RESISTIVITY: Ohm metres @ °C

OPERATING TIME: 25mins/20mins/20mins/ /

RECORDED BY: LK West

REMARKS:

2257-13

SOUTH AUSTRALIAN DEPARTMENT OF MINES

GEOLOGICAL SURVEY

TYPE OF LOG (S): Gamma-Ray, Self Potential, Point Resistivity.

DATE: 4-5-73 TIME: 0900/ 0840 / 0840 /

AREA: QUINYAMBIE LOCATION: Lat.

WELL: QDH203

ELEVATION G.L.: Log from 0 metres above G.L. Depth Scale: 1cm

RUN NUMBER: 1 / 1 / 1 / / /

CASING SHOE DEPTH (cm): LOG metres DRILL metres TOTAL DEPTH: L D

MUD: Type RESISTIVITY: Ohm metres @ °C

OPERATING TIME: 25mins/20mins/20mins/ /

RECORDED BY: LKWest

REMARKS:

2257-14(1)

SOUTH AUSTRALIAN DEPARTMENT OF MINES

GEOLOGICAL SURVEY

LOG (S): Self Potential, Lateral Resistivity.

DATE: 4-5-73 TIME: 0940 / 0940 / /

AREA: Quinyambie LOCATION: Lat. I

WELL: QDH 203

ELEVATION G.L.: Log from 0 metres above G.L. Depth Scale: 1cm r

RUN NUMBER: 2 / 1 / / /

CASING SHOE DEPTH (cm): LOG metres DRILL metres TOTAL DEPTH: LOG DRI

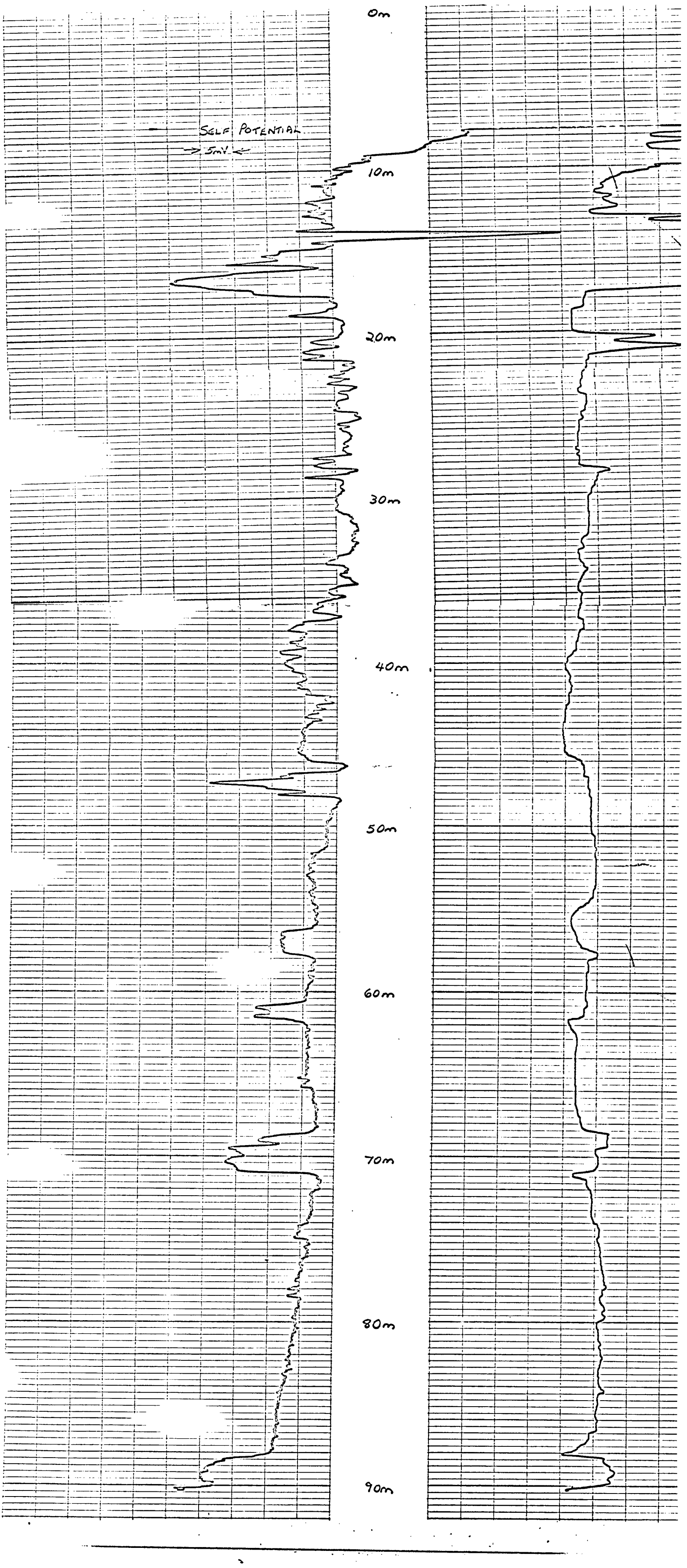
MUD: Type RESISTIVITY: Ohm metres @ °C

OPERATING TIME: 20mins/20mins/ / /

RECORDED BY: LK West

REMARKS:

2257-14 (2)



NORTH AUSTRALIA PRODUCTS OF MINES

GEOLOGICAL SURVEY

TYPE OF LOG (S): GAMMA-RAY, SELF POTENTIAL, POINT RESISTIVITY.

HOLE: 4-5-73 TIME: 1440 / 1415 / 1415 /

MINE: QUINYAMBIE LOCATION: Lat. Lo

HOLE: QDH204

ELEVATION G.L.: Log from 0 metres above G.L. Depth Scale: 1cm re

RUN NUMBER: 1 / 1 / 1 / /

CASING SHOE DEPTH (cm): LOG metres DRILL metres TOTAL DEPTH: LOG
DRI

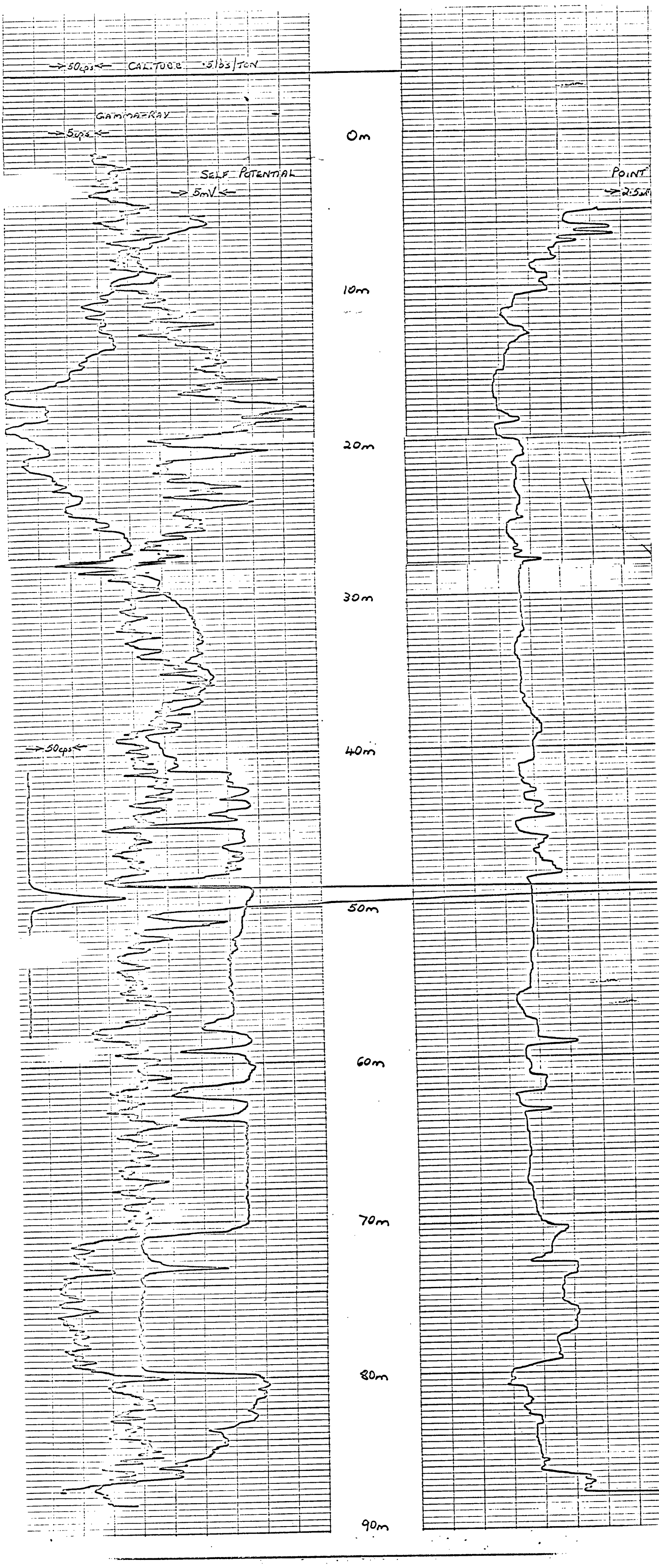
MUD: Type RESISTIVITY: Ohm metres @ °C

OPERATING TIME: 25mins/20mins/20mins/ /

RECORDED BY: LK West

REMARKS:

2257-15



SOUTH AUSTRALIAN DEPARTMENT OF MINES

GEOLOGICAL SURVEY

PE OF LOG (S): GAMMA-RAY, SELF POTENTIAL, POINT RESISTIVITY.

TE: 5-5-73 TIME: 1450/ 1515 / 1515 /

EA: QUINYAMBIE LOCATION: Lat. Lor

LL: QDH205

EVATION G.L.: Log from 0 metres above G.L. Depth Scale: 1cm re

N NUMBER: 1 / 1 / 1 / /

SING SHOE DEPTH (cm): LOG metres DRILL metres TOTAL DEPTH: LOG DRIL

ID: Type RESISTIVITY: Ohm metres @ °C

ERATING TIME: 20mins/ 15mins/15mins/ /

2257-16

CORDED BY: L.K West

MARKS: Spikes on logs between 30-40 metres caused by Human interference.
Logs 0.6m too deep

SOUTH AUSTRALIAN DEPARTMENT OF MINES

GEOLOGICAL SURVEY

TYPE OF LOG (S): GAMMA-RAY, SELF POTENTIAL, POINT RESISTIVITY.

DATE: 7-5-73 TIME: 1055/ 1030/ 1030 X

AREA: QUINYAMBIE LOCATION: Lat. Lo

HOLE: QDH 300

ELEVATION G.L.: Log from 0 metres above G.L. Depth Scale: 1cm re

RUN NUMBER: / / / / / /

CASING SHOE DEPTH (cm): LOG metres DRILL metres TOTAL DEPTH: LOG DRII

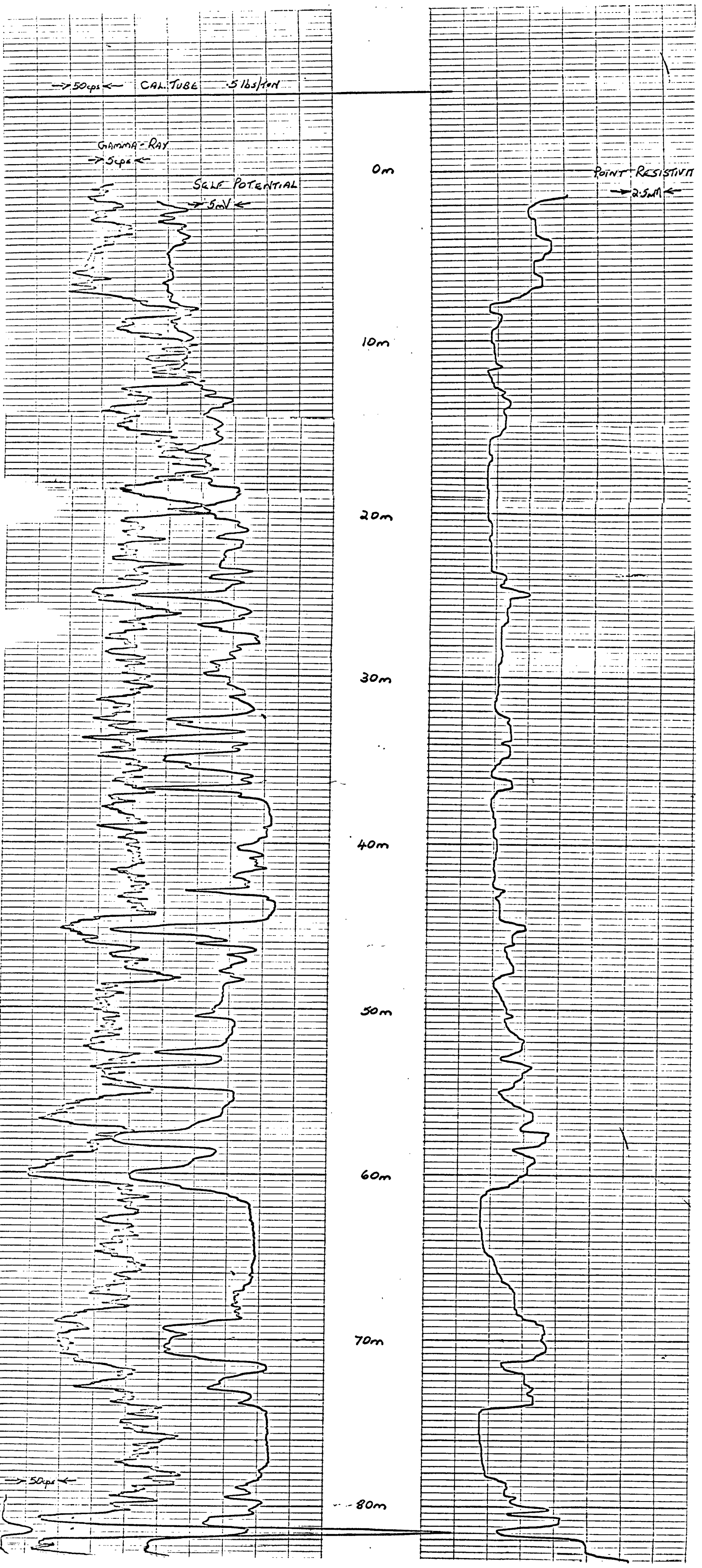
MUD: Typo RESISTIVITY: Ohm metres @ °C

OPERATING TIME: 25mins/20mins/20mins /

RECORDED BY: LKWest

WITNESS:

2257-17



SOUTH AUSTRALIAN DEPARTMENT OF MINES

GEOLOGICAL SURVEY

TYPE OF LOG (S): GAMMA-RAY, SELF POTENTIAL, POINT RESISTIVITY.

DATE: 3-5-73 TIME: 1010/0950/0950/

AREA: QUINYAMBIE LOCATION: Lat. Lo

HOLE: QDH 301

ELEVATION C.L.: Log from 0 metres above G.L. Depth Scale: 1cm re

NUMBER: / / / / / /

CASING SHOE: DIA (cm): LOG metres DRILL metres TOTAL DEPTH: LOG DRIL

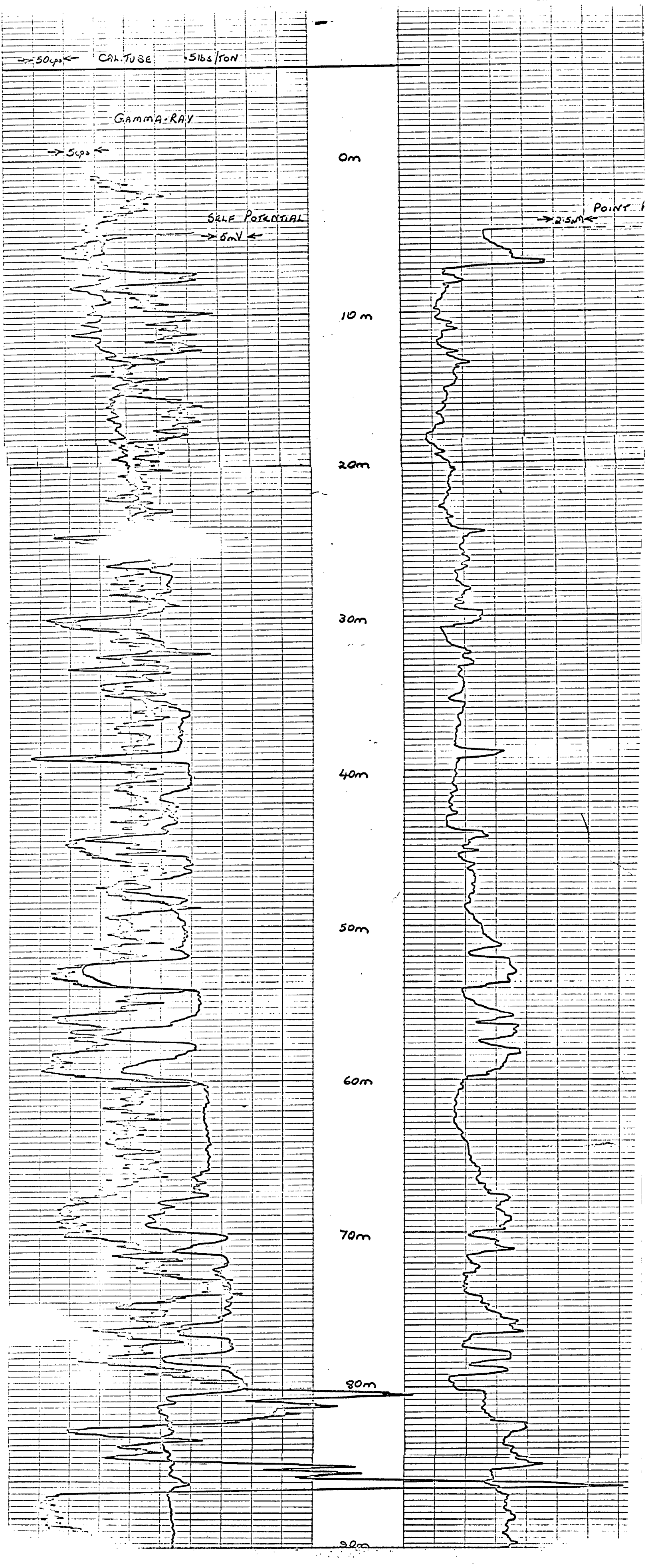
MUD: RESISTIVITY: Ohm metres @ °C

RECORDING UNIT: 20mm/20mm/20mm/

LOGGED BY: LKWest

RUN NO:

2257-18



SOUTH AUSTRALIAN DEPARTMENT OF MINES

GEOLOGICAL SURVEY

TYPE OF LOG (S): GAMMA-RAY, SELF POTENTIAL, POINT RESISTIVITY.

DATE: 2-5-73 TIME: 1210 / 1145 / 1145 /

: QUINYAMBIE LOCATION: Lat.

: QDH 302

ELEVATION G.L.: Log from 0 metres above G.L. Depth Scale: 1cm

RUN NUMBER: / / / / / /

CASING SHOE DEPTH (cm): LOG metres DRILL metres TOTAL DEPTH: LO
DR

MUD: Type RESISTIVITY: 2·5 Ohm metres @ 17 °C

OPERATING TI ins/ 20mins/ 20mins/ /

RECORDED BY: [illegible]

REMARKS:

2257-19

SOUTH AUSTRALIAN DEPARTMENT OF MINES

GEOLOGICAL SURVEY

TYPE OF LOG (S): GAMMA-RAY, SELF POTANTIAL, POINT RESISTIVITY

DATE: 6-5-73 TIME: 1130/ 1150 / 1150/

AREA: QUINYAMBIE LOCATION: Lat. Lo

HOLE: QDH 206

ELEVATION G.L.: Log from 0 metres above G.L. Depth Scale: 1cm re

RUN NUMBER: / /

CASING SHOE DEPTH (cm): LOG metres DRILL metres TOTAL DEPTH: LOG DRIL

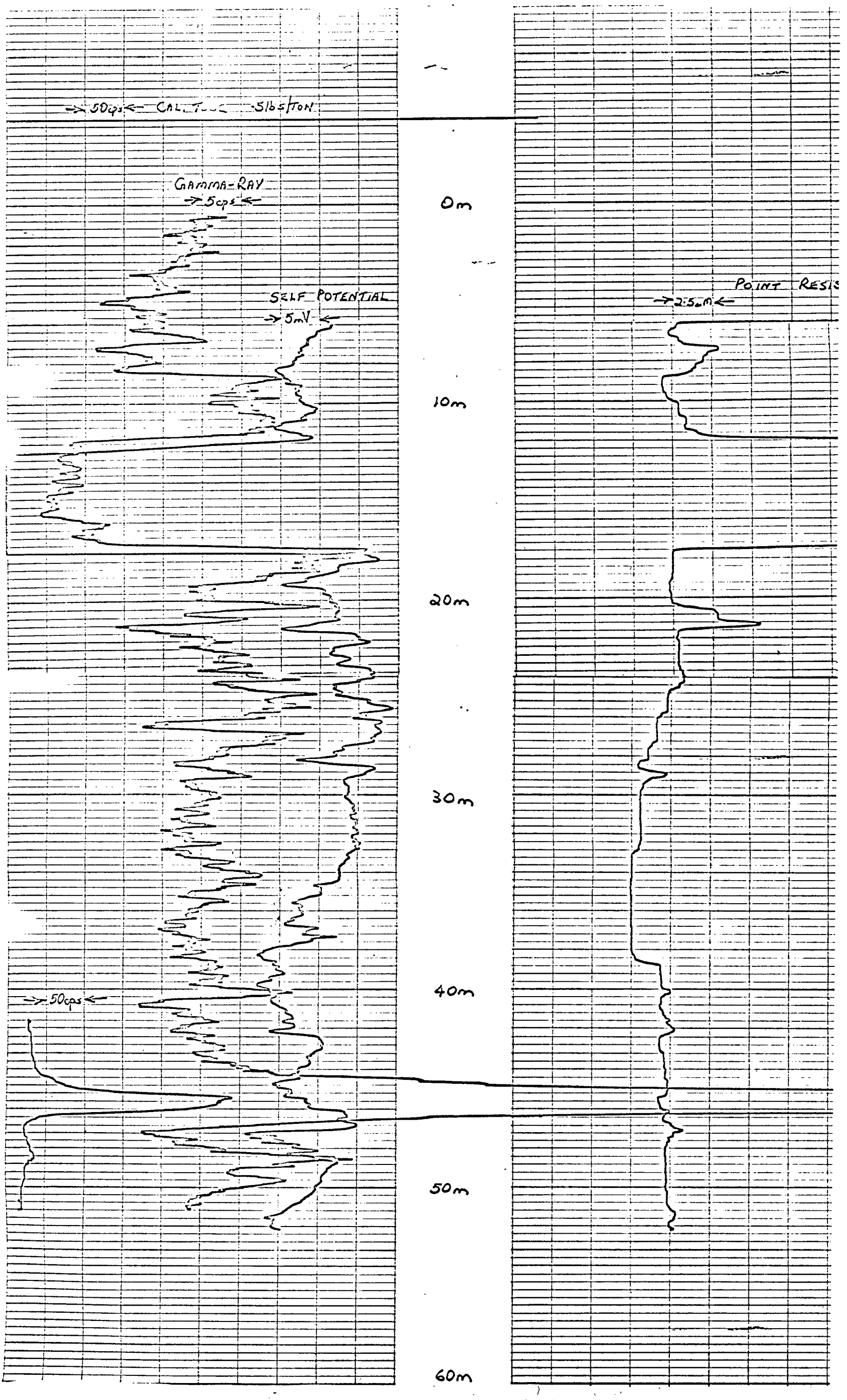
MUD: Type RESISTIVITY: Ohm metres @ °C

CIRCULATING TIME: 20mins/ 15mins/ 15mins/ /

RECORDED BY: LKWest

REMARKS:

2257-20



SOUTH AUSTRALIA

GEOLOGICAL SURVEY

TYPE OF LOG (S): GAMMA-RAY, SELF POTENTIAL, POINT RESISTIVITY

DATE: 2-5-73 TIME: 17?/ 1710 /1710 /

AREA: QUINYAMBIE LOCATION: Lat. I

WELL: QDH 303

ELEVATION G.L.: Log from 0 metres above G.L. Depth Scale: 1cm =

RUN NUMBER: / / / / / /

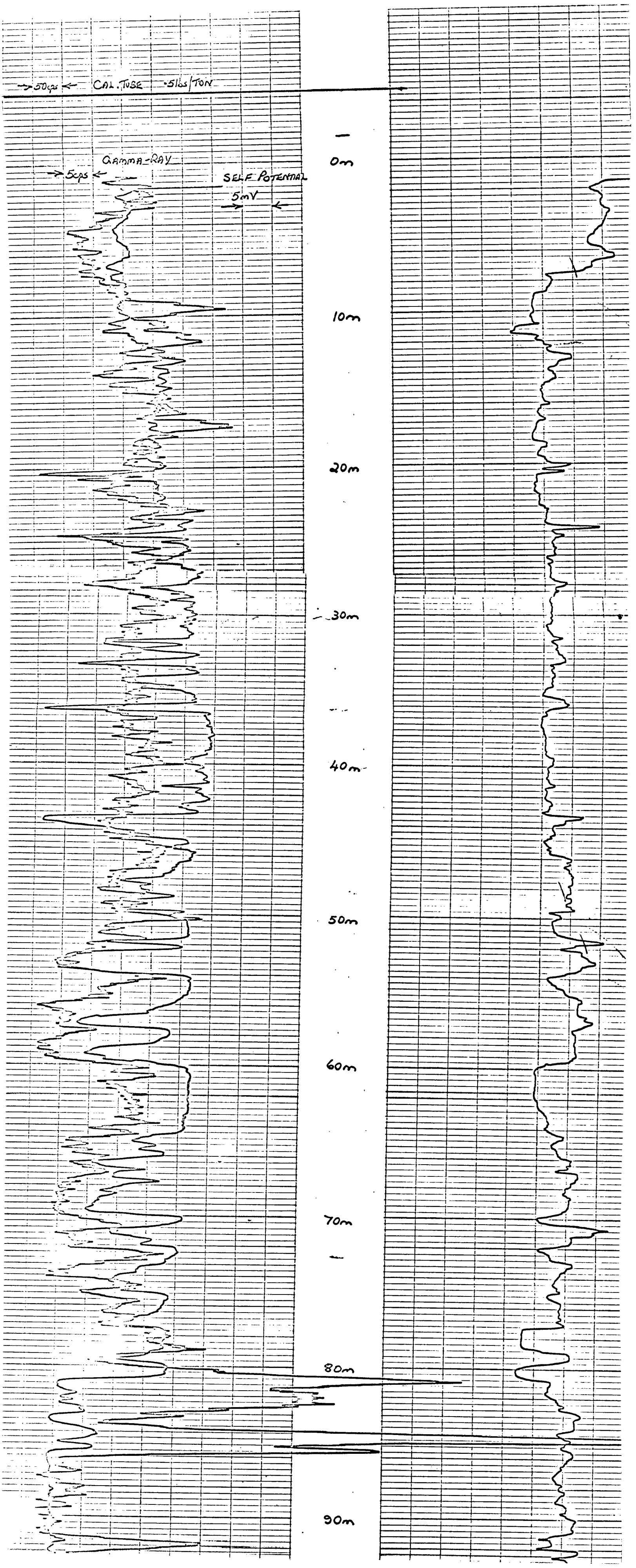
CASING SHOE DEPTH (cm): LOG metres DRILL metres TOTAL DEPTH: LOG DR

MUD: Type RESISTIVITY: Ohm metres @ °C

OPERATING TIME: 25mins/20mins/20mins /

RECORDED BY: LK West

REMARKS: 2257-21



SOUTH AUSTRALIAN DEPARTMENT OF MINES

GEOLOGICAL SURVEY

TYPE OF LOG (S): GAMMA, RAY, SELF POTENTIAL, POINT RESISTIVITY.

DATE: 3-5-73 TIME: 1400/ 1340/ 1340/

AREA: QUINYAMBIE LOCATION: Lat.

WELL: QDH304

ELEVATION G.L.: Log from 0 metres above G.L. Depth Scale: 1cm

RUN NUMBER: 1 / 1 / 1 / /

CASING SHOE DEPTH (cm): LOG metres DRILL metres TOTAL DEPTH: LO DR

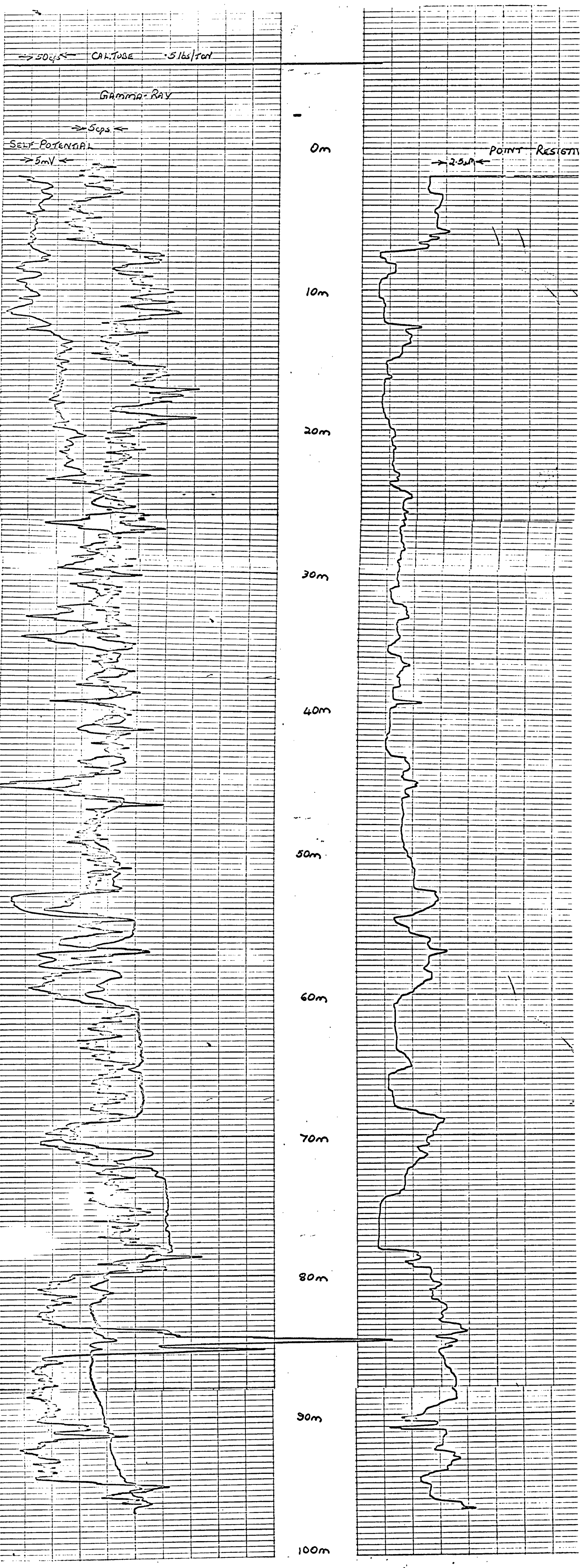
MUD: Type RESISTIVITY: Ohm metres Ω °C

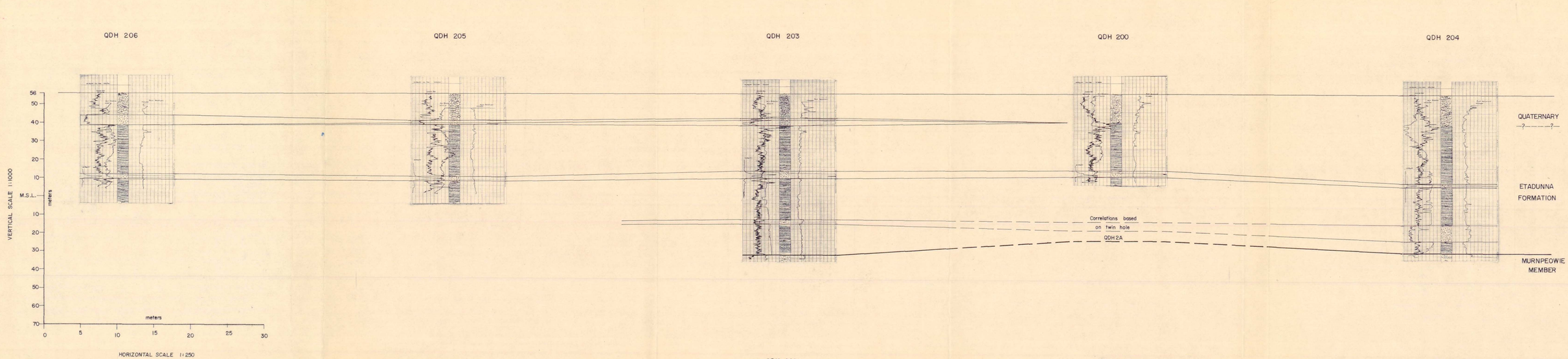
OPERATING TIME: 25mins/20mins/20mins /

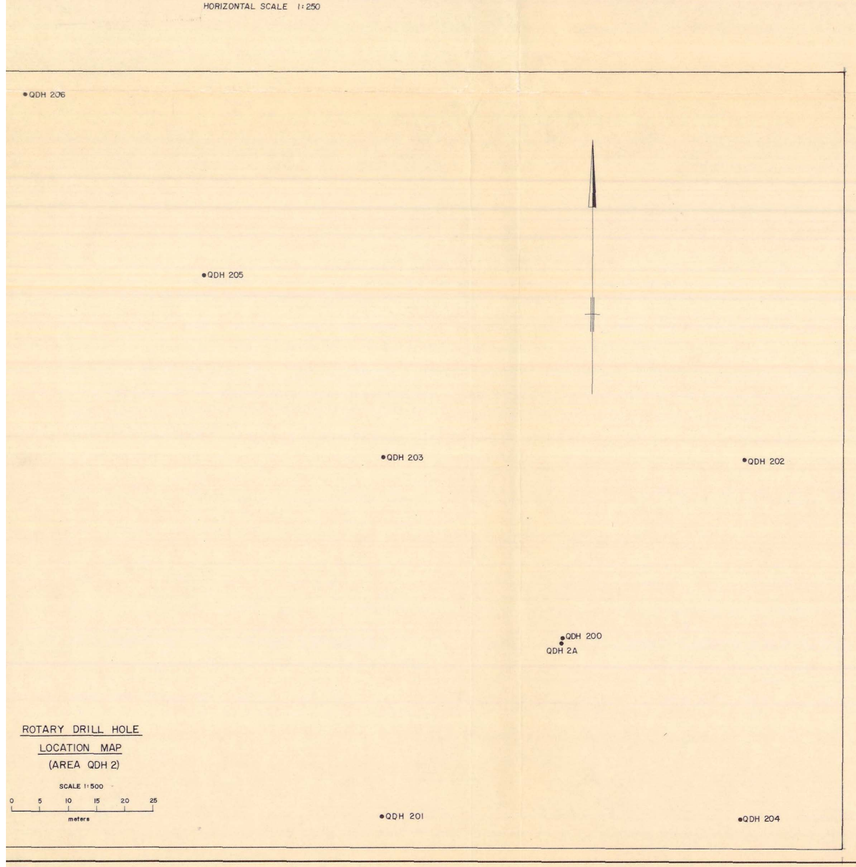
RECORDED BY: LKWest

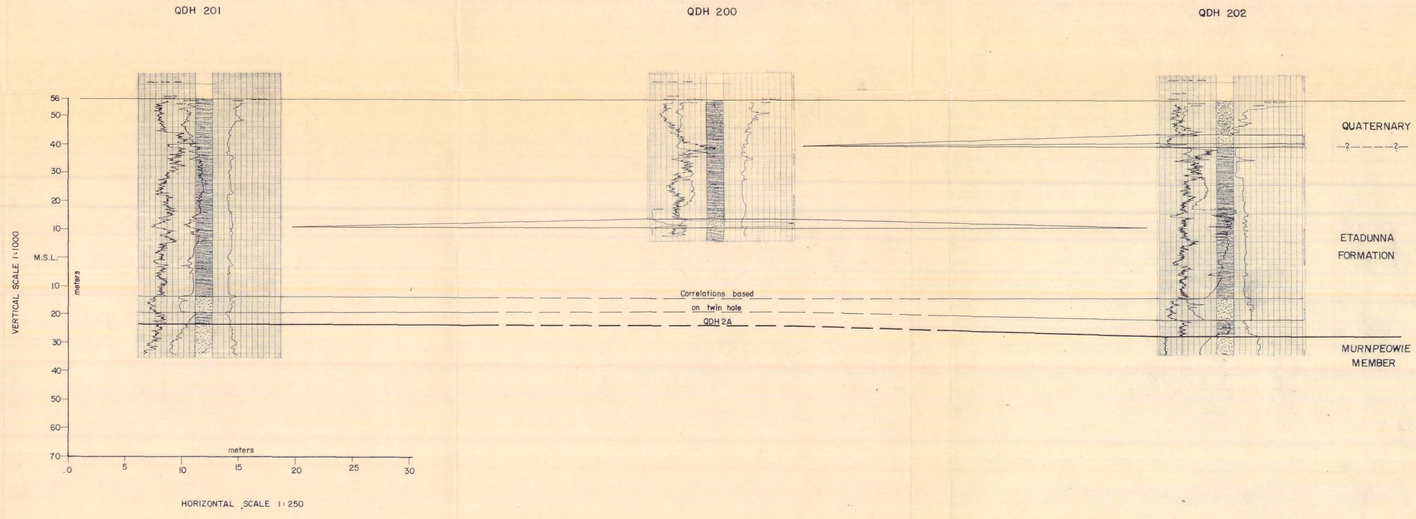
REMARKS:

2257-22









2257-2

CHEVRON EXPLORATION CORPORATION

QUINYAMBIE PROJECT E.L. 40

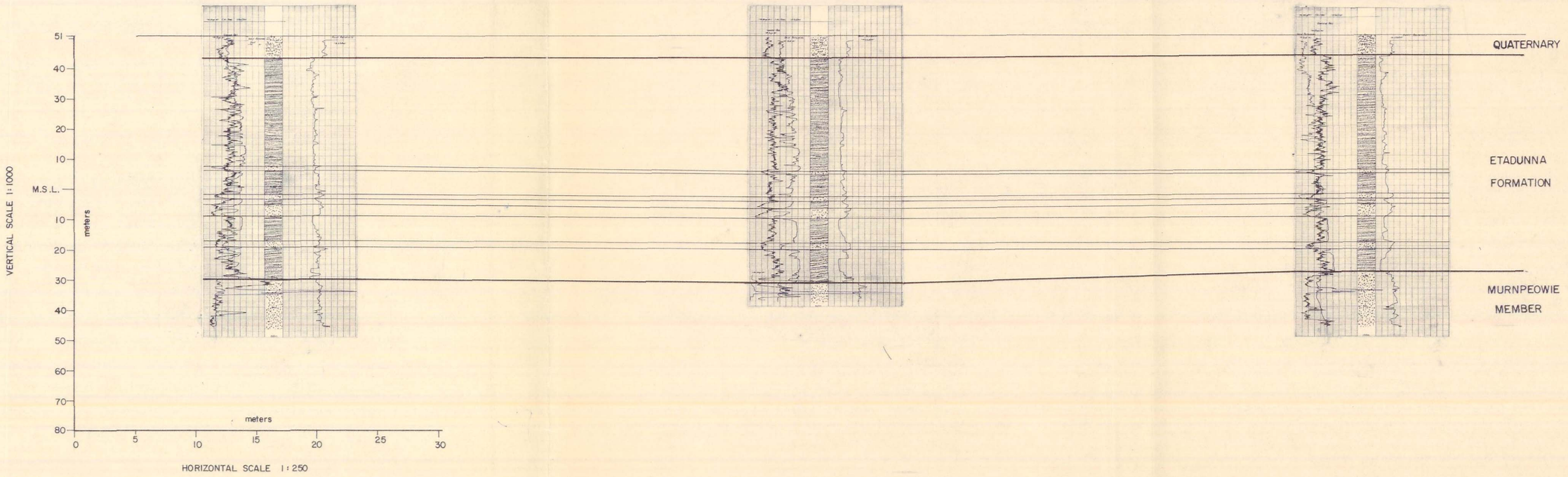
DETAILED ROTARY DRILLING AREA QDH 2

STRATIGRAPHIC CROSS SECTION 1 & SURFACE PLAN

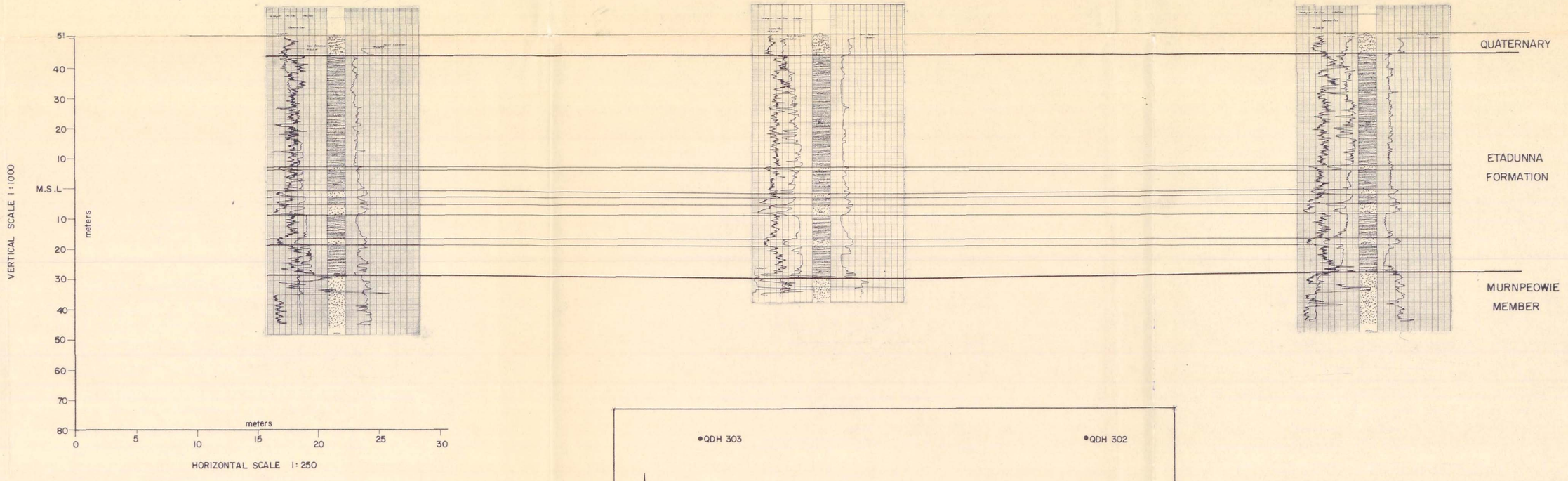
AUTHOR : P.J. MORGAN

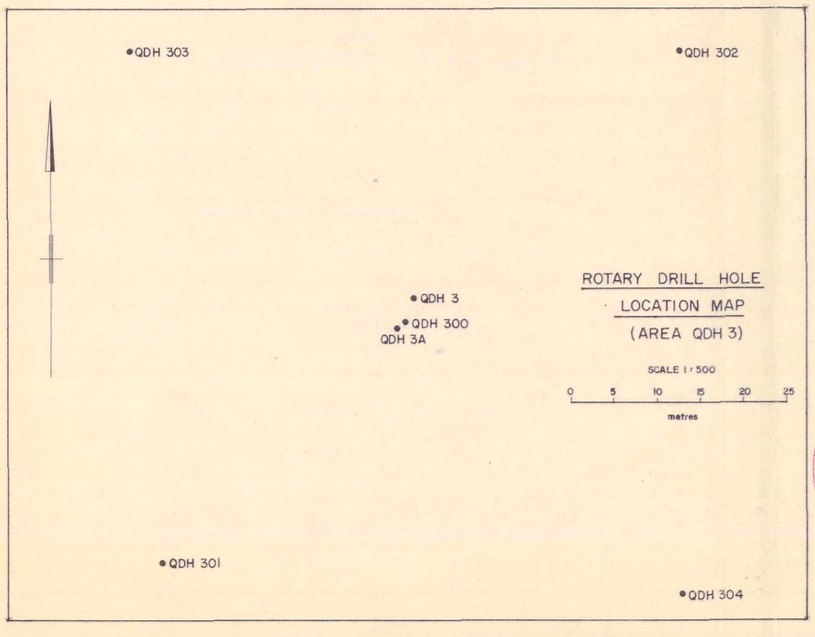
DRAWN	DATE	SCALE	REVISED	DRAWING NUMBER
R.J.P.	May 73	As shown		

QDH 303 QDH 300 QDH 304



QDH 301 QDH 300 QDH 302





2257-3

CHEVRON EXPLORATION CORPORATION

QUINYAMBIE PROJECT E.L. 40

DETAILED ROTARY DRILLING AREA QDH 3

STRATIGRAPHIC CROSS SECTION 2

&

SURFACE PLAN

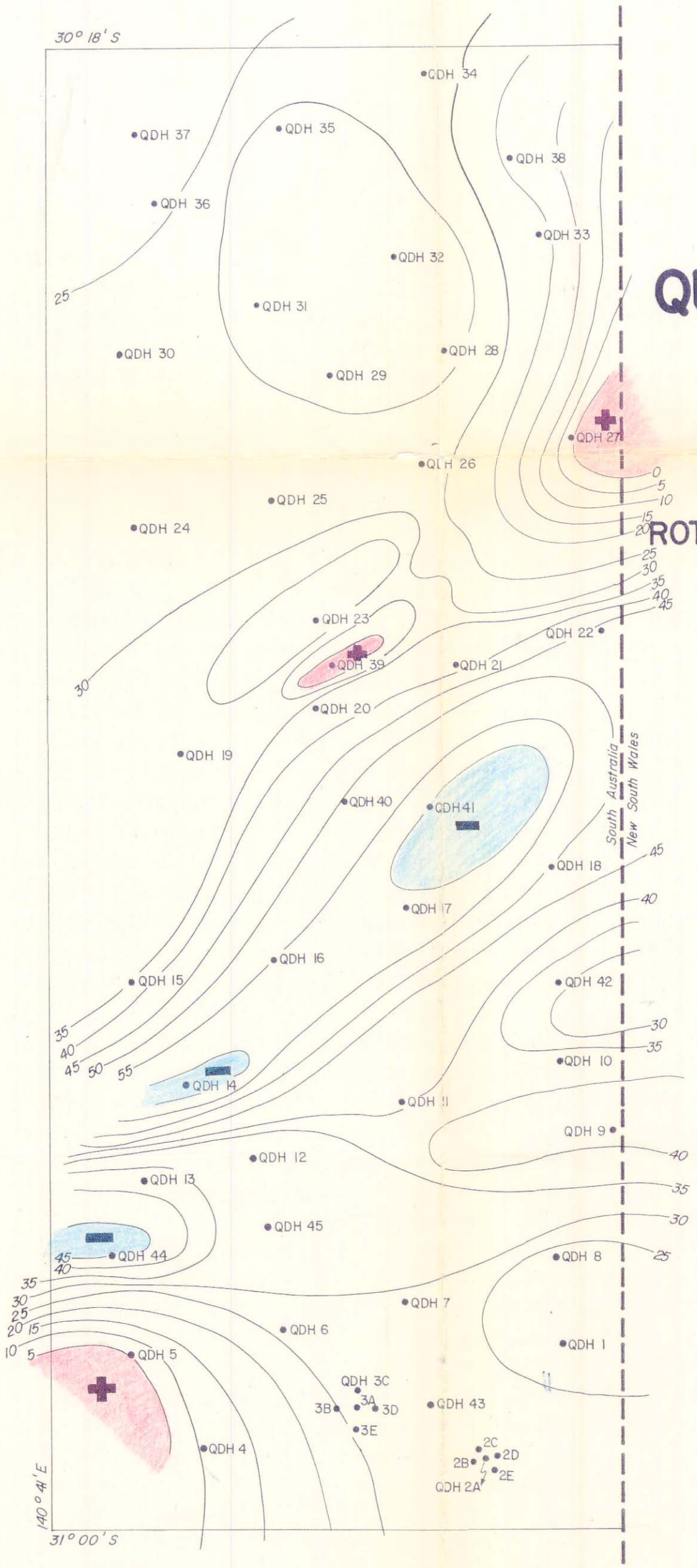
AUTHOR : P.J. MORGAN

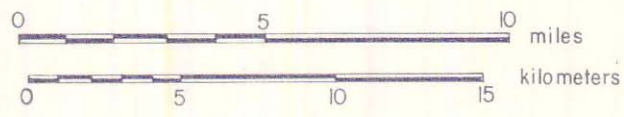
DRAWN	DATE	SCALE	REVISED	DRAWING NUMBER
R.J.P.	MAY 73	As shown		

QUINYAMBIE PROSPECT

SOUTH AUSTRALIA

ROTARY DRILL HOLE LOCATION MAP



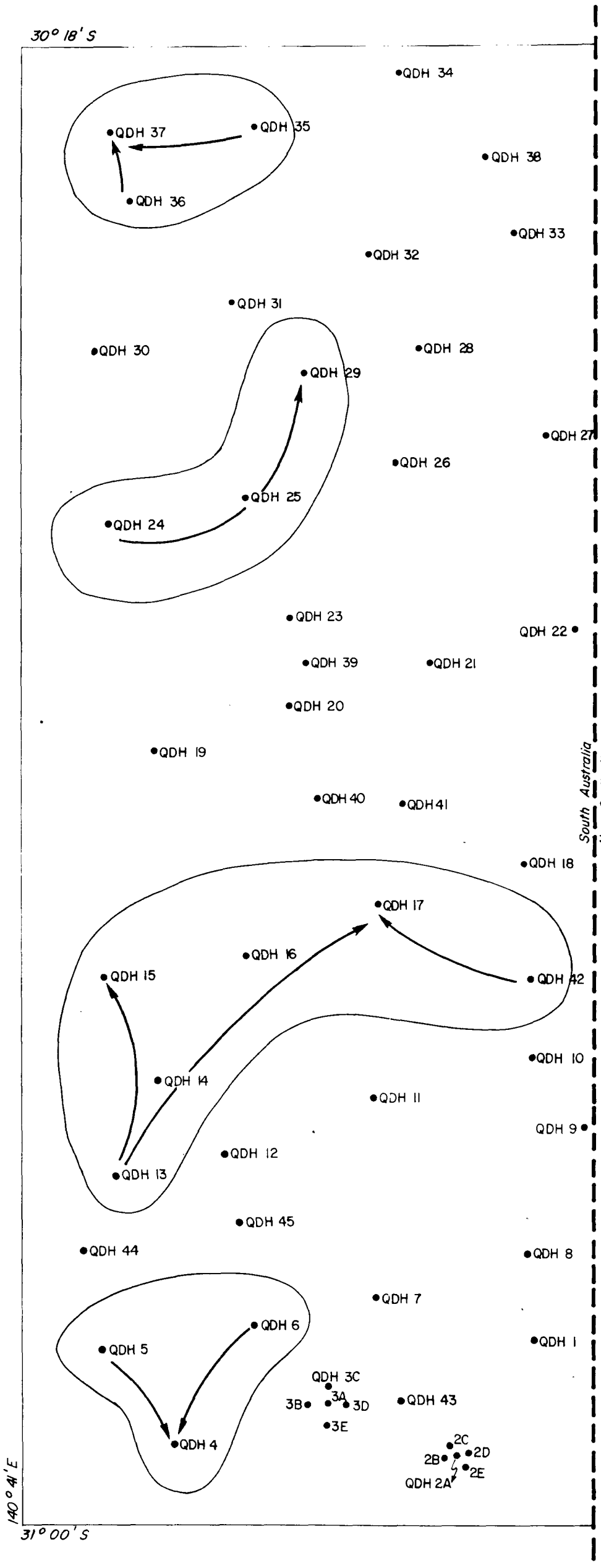


SCALE 1: 250,000

STRUCTURAL MAP
TOP OF MURNPEOWIE MEMBER
BELOW M.S.L.

2257-4

FIGURE 1.



N

QUINYAMBIE PROSPECT

SOUTH AUSTRALIA

ROTARY DRILL HOLE LOCATION MAP

0 5 10 miles

0 5 10 15 kilometers

SCALE 1: 250,000

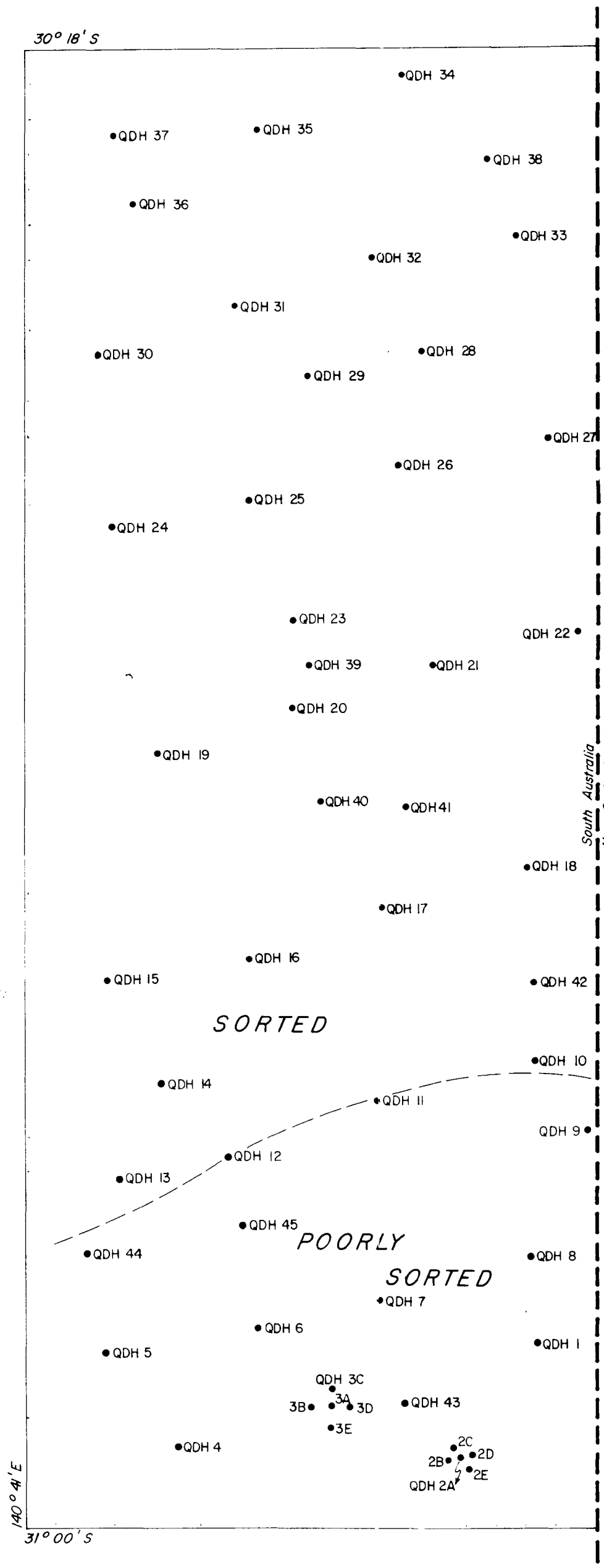
Areas containing lignite and lignitic sands

Direction of increase of carbonaceous matter

ETADUNNA – MURNPEOWIE SAND CARBONACEOUS CONTENT (LIGNITE)

2257-5

FIGURE 2



N

QUINYAMBIE PROSPECT

SOUTH AUSTRALIA

ROTARY DRILL HOLE LOCATION MAP

0 5 10 miles

0 5 10 15 kilometers

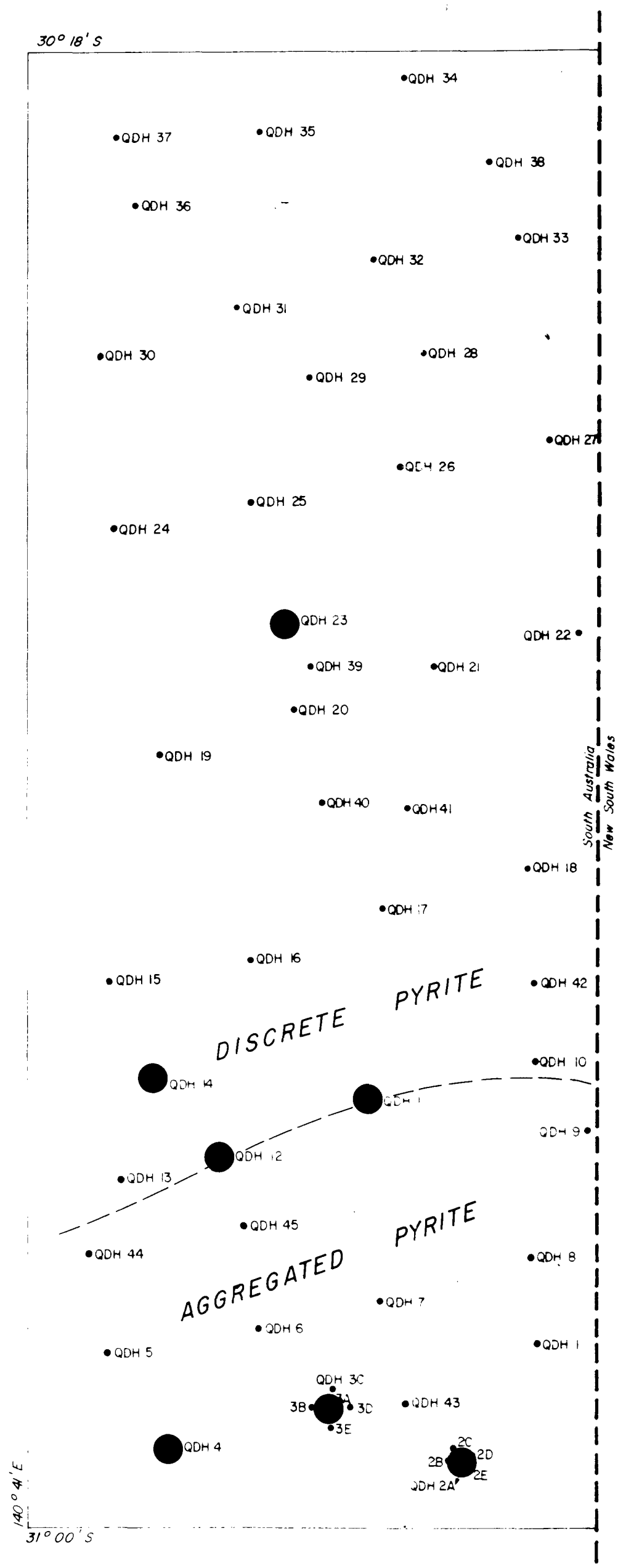
SCALE 1: 250,000

ETADUNNA – MURNPEOWIE SAND

(sorting)

2257-7

FIGURE 4.



N

QUINYAMBIE PROSPECT

SOUTH AUSTRALIA

ROTARY DRILL HOLE LOCATION MAP

0 5 10 miles

0 5 10 15 kilometers

SCALE 1:250,000

Magnetite

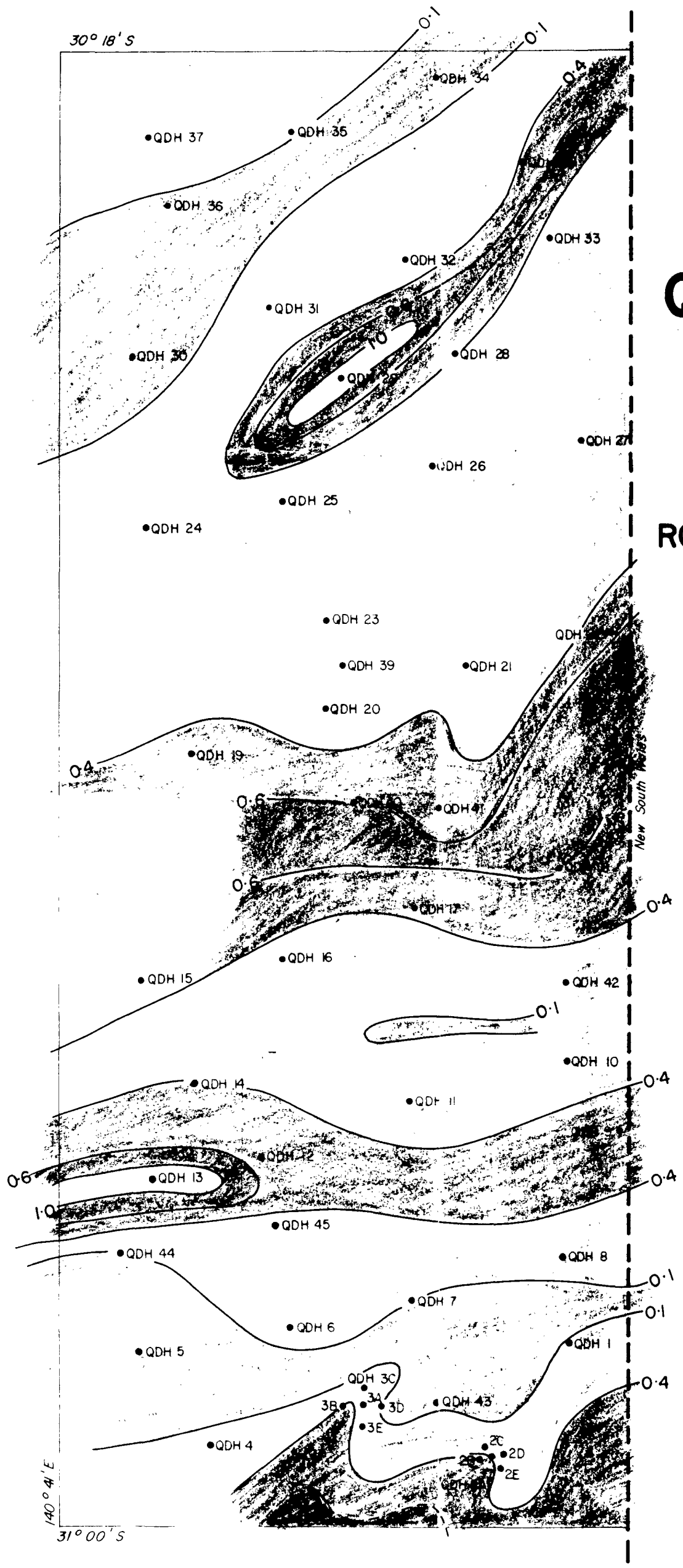
ETADUNNA - MURNPEOWIE SAND

(magnetite content – pyrite form)

2257-8

FIGURE 5.

5/A1-51/000-092



N

QUINYAMBIE PROSPECT

SOUTH AUSTRALIA

ROTARY DRILL HOLE LOCATION MAP

0 5 10 miles

0 5 10 15 kilometers

SCALE 1:250,000

SAND - CLAY RATIO

- ⩾ 1·0
- 0·6 - 1·0
- 0·4 - 0·6
- 0·1 - 0·4
- ⩽ 0·1

SAND - CLAY RATIO : ETA[illegible]NNA FM.

50m. slice above M[illegible]peowie sand.

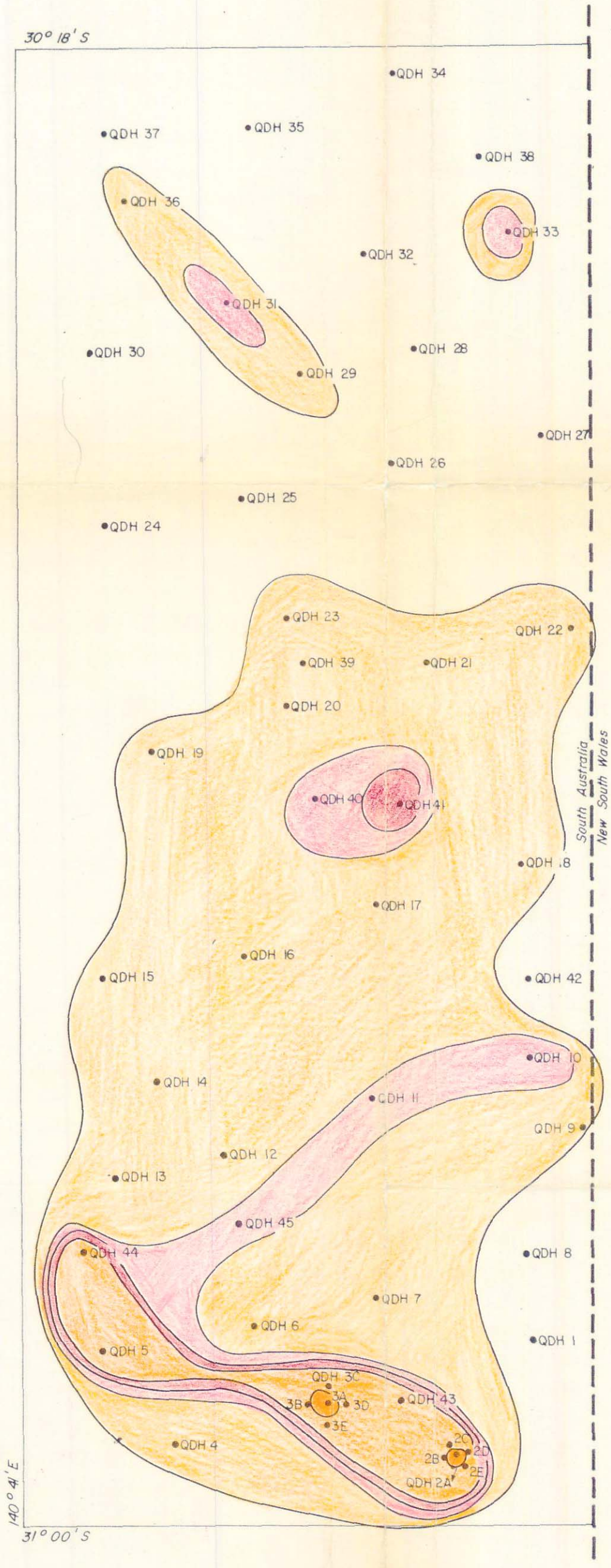
2257-9

FIGURE 6.

QUINYAMBIE PROSPECT

SOUTH AUSTRALIA

ROTARY DRILL HOLE LOCATION MAP



N

0 5 10 miles

0 5 10 15 kilometers

SCALE 1: 250,000

LEGEND

- 1·0 + 16 / ton U_3O_8 (relative)
- 0·75 - 1·0
- 0·50 - 0·75
- 0·25 - 0·50
- 0 - 0·25

(Calculated relative to probe calibration i.e. 1·76 lbs. / ton U_3O_8)

RADIOACTIVITY INTERSECTIONS

FIGURE 7.

ORE
RATION)
Bore

LE 1

W = 95 cps (x 2½) at 32 m

W = 125 cps (x 3) at 34·8 m

T.D. 147·6 m

LE 2

T.D. 157·4 m

LE 3

T.D. 166·4m

LE 4

T.D. 157·6 m

LE 5

W = 93 cps (x3) at 37 m

W = 98 cps (x2½) at 120·2 m

T.D. 166·8 m

LE 6

T.D. 147·2 m

LE 7

W = 138 cps (x 9½) at 46·6 m

W = 1061 cps (x 9½) at 58·9 m

T.D. 159·2 m

LE 8

T.D. 140·6 m

REFERENCE

TERTIARY – RECENT

- Sand
- Silt
- Clay
- Gypsum
- Limestone, marl
- Carbonaceous material, lignite
- Pyrite
- Pebbles

BASEMENT ROCKS

- Cretaceous – Winton Formation(?) – silty clays, carbonaceous silts, shales.
- Cretaceous (?) – Undifferentiated – silty clays.
- Cambrian – Undifferentiated – Frome Group (?) – mauve, carmine shales, argillites.
- Cambrian – Undifferentiated – Frome Group (?) – crystalline limestone.
- Cambrian – Pre Cambrian – Undifferentiated – siliceous metamorphics.
- Pre Cambrian – Undifferentiated – quartz-felspar porphyry.

- Unconformity (?) – base of red-brown oxidised sand-clay (recent)
- Unconformity (?) – top of Etadunna Formation – limestone, marl and clays.
- Unconformity – top of Eyre Formation – sands, clays.
- Unconformity – top of Cretaceous – Winton Formation (?)
- Unconformity – top of Cambrian – Pre Cambrian sediments, volcanics, metamorphics.

VERTICAL SCALE
1 centimetre = 5 metres

30
20
10

800 600 400 200

HORIZONTAL SCALE
1 centimetre = 100 metres

ENV 2392(I) – 2

TRICENTRO

CR

SHO
LAKE

DATE JULY, 1973

SCALE 1:500 V, 1:10,0