Open File Envelope No. 3973

EL 670, EL 687, EL 688, EL 1032 AND EL 1054

MCLACHLAN, TUCKEY, SHERINGA AND LOCK, POLDA BASIN

PROGRESS AND FINAL REPORTS TO LICENCE SURRENDER FOR THE PERIOD 8/7/80 TO 15/5/85

Submitted by
CRA Exploration Pty Ltd
1985

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Enquiries: Customer Services
Ground Floor
101 Grenfell Street, Adelaide 5000

Telephone: (08) 8463 3000
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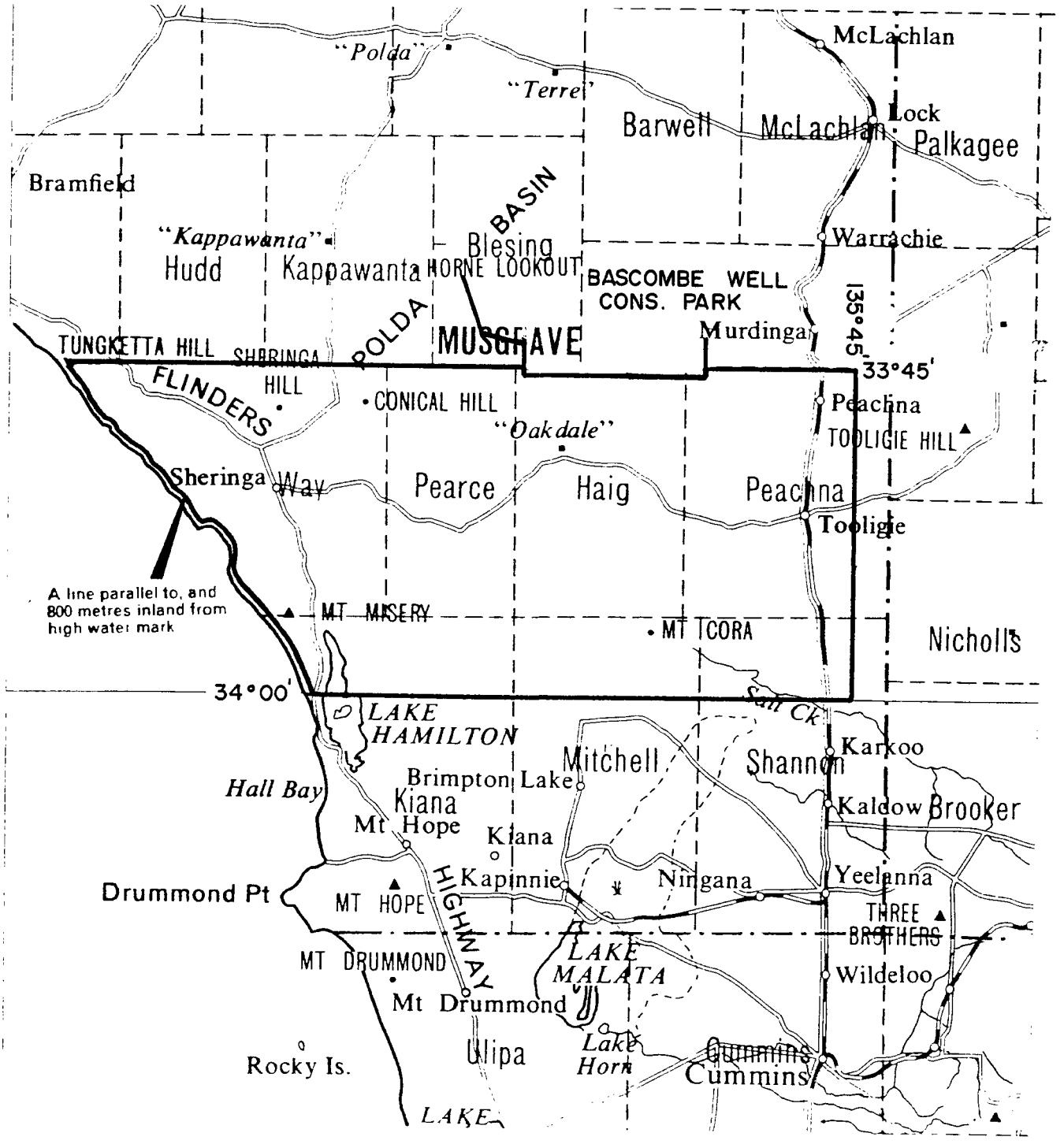
SCHEDULE A



EXPIRED

SCALE 1:500,000

KILOMETRES 10 0 10 20 30 40 50 KILOMETRES

APPLICANT: C.R.A. EXPLORATION PTY. LTD.

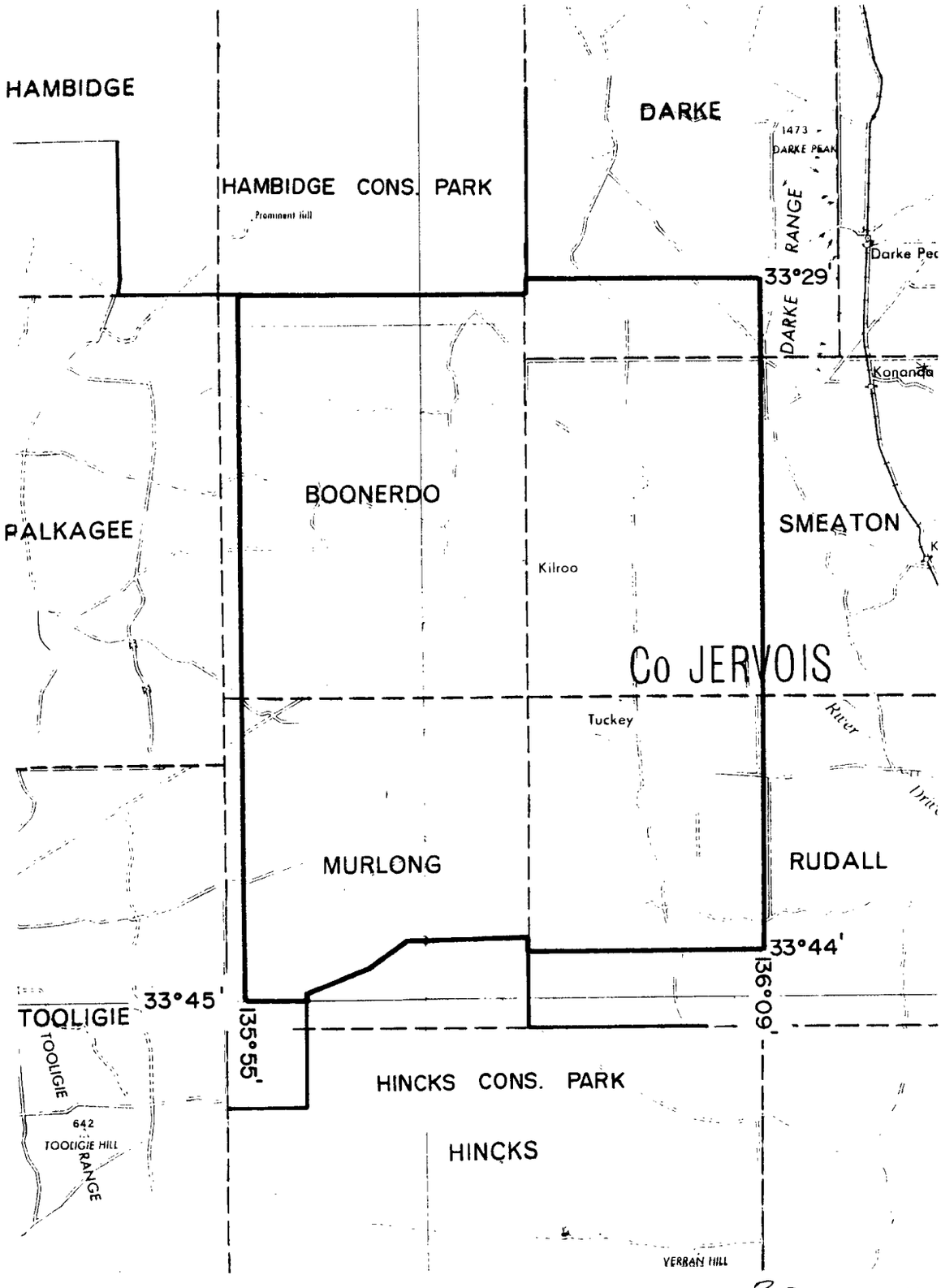
DM: 124/80 AREA: 1496 square kilometres

1:250000 PLANS: KIMBA

LOCALITY: SHERINGA AREA — APPROX 110 km N.W. of PORT LINCOLN

DATE GRANTED: 11-8-80 DATE EXPIRED: 10-8-81 EL No: 688

SCHEDULE A



PORTION ONLY
RE-AP 226/82

SCALE 1:250,000

KILOMETRES 5 0 5 10 15 20 25 KILOMETRES

EXPIRED

APPLICANT: C.R.A. EXPLORATION PTY. LTD.

DM: 123/80

AREA: 600 square kilometres

1:250000 PLANS: KIMBA

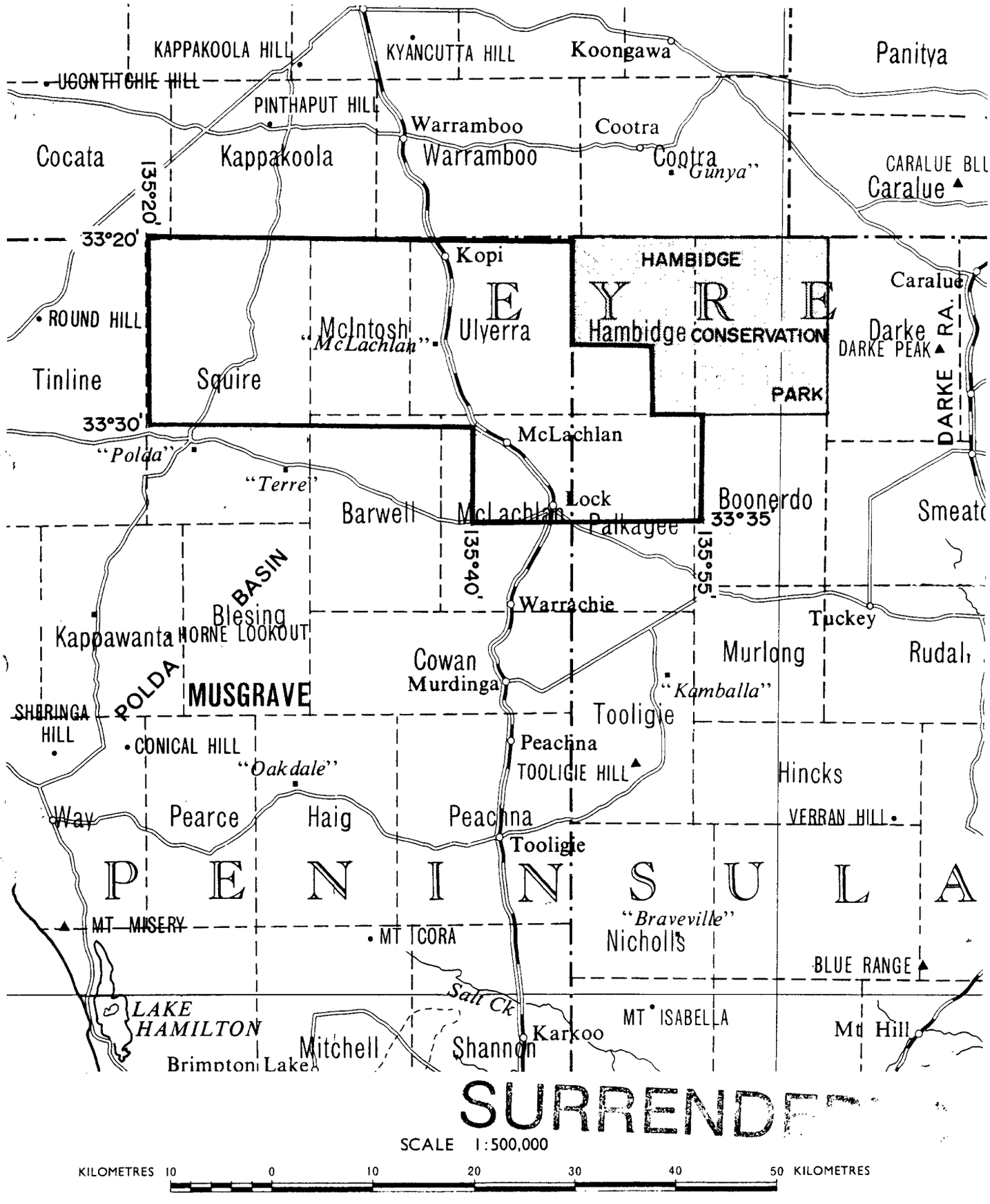
LOCALITY: TUCKEY AREA — APPROX. 120 km NORTH of PORT LINCOLN

DATE GRANTED: 11-8-80

DATE EXPIRED: 10-8-82

EL No: 687

SCHEDULE A



SCALE 1:500,000

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APPLICANT: CRA EXPLORATION PTY. LIMITED

DM: 210/82 AREA: 1050 square kilometres **approximately**

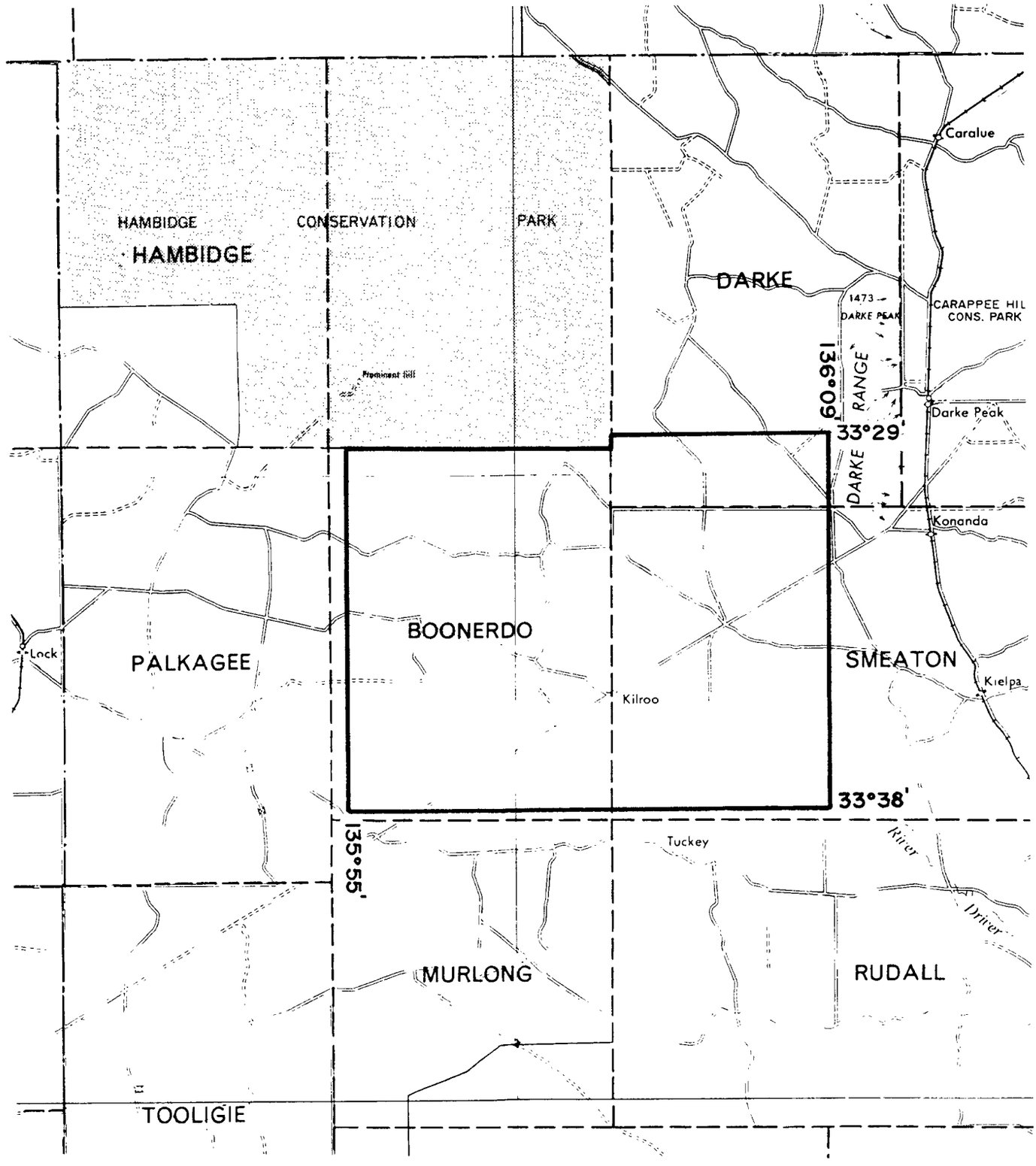
1:250000 PLANS: KIMBA

LOCALITY: LOCK AREA - CENTRAL EYRE PENINSULA

DATE GRANTED: 7·9·82 DATE EXPIRED: 6·9·83

EL No: 1032

SCHEDULE A



SCALE 1:250,000

KILOMETRES 5 0 5 10 15 20 25 KILOMETRES

APPLICANT: CRA EXPLORATION PTY. LIMITED

DM: 226/82 AREA: 355 square kilometres approximately

1:250000 PLANS: KIMBA

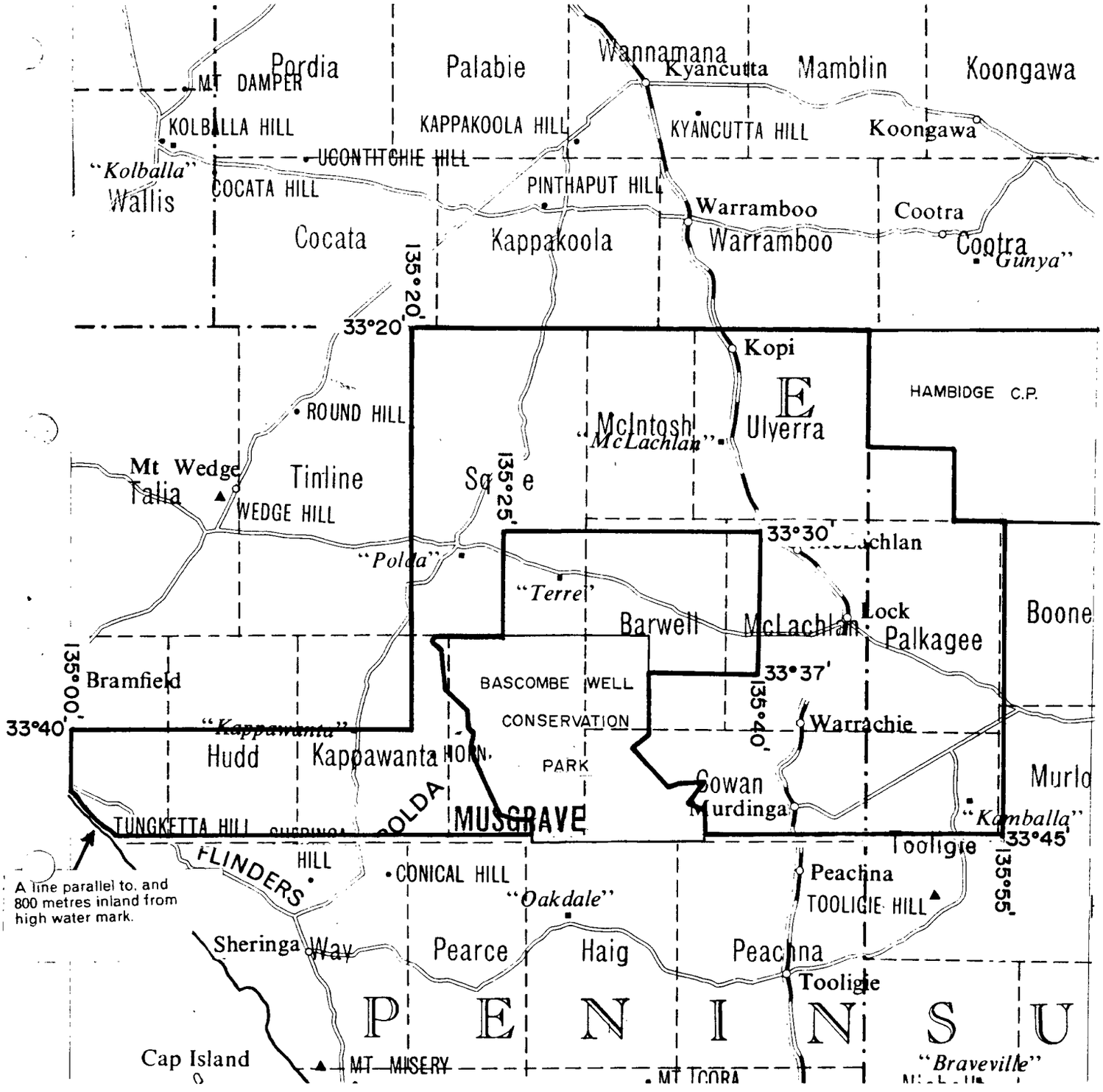
SURRENDERED 15.5.85

LOCALITY: TUCKEY AREA – Approximately 120km north of Port Lincoln

DATE GRANTED: 19-10-82 DATE EXPIRED: 18-10-83 18-10-84

EL No: ~~1054~~

SCHEDULE A



A line parallel to, and 800 metres inland from high water mark.

EXPIRED

part keep!

SCALE 1:500,000

KILOMETRES 10 0 10 20 30 40 50 KILOMETRES

EXPIRED

APPLICANT: C.R.A. EXPLORATION PTY. LTD.

DM: 709/79

AREA: 2072 square kilometres

1:250000 PLANS: KIMBA

LOCALITY: LOCK AREA — CENTRAL EYRE PENINSULA

DATE GRANTED: 7-7-80

DATE EXPIRED: 6-7-81

EL No: 670

C.R.A. EXPLORATION PTY. LIMITED

0003

FIRST QUARTERLY REPORT ON POLDA BASIN, SOUTH AUSTRALIA. MCLACHLAN E.L. 670 FOR THE PERIOD ENDING OCTOBER 7, 1980, TUCKEY E.L. 687, SHERINGA E.L. 688 FOR THE PERIOD ENDING NOVEMBER 11, 1980.

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SUBMITTED BY: M Flitcroft M.J.N. FLITCROFT

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DATE: NOVEMBER 14, 1980

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0004

1. SUMMARY

Interest in the area of E.L.'s McLachlan E.L. 670, Tuckey E.L. 687 and Sheringa E.L. 688 in the Polda Basin was generated by the Lock Coalfield in the central position, the possible development of Jurassic and Eocene coal elsewhere in the basin and the presence of possibly prospective Permian sediments.

Exploration activity to November 11, 1980 involved a survey of previous investigations to determine prospective areas containing well developed carbonaceous facies, a detailed gravity survey to augment existing gravity data and rotary mud and rotary core drilling to test those areas outlined by the above investigations.

These investigations found the Permian to be non-prospective. Four areas required testing by reconnaissance rotary drilling programs.

During this drilling program significant coal intersections were made, including 8.9 metres of lignite in hole 80LRM5. The areas surrounding these groups of coaliferous holes are recommended for further rotary mud drilling.

A sub-basin in the east of Tuckey E.L. was inferred from interpretation of the detailed gravity survey and a fault was relocated.

Only qualitative data was obtained from the rotary mud drilling samples making coring of interesting coal intersections and geophysical borehole logging essential.

A gamma peak was encountered in hole 80LRM39. Uranium analyses are awaited.

2. CONCLUSIONS

2.1

0006

Coal was intersected in almost every hole to the east of E.L. 434. An 8.9 metre seam of Tertiary lignite was intersected in hole 80LRM5 and its adjacent core hole 80L5C. Significant individual and stacked seams of coal, both Tertiary and Jurassic, were intersected in holes 80LRM 6,8,9 in the vicinity of hole 5, on the northern basin margin, 80LRM 16, 18,19,20 on the south-eastern basin margin, 80LRM29 north-west of Lock and 80LRM30, 31 to the west of Lock Coalfield.

2.2

The maximum development of lignite appears to be located in the main Polda Trough. Reconnaissance drilling in the west of McLachlan and in Sheringa E.L.'s downgraded lignite potential in these areas. Previous investigations found the Permian to be non-coal bearing.

2.3

Gamma logs of hole 80LRM39 indicates potential for sandstone uranium deposition. Assays are awaited.

2.4

Interpretation of two detailed gravity survey lines indicates a sub-basin in the north of the Tuckey E.L. The northern basin margin fault was repositioned further south.

2.5

Rotary mud drilling provides only qualitative information on sub-surface lithologies. Contamination of sample returns is a difficult problem which necessitates an attendant downhole geophysical logging unit capable of providing at least caliper, density, natural gamma and neutron logs and if possible self potential and resistance logs.

2.6

0007

Core drilling of coal intersections of interest adequately tested the accuracy of sample logs and geophysical borehole logs.

3. RECOMMENDATIONS

3.1

A closer spaced rotary mud and core drilling program is recommended to further test the potential of the following areas:

a. Northern basin margin between holes 80LRM 5 and 9

b. West of the Lock Coalfield, surrounding holes 80LRM 30 and 31

c. Southern basin margin in the south of Tuckey E.L. near holes 80LRM 18, 19 and 20

d. The northern part of the basin surrounding hole 80LRM29

e. Central area surrounded by holes 80LRM 13, 14, 27 and 24 as yet untested

3.2

Core drilling should supplement rotary mud drilling to obtain qualitative data in the above areas. Wireline coring techniques should be used to expedite drilling of cored holes as well as improve sample recovery.

4. INTRODUCTION

The three E.L.'s McLachlan E.L. 670, Tuckey E.L. 687 and Sheringa E.L. 688 are the subject of this report. These E.L.'s have been considered as a whole during exploration activities in the Polda Basin and although the McLachlan E.L. first quarter ends on October 7, 1980, reporting on all three E.L.'s is combined to present a complete picture.

These three exploration licences stretch from Sheringa on the west coast of Eyre Peninsula, through Lock to Rudall and are shown on plan no. 6.

C.R.A. Exploration (C.R.A.E.) was granted Tuckey E.L. 687, of 600 square kilometres, and Sheringa E.L. 688 of 1496 square kilometres on August 11, 1980, and McLachlan E.L. 670 of 2072 square kilometres on July 7, 1980. Annual expenditure commitments entail a total of $135,000 consisting of $25,000, $50,000 and $60,000 for E.L.'s Tuckey, Sheringa and McLachlan respectively. Each of the E.L.'s has been granted for a period of one year.

Interest in this area was generated by existence of the Lock Coalfield held by the Electricity Trust of South Australia (E.T.S.A.). The obvious possible extensions to this field, likelihood of other Jurassic sub-basins, references to overlying Tertiary lignites, and the presence of possibly prospective Permian sediments underlying Jurassic sediments in the Polda trough, led to C.R.A.E.'s applications for the above tenements in late 1979.

Literature research, which included evaluation of water bore records and on-shore open file information from 211 exploration drillholes by earlier sandstone uranium explorers, indicated the Polda Basin was more extensive eastwards than generally recognised and that significant coal development occurred at least in the Tuckey E.L., an area serviced by abundant roads and a railway.

The majority of the previous 211 drillholes were located east of the Lock Coalfield. Several significant coal intersections were made namely in holes LDH32, L1, P21, LDH11 and LDH41.(See plan no. 1). Hydrocarbons were recorded at depth in holes LDH11, LDH10 and LDH17. Shallow lignitic horizons (probably Tertiary) were intersected on the flanks of basement highs and in the centre of the basin and in places approach economic thicknesses (e.g. holes RX3A, RX9, LDH23, LDH37, LDH40, LDH41). These were not followed up. Interesting intersections of middle Eocene lignite from 40 to 62 metres were reported in Polda Stratigraphic Hole No. 1 by the South Australian Department of Mines and Energy (S.A.D.M.E.). Cretaceous coal intersections were recorded in Potoroo-1 well drilled in the Great Australian Bight Basin at the western, seaward extension of the Polda Trough.

This report covers exploration activity during the first quarter to November 11, 1980.

5. REGIONAL GEOLOGY

0009

Stratigraphy of the Polda Trough region is summarised in Table 4.1. Preliminary mapping has been carried out over the area by the S.A.D.M.E. at a scale of 1:250 000. Regional gravity, resistivity and seismic surveys have also been conducted over the E.L.'s by the S.A.D.M.E.

The landward part of the Polda Basin is shown by gravity and aeromagnetic surveys to extend from Elliston on the west coast of the Eyre Peninsula to Darke Peak in the east. It is a narrow graben-like intracratonic basin elongated east-west in Precambrian crystalline basement rocks of the Gawler Block. The northern margin of the basin is block faulted. Fraser and Tilbury (1979) suggest that the Polda Trough formed during Palaeozoic rifting along Australia's southern continental margin eventually leading to the breakup and separation of the Australian and Antarctic plates during the Eocene.

Basement lithology in the region varies. Drilling by Chevron Exploration Corporation identified schists of the ?Archean Warrow Quartzite and highly weathered granites of the Buckleboo Granite and Burkitt Granite equivalents in the eastern section of the Trough.

?Archean granites and metamorphics of the Darke Peak Range and Carrapee Hill form the eastern boundary of the Trough. ?Precambrian conglomerates and sands of the Pandurra Formation outcrop at Mt. Wedge to the west and Tooligie Hill to the south.

Polda 1 and Lock 1 stratigraphic holes drilled by the S.A.D.M.E. showed probable Permian diamictites, consisting of stiff brown and green clays with a variety of weathered granitic and metamorphic fragments, underlying Jurassic sediments. Neither hole entered the Precambrian. This Permian unit has an indicated thickness of more than 150 metres, and is correlated with the lower Permian of the Arckaringa Basin. No coal bearing sediments are known in the Permian.

Palynological investigations of drill core from Polda No. 1 stratigraphic hole indicated a late Jurassic age for the "Polda" Formation (Harris & Foster, 1972) which overlies the diamictites. This Formation consists of grey poorly sorted interbedded medium to coarse and fine to medium grained sands, dark grey to black highly carbonaceous fine sands silts and lignites deposited in fluviatile and paludal environments with periodic marine incursions. Four major arboreal advances were indicated in Harris and Foster's study. The Polda Formation has a probable maximum thickness of 90-120 metres and hosts the E.T.S.A. coal deposit which is believed to be of the order of 150 million tonnes.

TABLE 4.1 STRATIGRAPHY OF THE POLDA BASIN REGION

	AGE		NAME	ROCK UNIT	THICKNESS (metres)	LITHOLOGY	STRATIGRAPHIC RELATIONS	EXPRESSION
CAINOZOIC	Quaternary	Pleistocene		Bridgewater Formation	30m	Sand, off-white cemented calcareous, clay interbeds	Uppermost unit in sequence	Outcrops west of Lock and in cliffs Drill holes
		?		Undifferentiated	6-7m	Clay, vari-coloured, calcareous	Underlies Bridgewater Formation	
	Tertiary	Middle Miocene		Undifferentiated		Green to grey clay & carbonaceous clays. Grey poorly sorted coarse sand & carbonaceous sand	Relationships unknown. Correlated with Munno Para Clay	Many holes in Polda Trough
		Middle Eocene		Poelpena Formation	50m	Predominantly brown coarse sand and lignite. Very carbonaceous	Unconformably on Jurassic. Overlain unconformably by ?Miocene Quaternary	Many holes in Polda Trough - absent on southern edge.
MESOZOIC	Upper Jurassic			Polda Formation	90-120m	Dark grey to black very carbonaceous fine sand, silt & lignite and very coarse grey sands	Unconformably on Permian & pre-Cambrian. Unconformably overlain by Tertiary in Polda Basin, conformably by Cretaceous on Ceduna Terrace	Many drill holes in Polda Trough
PALAEOZOIC	Permian			Boorthanna Formation	150m	Pyritic diamictite & clay	Unconformably on Archean & Proterozoic. Unconformably overlain by Jurassic	Polda No. 1 Stratigraphic drill hole.
PROTEROZOIC	Adelaidean			Corunna Conglomerate	exceed 200m	Conglomerate, sandstone & shale	Unconformably on Lincoln Complex. Unconformably overlain by Permian, Jurassic & Tertiary	
	Carpentarian		Lincoln Complex			Granite gneiss, migmatite, granulite augen gneiss, quartzo-feldspathic gneiss. Syn-kimban Orogeny granites. Basic intrusives.	Overlain unconformably Corunna Conglomerate. Underlain by Hutchison Group	Southeast and northeast of Lock
	Nullaginian		Hutchison Group	Middleback Formation Warrow Quartzite		Metasiltstone, schist, iron formation, marble & quartzite	Overlain by Lincoln complex & underlain unconformably by Sleaford Complex	Outcrops southeast of Lock. May occur in drill holes.
	Lower Proterozoic & Archean		Sleaford Complex	Widbey Granite Kiana Granite	?	Granite, granite gneiss schist, granulite, metasediments, basic intrusives	Overlain unconformably by Hutchison Group.	Outcrops north & south of Lock. May occur in drill holes.

Coal bearing Cretaceous sediments intersected in Potoroo-1 well offshore on the Ceduna Terrace (Fraser and Tilbury, 1979 are not reported in the onshore Polda Basin where Morgan (1974) states that upper Jurassic to middle Eocene times were marked by non deposition and partial erosion of the basin sediments.

Unconformably overlying the Jurassic sequence is the Middle Eocene Peolpena Formation (Morgan, 1974) which was deposited in a variety of environments. North of Mount Wedge, Harris and Foster envisaged a low energy, barred basin environment with little organic matter input from streams resulting in predominantly sapropelic sedimentation. Elsewhere the environment is non-marine, either paludal or fluviatile. Lithologies of the Poelpena Formation are predominantly grey, poorly sorted, fine to very coarse grained sands, gravels and carbonaceous sands with interbedded grey clays, carbonaceous clays and lignites.

An unnamed unit of ?middle Miocene age, correlated with the Munno Para Clay (Harris et alies, 1972) was reported by Morgan (1974) from drilling in the area. This unit consists of green to grey clays and carbonaceous clays interbedded with grey poorly sorted medium to very coarse grained sands and carbonaceous sands.

Harris and Foster (1972) found a unit of unnamed ?Quaternary clays underlying the Bridgewater Formation. These clays are vari-coloured, calcareous and sometimes nodular. They don't exceed 6 or 7 metres.

The Bridgewater Formation is the uppermost formation in the sequence and is of variable thickness, exceeding 30 metres in the south. Commonly it is described as an off-white cemented calcareous sand with occasional calcareous clayey interbeds. The main aquifer in the Polda Basin occurs in the calcareous, cemented dune sands of the Bridgewater Formation. The calcrete capping of the Bridgewater Formation occurs as an extensive unit.

Varying thicknesses of Quaternary sandy soils mantle the Bridgewater Formation.

6. WORK CARRIED OUT

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6.1 PRELIMINARY INVESTIGATIONS

All on-shore open file data on the Polda Basin was examined. The following companies conducted exploration programs over portions of the Polda Basin:- Kerr-McGee Australia Ltd. (Kerr-McGee) (September 1967 to March 1969), Mines Administration Pty. Ltd. (Minad) (late 1969 to October 1972); Chevron Exploration Corporation (Chevron) (February 1973 to August 1974). All three companies were exploring for sedimentary uranium deposits. The S.A.D.M.E. have been working in the area for some time and have drilled a number of holes. Extensive freshwater aquifers cover much of the area of the Polda Basin and consequently a large number of water bores have been drilled in the area. Little published information exists on the Lock Coalfield which is under title to E.T.S.A.

Information from all these sources was evaluated. Drill data on 211 drill holes was examined and summarised, noting the depth, thickness and number of seams of any coal, Tertiary or Jurassic, and the depth and lithology of basement if it was intersected. If no coal was recorded the presence or absence of carbonaceous sediments was noted. These summary sheets form Appendix I which accompanies this report. The positions of these holes are shown on plan 1.

Most of the holes are located east of the Lock Coalfield and several significant coal intersections were made, namely in holes LDH32, L1, P21, DP3, LDH11 and LDH41. Hydrocarbons were recorded at depth in holes LDH11, LDH10 and LDH17.

Contour Maps and Sections

Several attempts were made to draw structure contour and isopach maps of the Tertiary and Jurassic coal-bearing Formations. This proved difficult because of rapid facies variations, generally low drilling density, lack of marker horizons, the lithological and geophysical similarity of the Tertiary and Jurassic sequences and the lack of density logs.

Plans showing structure contours on pre-Jurassic basement (plan 2), isopachs of overburden on carbonaceous facies (plan 3), structure contours on the top of Tertiary carbonaceous sediments and lignites (plan 4) were drawn.

Geological sections AA', BB' and CC' (plan 7-9) were drawn in areas of good drillhole control. The sections show thick carbonaceous facies developed at depth along the northern Basin margin and thinner carbonaceous facies along the southern margin,

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while the centre is predominantly sandy and non-carbonaceous.

Shallow lignitic horizons (probably Tertiary) are developed on the flanks of basement highs and in the centre of the Basin. In places, these approached economic thicknesses (e.g. holes LDH6, LDH23, LDH37, LDH40, LDH41, RX3A and RX9) but do not appear to be laterally extensive.

Gravity Interpretation

From a consideration of the cross sections and gravity work (described in the report), Graham Bubner of C.R.A.E. interpreted the position of the northern fault and the edges of an inferred sub-basin, the existence of which is suggested by a six milligal gravity low (plan 5).

Relogging of Drill Cuttings

Examination of all available drill core and cuttings held by the S.A.D.M.E. highlighted a number of discrepancies between samples and drill logs. In certain instances samples reported to contain abundant lignite contained coarse grained, angular, clayey quartzose sandstone instead. These suspect holes include LDH3, LDH4, LDH6, LDH7, LDH18.

Carbonaceous sands and clays were logged as lignite in holes LDH4, 5, 6, 11, 25, 40 and 57. No density logs were available to check these intersections. The qualitative nature of rotary mud drilling can explain the existence of only small quantities of lignite chips for other significant intersections reported. A summary of best intersections from previous investigations is presented in Table 6.1.1. Exploration for Permian coal does not appear justified since Lock 1 stratigraphic hole (S.A.D.M.E.) intersected 150 metres of non-coal bearing Permian diamictites.

Complete analysis of the data outlined target areas to be tested by drilling as well as non prospective areas which warranted no further testing. Thus the aims of the drilling program described in the next section were to test:-

a. Basin margins east and south-east of the Lock Coalfield.

b. The area between Polda 1 stratigraphic hole (which is coal-bearing) and the western boundary of E.T.S.A.'s E.L. 434.

c. The Basin margin adjacent to coal intersections in holes L1 and P13, south of E.L. 434.

d. Areas of sparse drillhole data in the north and south-west on McLachlan E.L. and Sheringa E.L. respectively.

TABLE 6.1.1

SUMMARY OF BEST INTERSECTIONS

PREVIOUS INVESTIGATIONS

HOLE NO.	FROM (M)	TO (M)	INTERVAL (M)	COAL THICKNESS (M)	NO. OF SEAM
LDH11	92.7	102.1	9.4	6.0	4
LDH11	127.1	137.2	10.2	6.0	5
LDH20	122.6	126.6	4.0	4.0	1
LDH23	22.6	50.6	28.0	10.0	7
LDH32	42.4	77.1	34.7	18.0	8
LDH36	27.7	29.7	2.0	2.0	1
LDH37	34.1	49.1	15.0	7.0	7
LDH40	15.8	19.8	4.0	4.0	1
LDH41	13.7	44.8	31.1	6.1	10
LDH55	18.0	40.0	22.0	6.8	several
POLDA 1	48.0	57.0	9.0	8.0	4
R8	74.4	81.4	7.0	7.0 (?)	1 (?)
DP2	97.6	142.6	+39.6	16.8	9+
DP3	123.5	137.2	+13.7	6.0	7+
RX3A	36.0	41.2	5.2	5.2	1
RX7	39.6	45.7	+6.1	1.8	1
L1	33.0	48.2	15.2	9.1	2
L7	74.7	91.5	16.8	11.0 (?)	(?) several
P12	53.0	75.3	22.3	8.3 (?)	several
P21	113.0	117.6	4.6	4.3	2 (?)

6.2 DRILLING PROGRAM

6.2.1 GENERAL

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Thompson Drilling Co. Pty. Ltd. was contracted to conduct the forty hole rotary mud and rotary core drilling program shown on Plan 6. Between August 26 and October 1, 1980, drilling was carried out with a Mayhew 1000 rotary dig, drilling vertical holes only. A total of 4299 metres was drilled. 1614 metres in Tuckey, 158 metres in Sheringa and 2527 metres in McLachlan, including 85 metres of coring; 31 metres in hole 80L5C (Tuckey E.L) and 54 metres in hole 80L30C (McLachlan E.L.)

Six days drilling time were lost due to the loss down hole 80LRM17 of a density probe and fishing tools. All hardware was eventually recovered.

Drilling rate in the Tertiary sediments was generally very fast but slower in the Jurassic sediments.

Difficulties were experienced in the surface calcrete/limestone which was up to ten metres thick and better developed toward the west. Three attempts made to penetrate this limestone in hole 80LRM33 were unsuccessful.

Interesting sections of two holes (80L5C, 80L30C) were cored adjacent to rotary mud holes. Conventional coring technique gave recovery which varied from nil in unconsolidated sands to 100% in lignite and stiff clay units. HQ core samples were taken and wrapped in polythene to minimise moisture loss.

During rotary mud drilling, samples were generally taken at approximately two metre intervals but one metre sampling interval was used over interesting lignite intersection. One large sample of each interval was collected from the mud tank and sealed in a numbered polythene bag to prevent moisture loss from carbonaceous material. Samples were logged on site using a hand lens or binocular microscope where necessary.

Difficulties encountered during preparation of the drill logs included:

- Drilling rate - this was sufficiently fast (up to 80 metres/hour) to prevent exhaustive logging of the samples.

- Sampling interval - samples were taken at the end of approximately two metre or one metre intervals and not over the entire interval.

- Delay of sample return - this varied for different materials and increased with drilling depth.
- Contamination - this is highlighted by holes 80LRM30.L30C and is discussed in detail below.

These factors should be considered when assessing the logs which are attached as Appendix 3. Combined geological and geophysical logs are presented in Appendix 4.

The qualitative nature of results from the rotary mud drilling technique was clearly demonstrated by the differences between the geological logs of rotary mud hole 80LRM30 and core hole 80L30C. From 80LRM30 coal was believed to occur down to basement at 104 metres. However the adjacent hole 80L30C indicated basement and the base of the coal bearing sequence occurs at 86 metres. In addition a 2.8 metre intersection of coal was indicated by geophysics from 48.2 metres to 51.0 metres in 80LRM30. No coal appeared in the samples. Subsequent coring proved the existence of the seam. The absolute necessity of an attendant logging truck was indicated by these results.

To prevent contamination of freshwater reservoirs, eleven holes were backfilled with cement.

6.2.2 DRILLING RESULTS

Basement lithologies encountered during this drilling included Precambrian chlorite schists and gneisses (80LRM29, 32, 37, 38, 39) granites (80LRM35, 36, 40) and Permian basement clays and diamictites (80LRM30, 30C, and 31). Hole 80LRM34 also struck basement but no cuttings were returned.

Predominantly sands with minor clay were intersected in holes 80LRM10, 11, 12 extending the area of the sandy facies previously outlined.

Lignite and/or coal intersections were made in several holes. Seam thickness ranged from less than one metre to a maximum of ?nine metres in hole 80LRM5/L5C. Due to the problems of sample contamination, geophysics was used to define individual seams. Significant intersections are summarised in Table 6.2.1

Table 6.2.1

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SUMMARY OF BEST INTERSECTIONS C.R.A.E. 1980 POLDA DRILLING PROGRAM

HOLE NO.	FROM(m)	TO(m)	INTERVAL(m)	COAL THICKNESS(m)	NO. OF SEAMS
4	121.5	123.5	2.0	2.0	1
5	60.1	69.0	8.9	8.9	1
6	111.5	127.5	16	10	6
8	64.5	67.0	2.5	2.5	1
9	66.0	94.5	28.5	10.2	8
9 (cont)	124	133	9	4.5	2
16	43	58.5	15.5	5	3
18	90.5	115.5	25	10.4	9
19	27.5	33.0	5.5	2.5	2
20	95	116	21	7	4
29	29.5	42.5	13	5	3
30	48.2	63.0	14.8	7	3
31	82.5	116	33.5	13.9	9

(Based on geophysical logs in conjunction with field lithological logs).

Bulk samples were taken over intervals which contained more than 10% of coal cuttings and sent to A.M.D.E.L. for proximate analysis.

Cored holes 80L5C and 80L30C were drilled adjacent to holes 80LRM5 and 30 to test relatively thick seams indicated by geophysics and drill cuttings. 80L5C intersected Tertiary lignite from 60.1 to 69.0 metres hole depth which was red-brown to dark brown in colour, friable and contained abundant woody fragments. Jurassic coal was intersected in hole 80L30C from 48.2 to 51.0 metres, 58.5 to 62.9 metres, 75.9 to 77.5 metres, 79.3 to 80.6 metre hole depths. These coals are dark grey-brown, moderately hard, banded and contain abundant vitrainite. The above intervals have been sampled and sent to A.M.D.E.L. for proximate and ultimate analysis. Results are awaited.

Differentiation of the middle Eocene Poelpena Formation from the Jurassic Polda Formation proved complicated due to the similarity of the units. The appearance of a stiff grey clay with vitreous carbonaceous flecks and slower drilling rate was generally taken to indicate the Polda Formation. Black vitreous coal chips in trace amounts are common in the Polda Formation and represent thin (up to a few centimetres) coal partings.

Summary geological logs of holes 80LRM1 to 80LRM40 form appendix 2.

Detailed correlation of sub-surface geology is progressing and will be presented in the report for the next quarter.

6.3 GEOPHYSICS

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6.3.1 BOREHOLE LOGGING

6.3.1a GENERAL

A truck mounted, computerised, geophysical logging unit, contracted from Geoex Pty. Ltd., provided caliper, short and long spaced density, natural gamma, neutron, self potential, and resistance logs of all boreholes on completion of drilling.

Caliper, short and long spaced density were run on the one probe. The remaining logs were run together on the neutron probe. Both probes logged at a speed of five metres/minute. Data was recorded digitally on magnetic tape, then plotted at a scale of 1:200. These logs were photographically reduced to 1:500 and combined with geological graphic logs to form Appendix 4 of this report.

Drop in the mud level prior to logging resulted in truncation of the neutron, SP and resistance logs. Generally only the top 20 metres of the log was not recorded. Where the hole contained dominantly sandy units up to 50 metres of the log was not recorded. The mud level in these holes may relate to the present water table.

Due to the temporary loss of the density probe down hole 80LRM17 density and caliper logs were not obtained. Hole 80LRM22 collapsed at 37 metres after the neutron probe had been run so density and caliper logs below this depth were not obtained.

As no account was taken of the effect of salinity on the electric logs the information gained is qualitative.

6.3.1b RESULTS

Geophysical logging proved essential for the accurate determination of location and thickness of coal seams. This need was highlighted by the drilling of hole 80L30C adjacent to 80LRM30. Logs of all holes were inspected for indication of coal seams which may have been overlooked due to the qualitative nature of the rotary mud samples. Appendix 5 summarized all the geophysical anomalies observed. Table 6.2.1 is a summary of the best coal intersections interpreted.

Coal was recognised on the geophysical logs by its characteristic response of low density, low neutron c.p.s.. low resistance and slightly elevated S.P., a response typified by the seams in holes 80LRM5 and 80LRM30. Natural gamma response was generally low, however some high gamma seams were recognised (80LRM13, 19). Since analyses of coal intersections from holes 80L30C and 80L5C are awaited, no calibration between density (c.p.s.) and percent ash has been made.

The Jurassic coal in holes 80LRM30 and 31 consists of many thin stacked seams with thin interbeds of carbonaceous clay and sandstone. The resultant logs, particularly density consist of many thin peaks from which the approximate thickness and depth of the seam can be interpreted.

The Tertiary coal in hole 80LRM5 and 80LRM8 appears as a broad density low of some thickness with only minor peaks suggesting only slight to moderate ash content. Analyses are still awaited. The density of Tertiary lignite in hole 80LRM5 is less than Jurassic sub-bitumenous coal in 80LRM30.

Probe Malfunction?

Curious features characterised by high gamma, and self potential, and low neutron and resistivity but no density response were noted in hole 80LRM13 at the following intervals 43 to 47 metres, 54.5 to 57 metres, 81 to 84 metres, 119 to 124 metres and 163 to 168 metres. From trace to five percent coal chips were observed in the samples over the corresponding intervals. If malfunction of the density probe has occurred then several significant intersections may have been overlooked. Similar features also occur in 80LRM14 (100 to 102 metres) and 80LRM19 (54 to 55.5 metres, and 84.5 to 88.5 metres). These features may represent relatively uniform clay bands.

Uranium Potential

The gamma log for hole 80LRM39 records a 110 c.p.s. peak at a redox surface between hematitic yellow sands and carbonaceous clays. Percent equivalent uranium oxide for this anomaly was calculated. Gamma peaks were also recorded in holes 80LRM14 (80 c.p.s., 25-28 metres; 50 c.p.s., 37-40 metres), 80LRM16 (70 c.p.s., 21-22 metres), 80LRM17 (70 c.p.s., 25.5-26.5 metres), 80LRM19 (60 c.p.s., 23-24.5 metres), 80LRM21 (46 c.p.s., 30 metres) at redox interfaces between carbonaceous reduced sands and clays and overlying more oxidised clays and sands. With the exception of 80LRM39 all other peaks appear insignificant but are being checked by analysis.

6.3.1c CALIBRATION

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At the completion of drilling the Geoex logging truck was taken to the A.M.D.E.L. test pits for density and gamma-ray probe calibrations. A K-factor was determined for the gamma probe, and calculations of percent equivalent uranium oxide for the anomaly in drill hole 80LRM39 from the Polda Basin were performed by Graham Bubner of C.R.A.E.

The radiometric anomaly was difficult to assess because there is a severe background gradient from sediments above to weathered basement below, and because of the double-peaked nature of the curve. However the following result is considered to represent a fair average over the whole intersection.

80LRM39 24.4-28 metres 0.0044%eU_3O_8 (0.1 lbs/+)

Full calculations are shown in Appendix 6.

6.3.2 GRAVITY SURVEY

6.3.2a GENERAL

Graham Bubner of C.R.A.E. carried out an interpretation of gravity data within Tuckey E.L. 687, in an attempt to define basement topography and any possible sub-basins within the Polda Basin. Open file data from the Mines Department was augmented by two traverses carried out by C.R.A.E., and the resultant data set was re-contoured. A sub-basin in the north of the E.L. is suggested after analysis of the data using foreward computer modelling.

6.3.2b DATA ACQUISITION

The source of the data for this work is shown on plan 5. The C.R.A.E. data was acquired over the period 12 - 18 July using a LaCoste and Romberg gravity meter #544. Readings were taken at 500 metre intervals over a distance of 27.5 kilometres on traverse 1 and over 28 kilometres on traverse 2. (Plan no. 5). Repeat readings were taken on the first and last stations of each 1½ hour loop; from these readings repeatability of the gravity observations is estimated at ± 0.01 milligals. Elevations were obtained using an A.G.A. Geodimeter and theodolite. The longest run between benchmarks, approximately 35 kilometres, returned a misclosure of about 0.3 metres. From this the accuracy of the Bouguer Gravity values is estimated at +/- 0.1 milligals. The data listings (Appendix 7) included in this report comprise the following :

- copies of the gravity field data sheets
- latitudes (decimal x 100)

- elevations (metres A.H.D.)
- drift corrected gravity readings
- Bouguer gravity for density 2.00
- Bouguer gravity for density 2.67

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The Bouguer gravity for a density of 2.67 gm/cc. is plotted in Figure 6.3.1. Traverse 2 is also coincident with Polda Basin section A-A', the Bouguer gravity is shown on plan 7.

The one permanent station which may be re-occupied for tying-in this data is BM705. (= station 00 N, traverse 1).

6.3.2c INTERPRETATION

Quantitative interpretation has been carried out on traverse 2 only; traverse 1 data served basically to provide continuity of contours through the Tuckey E.L.

The first approach to interpreting the gravity profile was to calculate the effect of a slab of Mt. Wedge Grits, assumed to be responsible for the prominent low evident from the contours. The only control available for this model was a) suggestion of a sub-basin between 18000N and 23000N, possible causing a gravity low, from interpretation of previous drilling; b) inference of 'basement' at about 700 metres in the vicinity of Tuckey, from a seismic section shot from Lock to Tuckey, and c) inference that the north side of the Polda Basin is bounded by a major fault.

The model generated (Figure 6.3.2 Polda Basin gravity traverse #2: basin model - 11/8/80) has a depth to top of 600-700 metres, is terminated abruptly at the northern end, and gives rise to an anomaly that produces a residual low between 17000N and 22000N. Whilst the paucity of control leaves the profile wide open for a number of different interpretations, the model of Mt. Wedge Grits used here is simply a tentative first-attempt solution. Any additional control provided by the drilling program could be incorporated in a re-interpretation.

After the calculated profile was removed from the observed profile, the residual low was roughly modelled as a sub-basin of depth 300-350 metres, using a density contrast of -0.3 gm/cc. (Figure 6.3.3 Polda Basin traverse #2: sub-basin model :14/4/80). The sub-basin as calculated extends from 17300N to 22000N, and the inferred position of the fault from the basin model is between 22500N and 23000N. (Plan 6).

M Flitcroft

M.J.N. FLITCROFT

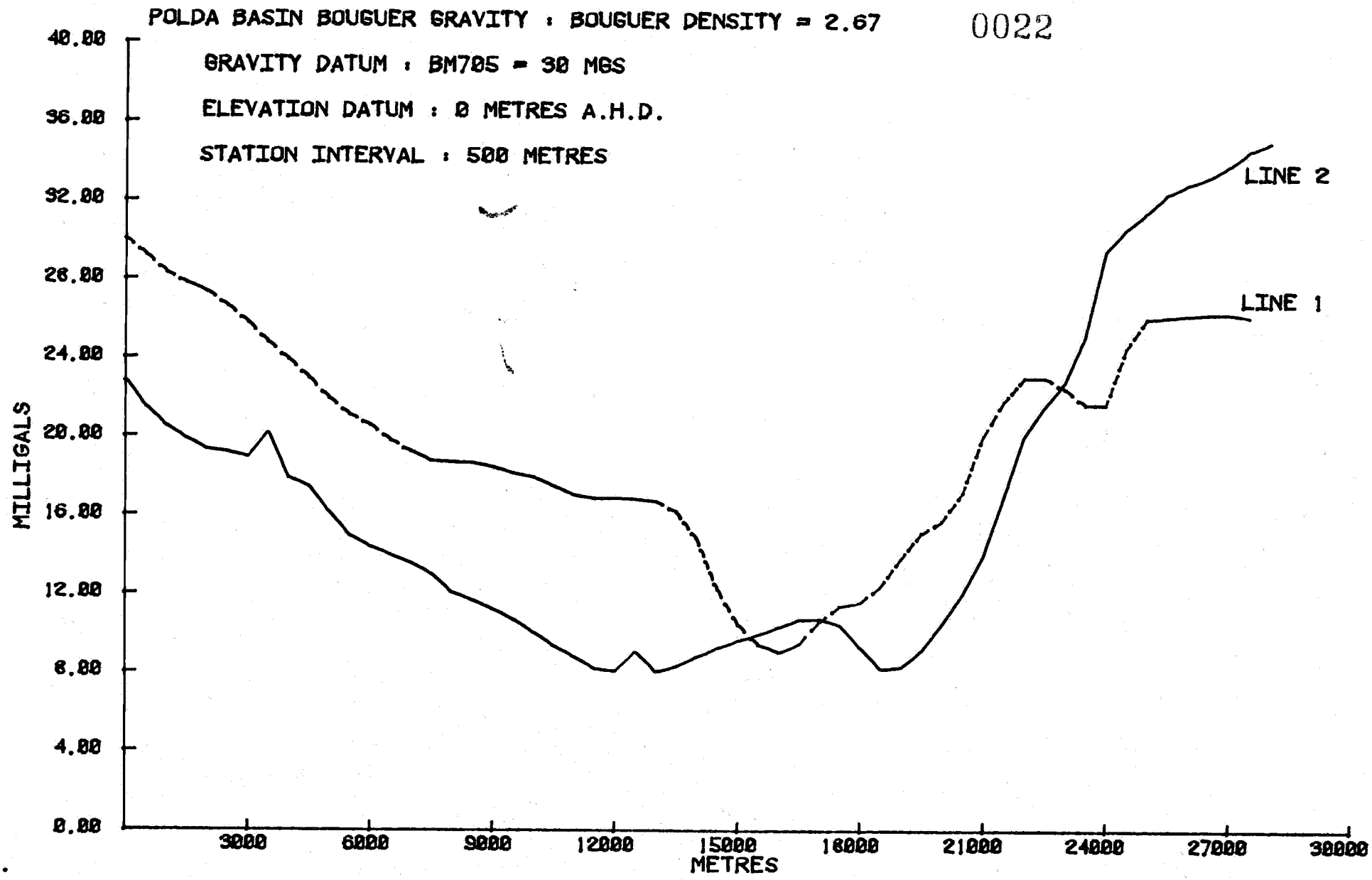

Figure 6.3.1 (Refer to Appendix 7)

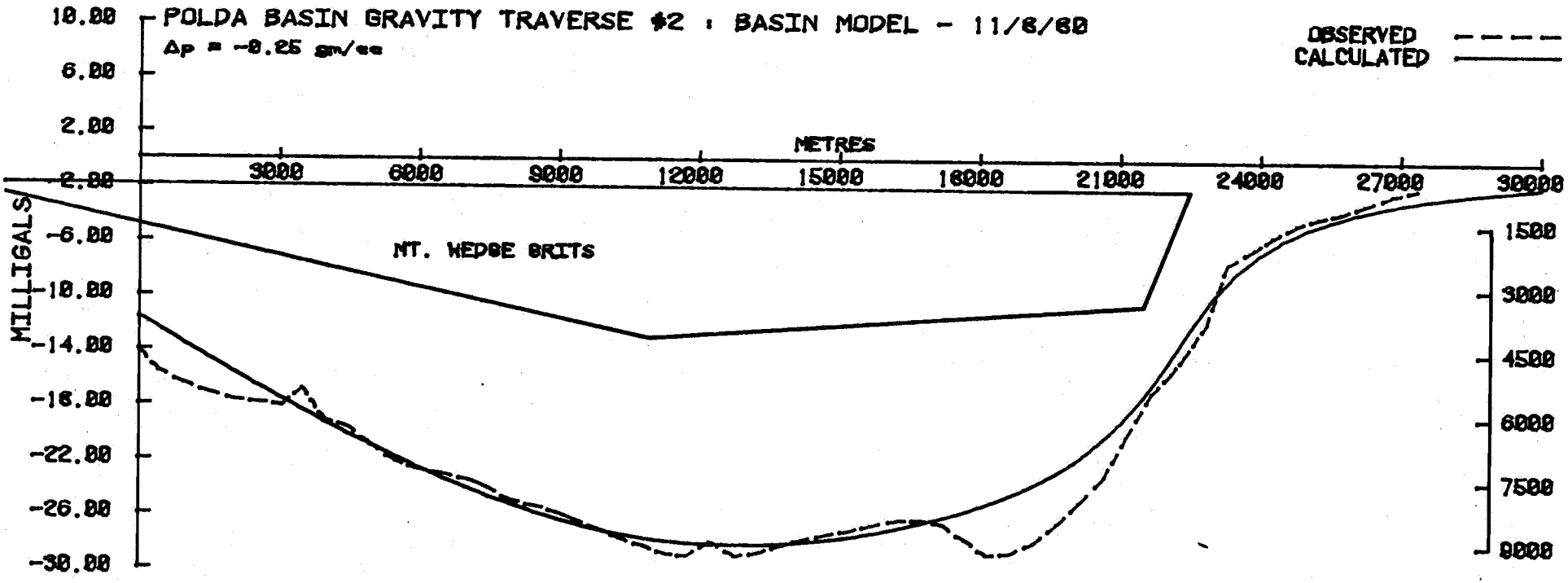

Figure 6.3.2 (Refer to Appendix 7.7)

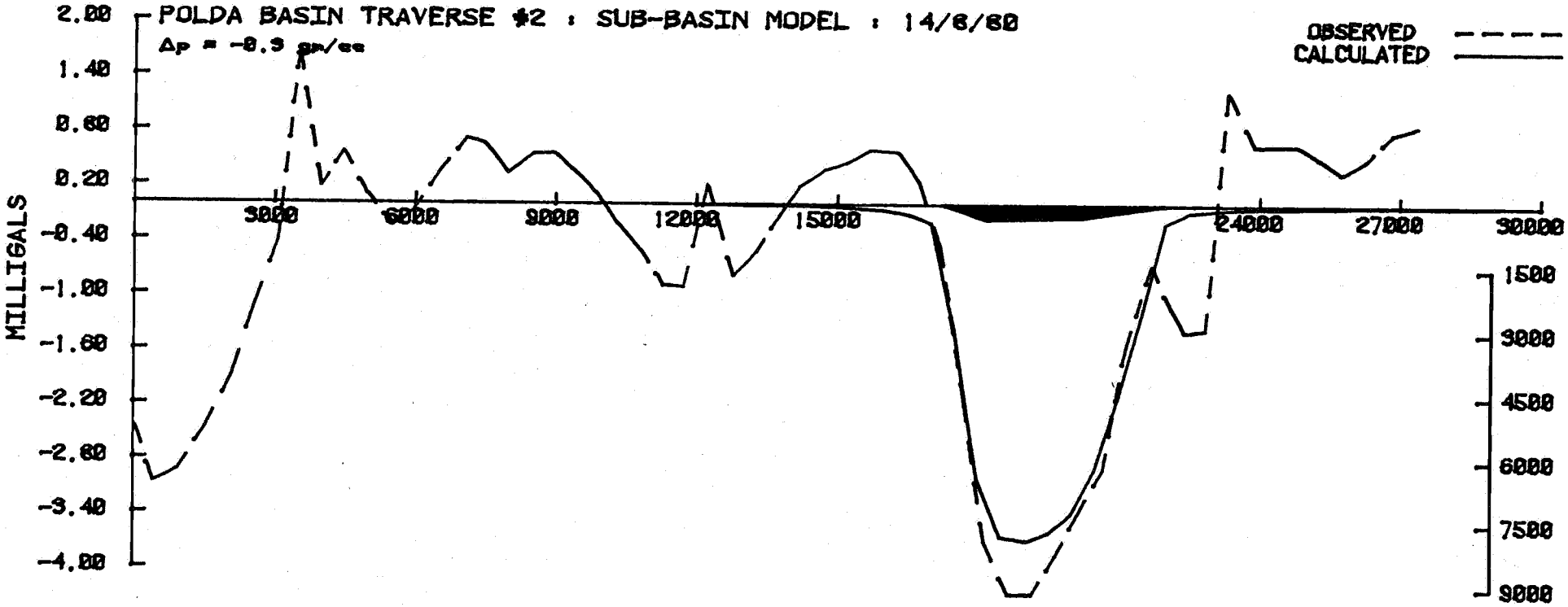

Figure 6.3.3 (Refer to Appendix 7.8)

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KEYWORDS

Coal-sub-bituminous, coal-lignite, uranium, carbonaceous coal measures, sediments, facies-continental, basin, Eocene, Jurassic, fault, geophys-bore hole, geophys-grav, geophysics-interpret. theory, literature research, drilling-rotary mud, drilling-rotary coring.

LOCATION

Kimba SI53-7

LIST OF PLANS

			Scale
Plan 1	Previous investigations - borehole location plan.	SAa 486	1:250 000
Plan 2	Previous investigations - structure contours of pre-Jurassic basement.	SAa 491	1:250 000
Plan 3	Previous investigations - isopach map - overburden on carbonaceous facies	SAa 616	1:250 000
Plan 4	Previous investigations - Structure contours - top of Tertiary carbonaceous sediments and lignites.	SAa 615	1:250 000

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LIST OF PLANS (cont.)

			Scale
Plan 5	Compilation of gravity data - Bouguer gravity contours	SAa 585	1:250 000
Plan 6	C.R.A.E. 1980 drill hole location plan	SAa 490	1:250 000
Plan 7	Geological Section AA'	SAa 499	1: 50 000
Plan 8	Geological Section BB'	SAa 498	1: 50 000
Plan 9	Geological Section CC'	SAa 500	1: 50 000

LIST OF APPENDICES

Appendix 1 Summary sheets of previous drilling, Polda Basin

Appendix 2 Summary logs, 1980 Drilling program

Appendix 3 Borehole lithological logs

Appendix 4 Geological and geophysical drillhole cross sections

Appendix 5 Summary borehole geophysical data

Appendix 6 Radiometric borehole anomaly calculation

Appendix 7 Detail gravity survey results

135°00' 135°30' 136°00'

33°30'

34°00'

Kyancutta

Elliston

Murdinga

Tooligie

Lake Newland

Lake Hamilton (salt)

Lake Malata (salt)

MT. WEDGE

TOOLIGIE HILL

Darke Peak

Hambidge Conservation Park

Bascombe Conservation Park

McLACHLAN

SHERINGA

TUCKEY

E.T.S.A. E.L.434

POLDA 1

LOCK

GREAT AUSTRALIAN BIGHT

To Port Lincoln

INSET 'A'

INSET 'B'

Holes LDH 48-54

All holes prefixed LDH

5 0 5 10 15 20 25 Kms

TN. MN 7°

LEGEND

- Φ Lock 1. — S.A.D.M.E. Stratigraphic D.H.
- • P 20 — S.A.D.M.E. D.H. (E.L.280)
- ○ 5/33 — Water Bore (Station & Bore Number)
- ○ R12 ○ V12 — Kerr McGee - SMLS 158 & 163 Open File Env. 1108
- Minad D.H.
- ○ RX 1 — SML 344 Open File Env 1238
- ○ DP 1 — SML 344 Open File Env 1238
- ○ L1 — SML 469 Open File Env 1538
- ○ LDH 1 — Chevron E.L.37 Open File Env. 2256
- (150) — Depth of drill hole
- C ——— C' — Location of geological section
- ——— Exploration Licence Boundary

ENV 3973-1

C.R.A. EXPLORATION PTY. LIMITED.

POLDA BASIN

TUCKEY E.L.687, SHERINGA E.L.688, McLACHLAN E.L.670

PREVIOUS INVESTIGATIONS

PLAN 1

BORE HOLE LOCATION PLAN

SHEET REF : KIMBA SI 53-7

Geol. : A.G.C.	Date : July. 1980	Report N° : 10307
Drawn : J.C.R.	Scale : 1 : 250,000	Plan N° : SAa 486

135° 00'
135° 20'
135° 40'
136° 00'
136° 09'
33° 20'
33° 30'
33° 37'
33° 40'
33° 44'
33° 45'
33° 29'
135° 25'
135° 03'
135° 55'
135° 45'
135° 30'
34° 00'

McLACHLAN

ETSA EL 434

EL McLACHLAN

EL Lock

TUCKEY

Mt WEDGE

BARCOMBA WELL CONS PARK

'SHERINGA'

TOOLIGIE HILL

SHERINGA

Mt Lyndhurst Creek Dist

HOLES INTERSECTING BASEMENT

- ⊖ Permian Basement (Diamictite)
- Φ ? Carpentarian Basement (Granite)
- ⊙ Lower Proterozoic or Archaean Basement (Schist or gneiss)
- +20 Structure Contour (metres above mean sea level)
- Contour interval 20 metres.
- o +63 Reduced level of pre-Jurassic Basement.

T.N. M.N. 7°

5 0 5 10 15 20 25 30 Kms.

ENV 3973-2.

C.R.A. EXPLORATION PTY. LIMITED.

POLDA BASIN

TUCKEY E.L.687, SHERINGA E.L.688, McLACHLAN E.L.670

STRUCTURE CONTOURS ON PRE-JURASSIC BASEMENT

PLAN 2

SHEET REF: KIMBA SI53-7

Geol.: A.G.C.	Date: July 1980	Report N°: 10307
Drawn: A.G.C./J.C.R.	Scale: 1:250,000	Plan N°: SAa 491

McLACHLAN E L 670

TUCKEY E L 687

SHERINGA E L 688

ETSAM E L 434

McLACHLAN'

'SHERINGA'

MT WEDGE

TOOL'GIE HILL

HAMBIDGE CONS PARK

BASCOMBE WELL CONS PARK

LOCK

135°00'
135°03'
135°20'
135°25'
135°30'
135°45'
135°55'
136°00'
136°09'

33°20'
33°30'
33°37'
33°40'
33°44'
33°45'
34°00'

5 0 5 10 15 20 25 30 KILOMETRES

LEGEND

340 Vertical depth to carbonaceous facies in metres from present ground surface.

30 —— Isopach - overburden on carbonaceous facies in metres — established.

30 — — — Isopach - overburden on carbonaceous facies in metres — interpreted.

No carbonaceous facies intersected

Depth to carbonaceous facies unknown.

34°00'

ENV 3973-3

C.R.A EXPLORATION PTY. LIMITED.

POLDA BASIN

TUCKEY E.L.687, SHERINGA E.L 688, McLACHLAN E.L.670

PREVIOUS INVESTIGATION

PLAN 3

ISOPACH MAP — OVERBURDEN ON CARBONACEOUS FACIES.

SHEET REF KIMBA SI53-7

Geol A.G.C.	Date : Nov., 1980.	Report No.: 10307
Drawn: S.J.B.	Scale: 1:250,000.	Plan No: SAa 616

135°00'
135°30'
136°00'
33° 20'
33° 30'
33° 40'
33° 45'
34°00'
135°20'
135°03'
135°55'
135°45'
136°09'
33° 44'
33° 29'

McLACHLAN E.L. 670

TUCKEY E.L. 687

ETSA E.L. 434

SHERINGA E.L. 688

MT WEDGE

BASCOMBE WELL CONS. PARK

HAMBR. E CONS. PARK

McLACHLAN

TOOLIGIE HILL

SHERINGA

INSET B

INSET B
RII
RX7 RX9
RX3A
RX3
RX4
RX5
RX6 RX2

LEGEND

- 75 Level of top of Tertiary Carbonaceous Sediments and lignites relative to mean sea level
- Lignite (1 or more seams)
- Lignitic sands
- Carbonaceous clays
- +20 Structure Contour (metres above mean sea level) established.
- +20 Structure Contour (" " " " ") interpreted.
- Tertiary carbonaceous sediments on hatched side only.

Contour interval 20m

5 0 5 10 15 20 25 30 KILOMETRES

TN MN 7°

ENV 3973-4

C.R.A EXPLORATION PTY. LIMITED.

POLDA BASIN

TUCKEY E.L.687, SHERINGA E.L.688, McLACHLAN E.L.670
PREVIOUS INVESTIGATIONS
PLAN 4
STRUCTURE CONTOURS
TOP OF TERTIARY CARBONACEOUS SEDIMENTS AND LIGNITES
SHEET REF. KIMBA SI53-7

Geol A.G.C.	Date: Nov. 1980	Report No. 10307
Drawn J.C.R.	Scale: 1:250,000	Plan No SAa 615

135° 00' 135° 30' 136° 00' 136° 30'

33° 15' 33° 30' 33° 45' 34° 00'

McLachlan

Tuckey

E.T.S.A. E.L. 434

LOCK 13

Bascombe Well Conservation Park

Sheringa

SHERINGA

SOURCES OF DATA

S.A.D.M.E. 1:100,000 Gravity Map (Unpublished; 1980)

C.R.A.E. Traverses

S.A.D.M. Bouger Anomaly Map Kimba 1:250,000, 1971

kms 5 0 5 10 15 20 kms

SCALE

Elevation datum : 0 metres Australian Height Datum

Contour Interval : 2 milligals

C.R.A. Exploration P/L Gravity Traverses : .....

Gravity Stations Ex Kimba 1:250,000 Gravity Map : +

■ Townships

—·— E.L. Boundary

o 35 Rotary Mud Hole Location and N° C.R.A.E. 1980 (1-40)

T.N. M.N. 7°

ENV 3973-5

C.R.A. EXPLORATION PTY. LTD.

POLDA BASIN

TUCKEY E.L. 687, SHERINGA E.L. 688, McLACHLAN E.L. 670

COMPILATION OF GRAVITY DATA

BOUGER GRAVITY CONTOURS

PLAN 5

SHEET REFERENCE KIMBA SI53-7

GEOPHYS : G.J.B.	SCALE : 1 250,000	REPORT N° : 10307
DRAWN : A.E.Y.	DATE : OCT 1980	PLAN N°: SAa 585

LEGEND

QUATERNARY	Qb	Modern Beach Sands
	Qrs	Aeolian Siliceous Sand
	Qrn	Soil Undifferentiated
	Qpk	Calcrete (Bridgewater Formation?)
PRECAMBRIAN	P-p	Pandurra Formation – cross-bedded conglomerate and grits
ARCHEAN	pEwa	Warrow Quartzite Undifferentiated Metasediments, gneisses, schists, amphibolites, migmatites.
		Dolomites

Geological Boundary

Geological Boundary, positition approximate.

Road; major ; secondary

Extent of possible sub-basin inferred from gravity.

1980 DRILLING RESULTS

All holes prefixed 80LRM

- 10(120m) Rotary Mud Hole, number and total metreage indicated.
- 5c Tungsten cored hole.
- Hole with coal or lignite intersection >5m
- Hole with coal or lignite intersection 2-5m
- Hole with coal or lignite minor seams.
- Hole with lignitic sand and clay only.
- Hole abandoned above target.

DRILLHOLE INFORMATION ON OPEN FILE & FROM WATER BORE RECORDS

- No carbonaceous material intersected.
- Minor thickness of carbonaceous material commonly less than 10m and usually associated with lenticular discontinuous shallow lignitic horizons.
- Major thickness of carbonaceous material (<20m) and mainly associated with deep carbonaceous facies along basin margins.
- Boundary between predominantly carbonaceous & predominantly non-carbonaceous sandy facies (speckled).
- Outline of E.T.S.A. Coal basin.

150mT Area of E.T.S.A. coal deposit 18m thick, S.G. 1·2 1:250,000

1000 mT Area of 1,000 mT deposit 20m thick, S.G. 1·2 1:250,000

LOCATION DIAGRAM

0 5 10 15 20 25 30 Kms

ENV. 3973-6 Vol 2

C.R.A. EXPLORATION PTY. LIMITED.

POLDA BASIN

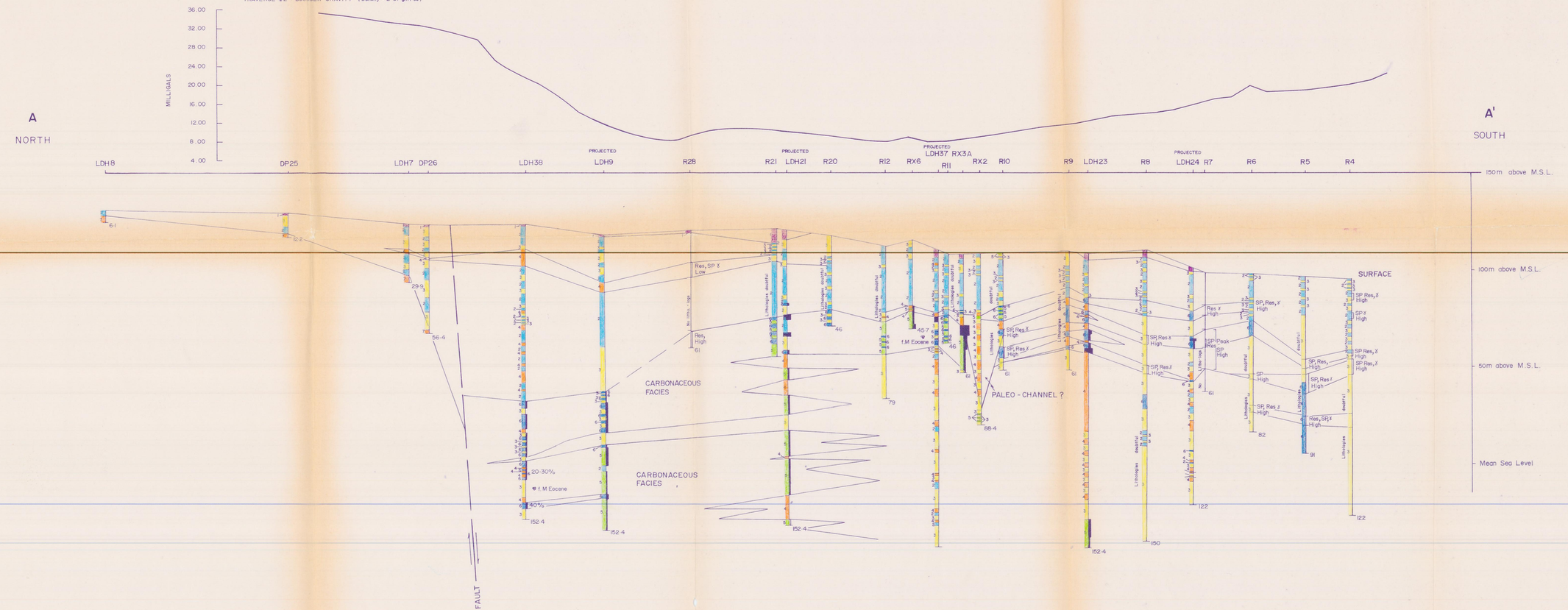
TUCKEY E.L.687, SHERINGA E.L.688, McLACHLAN E.L.670

1980 DRILL HOLE LOCATION PLAN

PLAN 6

SHEET REF: KIMBA SI53-7

Geol.: A.C., D.R.K., M.F.	Date: Sept. 1980	Report N°: 10307
Drawn: J.C.R.	Scale: 1:250,000	Plan N°: SAa 490



LITHOLOGY

1. Calcrete
2. Claystone and Shale
3. Fine Sandstone
4. Course Sandstone & Gravel
5. Carbonaceous Sandstone
6. Carbonaceous clay
7. Lignite
8. Basement

% CARBONACEOUS MATTER (approx.)

- Trace - 20%
- 20% - 50%
- 50% - 80%
- 80% - 100%

0 1 2 3 4 5 Kms

HORIZONTAL SCALE
1:50,000

VERTICAL SCALE
1:1,000

$\frac{V}{H} = 50$

NOTE : For source of data & location of section in plan refer to Plan 1 (SAc 486).

ENV 3973-7

C.R.A. EXPLORATION PTY. LIMITED

POLDA BASIN

TUCKEY E.L.687, SHERINGA E.L.688, McLACHLAN E.L.670

PREVIOUS INVESTIGATIONS

SECTION A-A' & GRAVITY TRAVERSE # 2

LOOKING EAST

PLAN 7

SHEET REF : KIMBA SI53-7

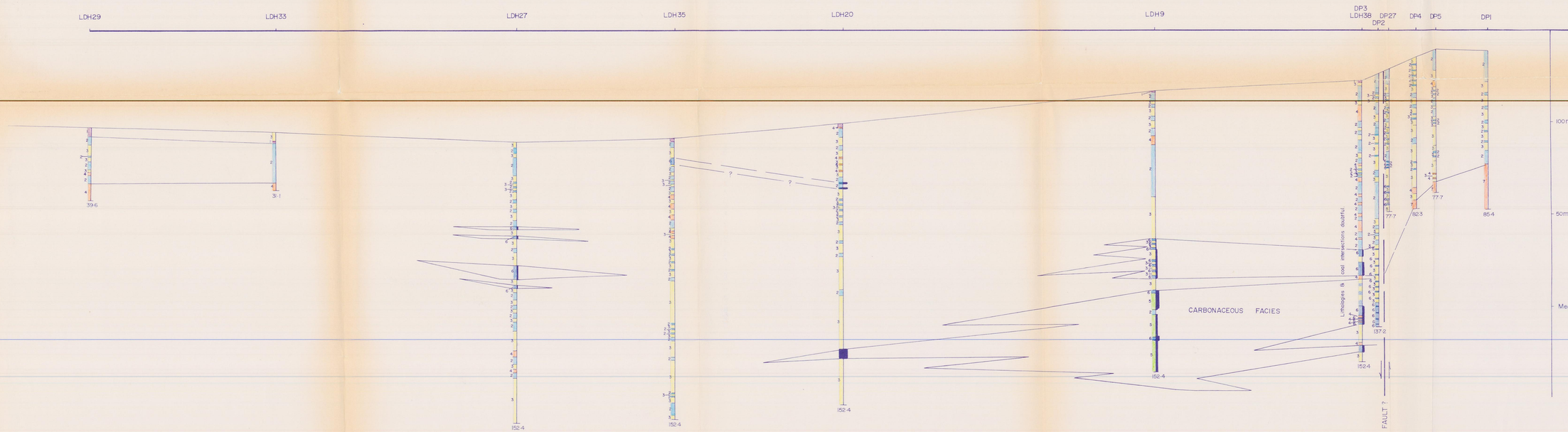
Geol. : A.G.C	Date : July 1980	Report N° : 10307
Drawn : J.C.R.	Scale :	Plan N° : SAc 499

B

SOUTH - WEST

B'

NORTH - EAST



LITHOLOGY

- Calcrete
- 2 Claystone and Shale
- 3 Fine Sandstone
- 4 Course Sandstone & Gravel
- 5 Carbonaceous Sandstone
- 6 Carbonaceous clay
- Lignite
- 7 Basement

% CARBONACEOUS MATTER (approx.)

- Trace - 20%
- 20% - 50%
- 50% - 80%
- 80% - 100%

1 0 1 2 3 4 5 KILOMETRES

HORIZONTAL SCALE
1:50,000

VERTICAL SCALE
1:1,000

$\frac{V}{H} = 50$

NOTE: For source of data & location of section in plan refer to Plan 1 (SAa 486).

ENV 3973-8

C.R.A. EXPLORATION PTY. LIMITED.

POLDA BASIN
TUCKEY E.L.687, SHERINGA E.L.688, McLACHLAN E.L.670
PREVIOUS INVESTIGATIONS
SECTION B-B'
LOOKING NORTH - WEST
PLAN 8
SHEET REF. KIMBA SI53-7

Geol : A.G.C.	Date : July 1980	Report N° : 10307
Drawn : J.C.R.	Scale :	Plan N° : SAa 498

C

NORTH - WEST

C'

SOUTH - EAST

LDH4 LDH43 LDH42 LDH12 LDH11 LDH40 P9 LDH20 PROJECTED LDH22 PROJECTED LDH36 R9 LDH23 PROJECTED LDH24 R14 R1 V1 V2 V3

150m above M.S.L.

100m above M.S.L.

50m above M.S.L.

Mean Sea Level

CARBONACEOUS FACIES

FAULT

152.4

156.4

1 0 1 2 3 4 5 Kms.

LITHOLOGY

1 Calcrete
2 Claystone and Shale
3 Fine Sandstone
4 Course Sandstone & Gravel
5 Carbonaceous Sandstone
6 Carbonaceous clay
Lignite
7 Basement

% CARBONACEOUS MATTER (approx.)

Trace - 20%
20% - 50%
50% - 80%
80% - 100%

HORIZONTAL SCALE
1:50000

VERTICAL SCALE
1:1,000

V.E. = 50

NOTE: For source of data & location of section in plan refer to plan 1 (SAs486).

ENV 3973-9

C.R.A EXPLORATION PTY. LIMITED

POLDA BASIN

TUCKEY E.L.687, SHERINGA E.L.686, McLACHLAN E.L.670

PREVIOUS INVESTIGATIONS

SECTION C-C'

LOOKING NORTH - EAST

PLAN 9

SHEET REF: KIMBA SI53-7

Geol. A.G.C.	Date: July 1980	Report N°: 10307
Drawn J.C.R.	Scale:	Plan N°: SAs 500

APPENDIX 1

KERR-McGEE AUSTRALIA LTD.

Hole No.	Elev.	T.D.	Tertiary Lignite				Jurassic Coal				Basement		Comments
			Depth	R.L. Depth	Thick.	No. Seams	Depth	R.L Depth	Thick	No. Seams	Depth	R.L Depth	
R1	88	61	30.5	57.5	3.0	?						<+27	brown sand + black mud 30.5 - ?
R2	98	105	25.9	72.1	12.2	?						<-7	gr sand + wood + blk mud 25.9 - 38.1
R3	101	134	35.0	66.0	7.7	?						<-33	gy sand + coal 27.4-35.0, bl sand + mud 35.0 -
R4	95	122										<-127	no coal
R5	96	91					54.9	41.1				<+4	some black mud + wood below 54.9.
R6	98	82	24.4	73.6								<+16	black mud 24.4 - 32.0
R7	98	61										<+37	no litho log - no res peaks. (no coal)
R8	110	150					74.4	35.6	7.0	1?		<-40	black mud + wood.
R9	109	61										<+48	no coal
R10	109	61	27.4	+81.6								<+48	no coal - some black mud 27.4 - 30
R11	108	46	35.1	+72.9								<+62	no coal - " " " 35.1 - 39.6
R12	112	79	38.1	+73.9								<+33	no coal - black sandy mud 38.1 - 45.
R13	95	47										<+48	no litho logs - no res peaks
R14	98	46	35.1	+62.9								<+52	no coal - some wood + mds below 35.1
R15	108	46	33.5	+74.5								<+62	no coal logged, res, gamma, SP peak 33.5-36.6
R16	110	46										<+64	no coal,
R17		no		information								<	no logs at all.
R18	105	41	34.1?	+70.9								<+64	no litho logs, γ, res, SP peak 34.1-36.9
R19	105	46										<+59	no litho logs, no res peaks.
R20	118	46	38.1?	79.9								<+72	no coal, black mud below 38.1
R21	121	61										<+60	no coal
R22	121	66										<+54	no coal.
R23	123	61	48.5?	74.5								<+62	no coal - black mud 48.5 - 53.1

KERR-McGEE AUSTRALIA LTD.

Hole No.	Elev.	T.D.	Tertiary Lignite				Jurassic Coal				Basement		Comments
			Depth	R.L. Depth	Thick.	No. Seams	Depth	R.L Depth	Thick	No. Seams	Depth	R.L Depth	
R24	130	70					70	+60	?	?		<+60	blackmuck, abn wood at 230' - no probes
R25	130	58										<+72	no coal.
R26	135	61										<+74	" "
R27	145	64	53.4	+91.6	+4.3	?						<+81	abn org matter below 53.4, rest 46.3 - 50.
R28	120	61	51.8	+68.2								<+59	no litho logs, rest below 51.8

KERR-McGEE AUSTRALIA LTD.

Hole No.	Elev.	T.D.	Tertiary Lignite				Jurassic Coal				Basement		Comments
			Depth	R.L. Depth	Thick.	No. Seams	Depth	R.L Depth	Thick	No. Seams	Depth	R.L Depth	
V1	90.9	99	19.8	71.1	21.4	?						<-8	abn bl wood frags, res↑ 27.4-32.3.
V2	81.1	142	24.4	56.7		←	50.0	31.1	9.5	2?		<-61	abn org b. lay 24.4, Gy sh (res↑) 110.4-114.6
V3	80.2	156.4	22.0	58.2	5.4	?	53.0	27.2	9.8	5?		<-76	abn org also 62.8-67.1, res↑ 107.6-112.2
V4	61.9	99	22.6	42.3								<-34	no coal, minor wood 1.5-9.1, res↑ 22.6-25.6
V5	68.0	97					37.8	30.2	7.0	?	95.7	-27.7	gy + bl clays, py no coal.
V6	79.7	82										<-2	no coal.
V7	~85	78	15.2	~70	21.4	?						+7	← org mud, clay, sand, wood. Res↑ 31.1-32.3
V8	~85	16	22.9	~62	7.6	?						<+39	Black lig mud + py.
V9		66	"										no coal.
V10		52											" "
V11		66											" "
V12		30											" " no litholegs or res
V13		18											" " " "
V14		15											" " " "
V15		43											no litholegs, res↑ 22.9-27.4 + 34.5-37.8
V16		46									27?		no coal
V17		81											no coal

MINES ADMINISTRATION PTY. LTD

Hole No.	Elev.	T.D.	Tertiary Lignite				Jurassic Coal				Basement		Comments
			Depth	R.L. Depth	Thick.	No. Seams	Depth	R.L Depth	Thick	No. Seams	Depth	R.L. Depth	
L1	35.4	77.1					33.0	+2-4	152	2 coal 7.5, 1.0	67.1	-31.7	Tert or Jur? several thin seams 158-148
L2	63.7	41.2									41.2	+22.5	no coal
L3	54.6	35.1									29.0	+25.6	no coal
L4	61.0	47.3									47.0	+14.0	no coal
L5	69.5	53.4	16.8	+52.7	1.6	?	73.5	+36.0	1.5	1?	44.2	+25.3	~~Tert-Jur?~~ or both Tert?
L6	65.5	83.8	40.2	+25.3	5.5	several thin	57.0	+9.5	5.2	several thin	79.3	-13.8	" " " " "
L7	55.8	125.0	16.2	+39.6	22.3	8 thin seams	72.7	-16.9	16.8	lots seams		<-70	Also seams @ 107.3 - 112.2 (Jur?)
L8	59.1	60.1									35.1	+24.0	no coal

MINES ADMINISTRATION PTY. LTD.

Hole No.	Elev.	T.D.	Tertiary Lignite				Jurassic Coal				Basement		Comments
			Depth	R.L. Depth	Thick.	No. Seams	Depth	R.L Depth	Thick	No. Seams	Depth	R.L Depth	
RX1	112.8	61.0	38.1	74.7	6.1	1@1.5m many small						<+59	Abn carb below 38.1m.
RX2	108.2	88.4	32.0	76.2	–	trace							trace lignite @ 32.0m.
RX3													See RX3A
RX3A	109.8	61.0	36.0	73.8	5.2	1 seam 5.2m							Abn carb 36.0 – 48.8
RX4	108.2	38.7	38.1	70.1	+0.6	1 seam							Hole stopped in lignite
RX5	109.8	67.1	39.6	70.2	trace	only							Trace Carb 39.6-67.1
RX6	115.9	45.7	36.6	79.3	"	"						<+70	Lignite increases below 36.6 → 45.7
RX7	112.8	45.7	39.6	73.2	+6.1	1@3.1m many small							Hole completed in lignitic sst.
RX8	109.8	88.4	42.7	67.1	trace	only							Traces lignite 42.7 → 88.4
RX9	111.3	45.7	36.6	74.7	+9.1	many small				–			Hole completed in lignite, lignite abn below 4.
RX10													Not relevant.
1													

MINES ADMINISTRATION PTY. LTD.

Hole No.	Elev.	T.D.	Tertiary Lignite				Jurassic Coal				Basement		Comments
			Depth	R.L. Depth	Thick.	No. Seams	Depth	R.L Depth	Thick	No. Seams	Depth	R.L Depth	
DP1	138·7	85·4									61·0	+77·7	no coal
DP2	127·4	137·2					97·6	+29·8	+39·6	9+		<-9·8	8 thin seams 97·6-125·6, Main seam 125·6-EOH.
DP3	123·2	137·2					123·5	-0·3	+13·7	7+		<-14	Stopped in coal seq. Seam in DP2 not reached.
DP4	135·4	82·3	57·9	+77·5	4·9	2:					77·7	+57·7	Very thin seams, tr lignite @ 36·6.
DP5	140	77·7									71·6	+52·2	no coal.
DP25	129·9	12·2									10·7	+119·2	no coal.
DP26	123·2	56·1									54·9	+68·3	no coal.
DP27	130	77·7	51·2	+79·0	+26·5	7 thin seams						<+52·5	3 seams 51·2-54·3, Stopped in lignitic zone

CHEVRON EXPLORATION CORPORATION

Hole No.	Elev.	T.D.	Tertiary Lignite				Jurassic Coal				Basement		Comments
			Depth	R.L. Depth	Thick.	No. Seams	Depth	R.L Depth	Thick	No. Seams	Depth	R.L. Depth	
LDH1	74.7	94.5									81.4	-6.7	no coal.
LDH2	70.1	42.7									40.5	29.6	no coal.
LDH3	105.2	62.8									59.8	45.4	no coal.
LDH4	85	50.3	25.0	60	1.5	1					46.6	38.4	lignite in sand.
LDH5	95	38.1	21.6	73.4	3.0	2					37.2	57.8	
LDH6	110	68.6	41.2	68.8	2.7	1					64.6	45.4	
LDH7	123	29.9									26.5	97.0	no coal.
LDH8.	131	6.1									2.1	129	no coal.
LDH9	118	152.4				many fine seams	86.9	31.1	65.5			<-34	*mainly lignitic sandstone*
LDH10	99	152.4	61.0	38.1	19.2	?	102.1	-3.0	50.3			<-53	~30% highly carb'g sst ? bl/petroleum fluor?
LDH11	89	152.4	18.3	70.7	12.2	5 seams max 2.1m	125	-36	18.3	5		<-63	carb + hydrocarb sst 102.1-137.8
LDH12	124	152.4					100	23.5	47.9			<-29	no coal, carb clay 100-147.9m
LDH13	149	152.4										<-3.4	no coal
LDH14	160	152.4	48.1	111.9								<+7.6	" " carb clay 69.5-EOH.
LDH15	100	41.2									39.9	60.1	" "
LDH16	85	45.7									42.7	42.3	" "
LDH16A	85	27.4										<58	" "
LDH17	74	69.2	15.2	58.8	25.0	many thin seams					63.1	10.9	lignitic sands - lenticular No real seams
LDH18	110	152.4	34.1	75.9	3.0	1	106.7	3.3	4.6	thin multi seamed.		<-42	lignitic clay 34.1-110.4 Main seam @ 34.
LDH19	89	152.4										<-63	no coal.
LDH20	100	152.4	32.0	68	3.0	2 seams 0.6m ea	122.6	-22.6	4.3	1		<-52	
LDH21	121	152.4	44.2	76.8	1.5	many paper like seams						<-31	lignitic clays 44.2-EOH generally <5%
LDH22	105	152.4	27.4	77.6	4.9	thin seams <20% lig	97.0	8.0	4.3	thin seams		<-47	Very little lignite

CHEVRON EXPLORATION CORPORATION

Hole No.	Elev.	T.D.	Tertiary Lignite				Jurassic Coal				Basement		Comments
			Depth	R.L. Depth	Thick.	No. Seams	Depth	R.L Depth	Thick	No. Seams	Depth	R.L Depth	
DH23	108	152.4	22.6	85.4	28.0	several max 18	139.3	-31.3	8.5	minor lignite only		<-44	Main seam @ 48.8, remainder v thin seams.
DH23A	108	31.7	16.8	91.2	+3.0	minor only						<76'	No seams, carb clay.
DH24	100	122.0	22.3	77.7	21.9	mainly thin 1@0.9m						<-22	Mainly carb clay. Seam @ 36.6
DH25	95	152.4	8.5	86.5	16.8	many thin seams	53.7	41.3	47.8	no seams partings		<-57	Mainly carb clay & minor lignite. Poss no Jur?
DH26	95	152.4	22.9	72.1	11.4.0	see note.						<-57	Many thin seams (to 30% 74.7-76.2) Mainly gravels.
DH27	90	152.4	44.5	45.5								<-62	No lignite - carb clay only. 44.5-79.3
DH28	89.9	54.9											No coal.
DH28A	89.9	57.6									31.1	59	" "
DH29	97.6	39.6									34.8	63	" "
DH30	100	59.5								?	53.7	+46	"
DH31	107	32.0	7.6	99.4							29.0	78	tr carb in sand @ 7.6m.
LDH32	100	123.5					42.4	55.2	34.7	5 seams 18.0m Total	82.3?	18	2 main seams each 4.9m thick 53.4-66.8
DH32A	100	133.8	17.7	82.9		many thin seams see note	85.4	15.2	<0.6m	1	?	<-33	+ thin seams. 1@ 46.6m ~0.9m thick
DH33	95	31.1									27.4		No lignite or coal. Possible weathered basement 1
DH34	99	152.4	24.4	74.6			82.9	16.4	note			<-68	No coal, carb sandy clay
LDH35	92	152.4	11.9	80.1		lig patches in carb clay						<-60	Otherwise no coal.
LDH36	102	152.4	27.4	74.6	10.6	2 seams see note						<-50	1 seam 1.5m & carb clay 1 seam ~1A
DH37	112	152.4	33.8	78.2	15.2m	1 thick seam many thin						<-40	2.4m thick seam @ 34.2m, 0.9m seam @ 45.7
DH38	129.6	152.4					91.5	38.1				<-23	No coal carbonaceous clay
DH39	102	152.4					75.6	26.5				<-50	" "
LDH40	90	152.4	15.9	74.1	56.4	4 thin seams						<-62	3.2m @ 15.9 lig interbedded clay others <0.6m
LDH41	87	152.4	12.2		64.9	7 seams var thick 1@32m 1m thick						<-65	2 main seams. Max thickness 3.6m 16.5 - 25m
LDH42	102	68.6	26.2	75.8	37.2						68.6	+33.4	mainly carb sands.

CHEVRON EXPLORATION CORPORATION

Hole No.	Elev.	T.D.	Tertiary Lignite				Jurassic Coal				Basement		Comments
			Depth	R.L. Depth	Thick.	No. Seams	Depth	R.L Depth	Thick	No. Seams	Depth	R.L Depth	
DH 43	100	39.6									34.5	+66	No coal.
DH 44	77.1	50.3	24.4	52.7	3.1	1 seam see note						<27	coaly bands in carb clay
DH 45	77.1	85.4									81.4	-4.3	No coal.
DH 46	*	49.4					25.0		4.0	3 thin seams	31.0		Basement is weathered granite Fresh granite @ 47.4
DH 47		45.4									11.9		No coal.
DH 48		43.3	5.2		4.9	several thin seams	25.0		0.6	1 seam	27.4		Only thin seams
DH 49		42.4	15.2		1.5m	1 seam 1.5m thick	18.9		0.3	1 seam	23.5		
DH 50		75.7									30.8		No coal
DH 51		53.4	*								28.6		No coal, carb clay
DH 52		54.5									24.7		No coal, "chocolate brown clay + black chunks"
DH 53		54.9									38.1		No coal, minor carb clays + carb matter
DH 54		63.1									25.9		No coal
DH 55	*	57.9									42.7		No coal, carb clay ± some coaly particles
DH 56		152.4					30.5		see note	many bands	144		Interbedded clays + gravels ± bands of black lignite to EOH
DH 57	*	153					34.1		see note 1-2ft	many bands			Carb clays ± bands of lignite to EOH 60% carb 35.1%
DH 58	*	56.4	15.2		6.1	thin seams + lenses	38.7			1 seam in carb clay	46.0		Carb clay mainly
DH 59		53.7									29.0		No coal, carb clay
DH 60	*	82.6					20.7		30.5	ufew thin seams	67		Carb clays ± lignite bands ~1ft seam @ 62.1
DH 61	*	59.5									57.9		Carb clays + sands ± "black blebs" + "carb matter"
DH 62		73.2									70.4		No coal
DH 63		20.7									69.5		No coal
DH 64		56.7									55.8		No coal minor carb clays
DH 65		54.1									27.8		No coal minor carb clays

0037

CHEVRON EXPLORATION CORPORATION

Hole No.	Elev.	T.D.	Tertiary Lignite				Jurassic Coal				Basement		Comments
			Depth	R.L. Depth	Thick.	No. Seams	Depth	R.L Depth	Thick	No. Seams	Depth	R.L Depth	
LDH 66	*	72.9					29.6		28.3	many thin seams	70.4		carb clay + sand 2 main bands lignite @ 45.7 + 56.4 ≤1ft thick
LDH 67		58.5					25.0		11.6	2 bands v thin			Carb clay, minor lignite, pyrite after wood.
LDH 68		47.3					24.4						Carb clay & chunks of lignite Lost circ @ 24.4 no more samples

WATER BORES

Hole No.	Elev.	T.D.	Tertiary Lignite				Jurassic Coal				Basement		Comments
			Depth	R.L. Depth	Thick.	No. Seams	Depth	R.L Depth	Thick	No. Seams	Depth	R.L. Depth	
175/21		38·1	21·3		16·8	no definite							carb sand increases to 40% @ EOH.
F6		39·9	39·6		+0·3	"							silty lignite - stopped in lig.
D5		32·9											no lignite, carb clay
D3		25·2											no lignite " "
5/9	47	18·3	16·8	30·2	+1·5	?						<29	lignitic sand.
20/11	42	13·7	11·0	31·0	+2·7	?						<28	" "
20/10	39	13·1	10·1	28·9	+3·0	?						<26	" "
20/25	40	12·9	10·7	29·3	+4·2	?						<25	" "
19/17	48	18·0	17·4	30·9	+0·9	?						<30	" "
2/3	55	18·3	15·2	39·8	+3·1	?						<37	" " & clay.
A/4	51	41·1	12·8	38·2	5·5	?						<10	" "
4/2	48	14·0	13·7	34·3	+0·3	?						<34	" "
3/1	59	13·7	4·3	54·7	6·1	?						<45	" " & clay
3/2	75	25·6	25·0	50·0	+0·6	?						<49	carb clay only.
C/1		39·9											" " "
19/1	39	13·7	11·9	27·1	1·8	?						<25	lignitic sand
E/1		36·6	17·7		+18·9	1@5·1m							lignite below 31·7, stopped in lig.
E/2		30·5	23·8		+6·7	1@3·6m							Lignite 23·8-27·4
C/5	35	45·7	20·4	14·6	20·3	?						<-11	Mainly lignitic sand.
47/2	35	22·9	20·7	14·3	+2·2	?						<12	Lignitic sand only.
15/2	18	22·6									19·8?	+3	carb clay only
65/2	15	18·0	17·7	-2·7	+0·3	?						<-3	silty lignite
96/2	18	14·3										<4	carb clay only

Hole No.	Elev.	T.D.	Tertiary Lignite				Jurassic Coal				Basement		WATER BORES Comments
			Depth	R.L. Depth	Thick.	No. Seams	Depth	R.L Depth	Thick	No. Seams	Depth	R.L. Depth	
129/1	25	19.2	15.5	9.5	+3.7	?						<6	carb sand
55/1	30	44.2	21.3	8.7	1.9	tr					?23.2	+6.7	tr carb only.
199/70-79	65	43.9										<21	carb clay only.
199/102-5	70	33.5	33.2	36.8?								<37	" " "
199/92	60	45.7	43.9	16.1								<14	clay carb silt 43.9-EOH.
36/1	50	93.9	13.1	36.9	17.4	?					76.8	-26.8	lign sand.
5/33	65	57.9	43.6	21.4	14.1	?					?47.5	+17.5	lign clay only.
5/38	38	10.7	10 4	27.6	+0.3	?						<27	
2/1	60	106.7	29.0	31.0	39.6						99.4	-39.4	lig, lignitic clay + sand
3/1	69	92.7	27.4	41.6	21.4	20-70%					48.8	+20.2	lig, lig sand + clay.
42/1	75	77.7	21.3	53.7	15.3	?					36.6	+38.4	" " "
42/3	70	57.6	27.4	42.6	15.3	?					42.7	+27	" " "
25/1	80	77.3	30.5	49.5	9.1	?					39.6	+40	" " "
25/2	70	89.6	42.7	27.3	24.4	?					67.1	+3	" " "
25/3	80	93.0	42.7	37.3	6.1	?					48.8	+31	
73/3	48	41.1	17.7	30.3	12.2	?					?29.9	+18	black lig^c sand.
37/6	55	39.6	38.4	16.6								<15	carb clay below 38.4
39/1	48	38.1	15.8	32.2	22.5	?						<10	sandy lignites + lig^c sand.
21/1	35												
12/1	38		14.6	23.4									

0040

SADME.

Hole No.	Elev.	T.D.	Tertiary Lignite				Jurassic Coal				Basement		Comments
			Depth	R.L. Depth	Thick.	No. Seams	Depth	R.L Depth	Thick	No. Seams	Depth	R.L. Depth	
P1													
P2		46.6	20.4		0.4	1					45.2		
P3		27.0	17.8		4.8	—					22.6		poor lignites, poss C shale/clay.
P4		85.0					53.1		6.3	many stringers	78.4?		
P5		94.0					63.0		0.8	1?			? Jur coal.
P6													
P7													
P8	112	156.2	33.8	78.2	11.0	3 seams >0.5m	84.0	28	5.0			<-144	? Jur. coaly seams from 84.0 – 148.0
P9	98	43.0	18.8	79.2	1.6	2						<+55	
P10	95	30.0										<+65	no coal.
P11	110	40.0										<+70	no coal.
P12	100	75.0					47.0	53	22.3	many stringers		<+25	thin lignites – mainly from 51.0–59.3.
P13	72	58.0	42.0	30.0	2.0	?						<+14	lignitic 30.0–48.0
P14													
P15													
P16													
P17													
P18													
P19													
P20													
P21	120.	123.0	32.5	87.5	18.0	2?	113.0	7	4.6	3 major? + minor?		<-3	Good hole!!
P22													
P23													

Hole No.	Elev.	T.D.	Tertiary Lignite				Jurassic Coal				Basement		S.A.D.M.E. Comments
			Depth	R.L. Depth	Thick.	No. Seams	Depth	R.L. Depth	Thick	No. Seams	Depth	R.L. Depth	
P45	74.0	90.95					48.0	+26.0	15.8	6 total 11.8m			Lacks clays & coal from 39.5 - T.D.
P47	65.4	116?					77.0	-11.6	28.0	?			Prop of coal not known.
P48	89.0	89.0					31.0		12.0	4 total 6.0m			
P54	75.0	148.3					129.5	-54.5	1.0	1			
P595	68.8	66											Coal not intersected
P70	58.4	240					220.0	-161.6	20+	?			No geo logs - prop of coal unknown - stopped in coal
P99	105.8	175.2					92.6	+13.2	44.4	?			Prop of coal not known.

SADME 0042

Hole No.	Elev.	T.D.	Tertiary Lignite				Jurassic Coal				Basement		Comments
			Depth	R.L. Depth	Thick.	No. Seams	Depth	R.L. Depth	Thick	No. Seams	Depth	R.L. Depth	
[illegible]DA 1	50	172·2	48·2	1·8	10·9	many thin	108·8		7.3	1@06m	162·8	-112·8	= Bore 19/26, Lign to 116m.
Lock 1	105	368·7					112·4		17·6		188·0	-183	Jur - no thick seams (best 112-130m)

0043

APPENDIX 2

Vol 1.

80LRM1

0 - 8m	Clay, red-cream, silty; calcrete bearing 0.4 metres	HOLCENE
8 - 12m	Sand, red, medium to coarse grained	? EOCENE
12 - 38m	Silt and Clay, yellow brown to grey	POELPENA FORMATION
38 - 44m	Sand, red, medium grained	
44 - 96m	Clay, grey, yellow, green, sandy	
96 -158m	Sand, grey to white, fine to coarse grained some pyrite cement. Contains thin brown lignitic clay seams within the intervals 110-120, 128-158	? JURASSIC POLDA FORMATION
	B.O.H. 158m.	

80LRM2

0 - 6m	Clay, brown and calcrete	
6 - 16m	Clay and sand, red-brown to green, mottled	? EOCENE
16 - 20m	Sand, yellow-brown, fine to coarse grained	
20 - 32m	Clay, silty, red-brown, mottled	
32 - 40m	Sand, yellow-red, medium to coarse grained	
40 - 50m	Clay, sandy, grey-green	
50 - 84m	Clay, yellow, green, purple, mottled, becoming sandy at depth	
84 -114m	Clay, light green and indurated grey-green; carbonaceous specks at 102 metres; local patches dark grey carbonaceous clay	? JURASSIC
114 -130m	Clay as above interbedded with sand	
130 -153m	Sand, feldspathic with thin lignitic sand bands, variably pyritic.	
	B.O.H. 153 metres.	

80LRM3

0 - 10m	Clay, orange-brown, sandy and calcrete
10 - 32m	Clay, green-brown, sandy
32 - 66m	Clay, green-brown, red, mottled with pebbly bands
66 - 88m	Clay, green with mottled sandy patches
88 -114m	Clay, green with dark grey carbonaceous clay interbeds and light grey kaolinitic zones tending sandy
114 -142m	Clay, green, soft, interbedded sands
142 -153m	Sand, light grey to brown, medium grained, variable minor lignite content, occasional lignitic clay/sand intervals.
	B.O.H. 153 metres

80LRM4

0 - 6m	Clay, red-brown, calcareous, sandy; calcrete
6 - 16m	Clay, green-brown, mottled, sandy
16 - 32m	Clay, green, sandy
32 -120m	Sand, grey to brown, fine to coarse grained, micaceous and pyritic, locally clayey; lignitic clayey sand in thin seams
120 -152m	Sand as above and carbonaceous clay, grey
	B.O.H. 152 metres

80LRM5/80L5C (cored hole 47-78.1 metres)

0 - 10	m	Clay, orange-yellow, mottled, silty; calcrete above 6 metres
10 - 36	m	Clay as above interbeddedwith sand, yellow, quartzose
36 - 44	m	Clay, green, soft
44 - 47	m	Sand, coarse with carbonaceous intervals, green to dark grey
47 - 49	m	Clay, grey, sandy
49 - 52.1	m	Sand, quartzose (core loss)
52.1- 56.2	m	Carboanceous clay, dark brown and lignitic clay, woody and micaceous. Core loss 53-54 metres in lignitic clayey sand.
56.2- 57.5	m	Sand, brown, fine grained, grading into lignitic sand
57.5- 59.0	m	Sand, lignitic, grey; core loss
59.0- 60.1	m	Sand, lignitic, light brown to black, medium grained
60.1- 69.0	m	Lignite, dark brown to back, very minor clay bands below 68.5 with woody fragments. No pyrite
69.0- 70.4	m	Sand, light brown, fine grained, micaceous
70.4- 74.6	m	Sand, brown, clayey with minor lignitic bands
74.6- 75.0	m	Clay, light grey-brown, micaceous, sandy; silt shows cross bedding
75.0-110.0	m	Sand, grey, fine to coarse grained, micaceous locally pyritic
110.0-116.0	m	Clay, green, white
116.0	m	Granodiorite, medium to coarse grained; Basement B.O.H. 116 metres

80LRM6

0 - 10m	Clay, yellow, mottled, sandy
10 - 22m	Sand, white to red-brown, fine to very coarse grained
22 - 42m	Clay, green, mottled, sandy
42 - 60m	Clay, green, grey, white kaolinitic with sandy interbeds
60 - 66m	Clay, white, sandy in part
66 - 70m	Clay, dark grey-green, sandy in part
70 - 88m	Clay, white and dark carbonaceous with sandy interbeds
88 - 96m	Sand, grey, fine to medium grained
96 -112m	Clay, white, stiff and micaceous sand
112 -136m	Sand, grey, fine grained with trace pyrite and with minor interbedded lignite horizons
136 -153m	Sand, micaceous, pyritic
	B.O.H. 153 metres

80LRM7

0 -	8m	Clay, yellow-orange, mottled, sand; and calcrete
8 -	20m	Clay, green, cream, yellow, brown
20 -	26m	Clay and sand, fine to coarse grained, some pyrite
26 -	34m	Sand, fine to very coarse grained, with lignitic sand and clay bordering on lignite 30-32 metres
34 -	38m	Claystone, light yellow-green, silty
38 -	58m	Sand, fine grained, micaceous, with clay interbeds
58 -	72m	Clay, brown to grey, micaceous, sandy
72 -	118m	Sand, grey-white, fine grained with micaceous clay and silt bands and lignitic sands and clays below 108 metres
118 -	153m	Clay, grey, micaceous, sandy; and clayey silts with black coaly flecks; some sand B.O.H. 153 metres

80LRM8

0 -	4m	Clay, orange, sandy; and calcrete
4 -	18m	Silt, green, red, mottled clayey; and sandstone
18 -	24m	Clay, grey, yellow, sandy; and sand, fine to coarse grained
24 -	34m	Sand, light grey, fine to very coarse grained, quartzose, micaceous and pyritic; below 28 metres is dark brown , lignite stained.
34 -	42m	Sand, dark brown with 40% lignite lumps
42 -	82m	As for 24-34 metres
82 -	90m	Silt, light grey, sandy
90 -	106m	Silt, green, sandy; and clay; very micaceous-biotite fragments below 94 metres and occasional composite quartzbiotite grains (Basement) B.O.H. 106 metres

80LRM9

0 -	4m	Soil, sandy; and calcrete
4 -	14m	Clay, grey, mottled, sandy
14 -	26m	Silt, green clayey and sand, clayey.
26 -	44m	Clay, yellow grey, mottled and sand, light grey, lignite stained below 30 metres
44 -	68m	Clay and sand as above with stiff dark grey carbonaceous clay grading to white kaolinitic clay
68 -	82m	Sand, fine to coarse grained, micaceous, pyritic with minor brown lignitic sand and clay partings
82 -	86m	Sand and Lignite (<40%)
86 -	94m	Sand as 68-82 metres
94 -	94m	Sand and Lignite (<40%)
98 -	148m	Sand as 68-82 metres and white clay <50% below 134 metres
148 -	152m	Pebble band
152 -	156m	Sand as 98-148 metres B.O.H. 156 metres

80LRM10

0 -	4m	Clay, sandy; sandstone, ferruginous; calcrete
4 -	8m	Sandstone, white to red, fine grained, graded bedding
8 -	24m	Sand, yellow, quartzose, unconsolidated
24 -	120m	Sand, grey, micaceous with white clay bands and matrix, pyritic in part, no lignite
		B.O.H. 120 metres

80LRM11

0 -	4m	Clay, orange-red, sandy; calcrete
4 -	16m	Sandstone, white to red
16 -	48m	Sand, yellow to grey, unconsolidated, micaceous, minor pyrite; and silty clay band
48 -	153m	Sand as above with white kaolinitic bands and matrix and minor sections with <40% lignite. Vitreous black coal fragments 132-136 metres
		B.O.H. 153 metres

80LRM12

0 -	4m	Silt, sand, clay, orange; and calcrete
4 -	60m	Sand, light yellow-grey and lesser clay, white, kaolinitic
60 -	150m	Sand, light grey, locally clayey and silty, micaceous and pyritic throughout; no lignite
		B.O.H. 150 metres

80LRM13

0 -	10m	Clay, orange-red, sand; and calcrete
10 -	16m	Sandstone, white to red-brown, fine grained, quartzose
16 -	44m	Clay, white, micaceous, sandy to very sandy locally
44 -	60m	Clay, grey to brown, carbonaceous, sandy in part
60 -	194m	Sand, grey, clayey, very pyritic (5-7%), trace mica, very fine lignite specks in clay. Distinct coarse grained granular chips of vitreous coal below 68 metres
		B.O.H. 194 metres

80LRM14

0 -	6m	Sand, yellow, and calcrete	QUATERNARY
6 -	14m	Sandstone, fine grained, white to red	EOCENE
14 -	34m	Sand, yellow	
34 -	84m	Clay, silt, white, grey, brown, sand interbeds. Up to 20% chips of sub-bitumenous brown-black coal.	JURASSIC
84 -	108m	Sand, grey	
108 -	124m	Clay, grey, brown, sand interbeds	
		B.O.H. 124m	

80LRM15

0 - 4m	Sand, yellow and calcrete	QUATERNARY
4 - 12m	Sandstone, fine grained, white to red	EOCENE
12 - 30m	Sand, yellow	
30 - 38m	Clay, carbonaceous, white to grey. Up to 20% black coal chips	JURASSIC
38 - 122m	Sand, grey, pyritic below 102m, with carbonaceous clay interbeds. Up to 20% chips of sub-bitumenous coal	
	B.O.H. 122m	

80LRM16

0 - 8m	Clay and sand, orange and calcrete	QUATERNARY
8 - 12m	Sandstone, white to yellow	EOCENE
12 - 20m	Sand, yellow	
20 - 46m	Clay, grey to brown, carbonaceous. Thin black sub-bitumenous coal partings	JURASSIC
46 - 72m	Sand, grey, locally pyritic, with carbonaceous clay interbeds	
72 - 74m	Clay, green with lithic fragments of granite and metamorphics. Weathered diamictite. Loss of circulation	?PERMIAN
	B.O.H. 74m	

80LRM17

0 - 6m	Clay, orange and calcrete	QUATERNARY
6 - 10m	Sandstone, white to orange	EOCENE
10 - 44m	Sand, white	
44 - 56m	Clay, grey to brown, minor coal fragments	JURASSIC
56 - 100m	Sand, white with white clay bands	
100 - 124m	Clay, grey, carbonaceous with increasing sand at depth	
	B.O.H. 124m	

80LRM18

0 - 6m	Calcrete and clay	QUATERNARY
6 - 8m	Clay, yellow-green	
8 - 14m	Clay, white	
14 - 58m	Sand, weakly pyritic, pebbly locally with interbedded white clays	EOCENE
58 - 124m	Clay, grey, carbonaceous. Woody coal fragments up to 30%. Interbedded pyritic sands.	JURASSIC
	B.O.H. 124m	

80LRM19

0 - 4m	Calcrete	QUATERNARY
4 - 8m	Clay, red, orange, green, sandy	EOCENE
8 - 16m	Sandstone, white, clayey, and clay, yellow	
16 - 24m	Sand, white and clay	
24 - 30m	Clay, grey with pyritic sandy interbeds	JURASSIC
30 - 42m	Clay and lignitic clay Lignite band, 34-36m	
46 - 52m	Clay, white with sandy interbeds	
52 - 120m	Sand, white to brown with white clay interbeds B.O.H. 120m	

80LRM20

0 - 4m	Sand, orange and grey	QUATERNARY
4 - 8m	Calcrete and orange clay	
8 - 14m	Sand, yellow brown, minor clay	EOCENE
14 - 30m	Clay, dark, carbonaceous with pyritic sandy interbeds. Minor lignitic clay and sand	JURASSIC
30 - 44m	Sand, grey with minor white clay bands	
44 - 122m	Sand, dark grey, pyritic with interbedded brown-grey carbonaceous clay. Black sub-bitumenous coal chips up to 20%. Increases to 50% 98-100m, 104-106m B.O.H. 122m	

80LRM21

0 - 4m	Calcrete, clay, sandstone	QUATERNARY
4 - 12m	Sandstone white and yellow, sand white	EOCENE
12 - 28m	Sand, red, hematitic	
28 - 44m	Sand, fine through to cobbles, pyritic. Lignitic sand and clay locally. Bivalve fragments 32-40m	
44 - 68m	Sand as above. No lignite, pyritic in part only, with white clay interbeds. B.O.H. 68m	EOCENE

80LRM22

0 - 4m	Calcrete, cream and soil	QUATERNARY
4 - 8m	Sand, red-orange and clay	EOCENE
8 - 12m	Sandstone, white to red	
12 - 32m	Sand, pink	
32 - 42m	Sand, pink and black, lignitic	
42 - 48m	Sand, brown black, lignitic, minor lignitic clay	?EOCENE
48 - 68m	Clay, white and sand, pyritic interbedded B.O.H. 68m	

80LRM23

0 - 4m	Calcrete, cream and clay orange, pink	QUATERNARY
4 - 10m	Sandstone, white to red	EOCENE
10 - 18m	Claystone, cream	
18 - 36m	Clay, brown	
36 - 54m	Sand, grey, minor clay	JURASSIC
54 - 118m	Clay, grey, carbonaceous and sand, grey, pyritic. Minor sub-bitumenous coal chips	
118 - 124m	Clay, greenish grey, sandy	?WEATHERED PERMIAN DIAMICTITE
	B.O.H. 124m	

80LRM24

0 - 6m	Clay, brown, yellow, orange	
6 - 14m	Sandstone, white to red	
14 - 36m	Clay, white with grey sand interbeds	?
36 - 54m	Sand, grey with white clay interbeds	
54 - 120m	Clay, grey to brown, locally carbonaceous	
	B.O.H. 120H	

80LRM25

0 - 6m	Clay, pink and clacrete, pink	QUATERNARY
6 - 14m	Sandstone white to pink	EOCENE
14 - 64m	Sand, grey and clay, white	
64 - 120m	Clay, grey, carbonaceous and sand grey, pyritic. Sub-bitumenous coal chips trace to 5%	JURASSIC
	B.O.H. 120m	

80LRM26

0 - 4m	Clay, orange brown, calcrete cream	QUATERNARY
4 - 10m	Sandstone, red and brown	EOCENE
10 - 42m	Sand, red to yellow and clay, white	
42 - 64m	Clay, white and sand, grey, pyritic	
64 - 120m	Sand, grey, pyritic; clay, grey, carbonaceous; rare chips of sub-bitumenous brown-black coal	JURASSIC
	B.O.H. 120	

80LRM27

0 - 3m	Calcrete, cream	QUATERNARY
3 - 8m	Sand and gravel, orange-yellow	
8 - 12m	Clay, yellow, white; sandstone yellow-brown	EOCENE
12 - 20m	Sand, red	
20 - 44m	Sand, yellow and clay, white and yellow	
44 - 60m	Clay, white to brown and sand, grey	JURASSIC
60 - 150m	Clay, grey, carbonaceous and sand, grey, pyritic	
	B.O.H. 150m	

80LRM28

0 - 4m	Calcrete, cream	QUATERNARY
4 - 14m	Sandstone, yellow brown and clay, pink	EOCENE
14 - 22m	Sand, yellow	
22 - 64m	Sand, brown, lignitic, pyritic and clay, grey, lignitic	
64 - 66m	Clay, brown	
	B.O.H. 66m	

80LRM29

0 - 4m	Calcrete, cream	QUATERNARY
4 - 8m	Clay, green, yellow, red	EOCENE
8 - 14m	Sandstone, white, yellow	
14 - 48m	Sand, brown, lignitic below 32m Lignite, lignitic sand 42-44m 60%, 32-34m 30%	
48 - 54m	Clay, green, brown, ?glauconitic	
54 - 62m	Sand, light grey and gravel; clay, white	
62 - 82m	Clay, yellow, white; sand grey, locally pyritic	
82 - 86m	Clay, green and weathered acid intermediate igneous rock	CARPENTARIAN
	B.O.H. 86m	

80L30C

Note that this hole was first rotary mud drilled to 112 metres as 80LRM30 then an adjacent hole (80L30C) cored the 44 to 86 metre section.

The log below represents a 'splice' between the very qualitative rotary mud data in the upper part of the hole and the accurately cored coal bearing section. (44.4-89.4m)

80L30C

0 - 8m	Calcrete, cream	QUATERNARY
8 - 18m	Clay, green, blue, yellow, red	EOCENE
18 -48.2m	Sand, grey	
48.2 -51.0m	Coal, blackish-brown, sub-bitumenous with woody fragments. May be Eocene or Jurassic	?JURASSIC
51.0 -58.5m	Clay, brown, lignitic in part and sand, grey	JURASSIC
58.5 -62.9m	Coal, black, brown, sub-bitumenous, hard, blocky. Contains three sand/clay interbands maximum thickness 10 centimetres	
62.9 -74.2m	Sand, grey, cross-bedded and clay, grey-brown, locally lignitic with thin coal partings	
74.2 -74.8m	Clay, brown, carbonaceous with some black coal fragments and partings	
74.8 -75.9m	Sand, grey-brown with thin coal partings	

80L30C (cont)

75.9 - 77.5m	Coal, black, sub-bitumenous, hard and blocky; grades downward into lignitic clay	JURASSIC
77.5 - 79.3m	Clay, brown and sand with thin coal partings	
79.3 - 80.6m	Coal, black, sub-bitumenous, crumbly	
80.6 - 82.6m	Core loss, possibly gravel	
82.6 - 83.9m	Clay, brown with sub-bitumenous coal partings up to 30 centimetres thick and sand, grey	
83.9 - 84.6m	Clay and sand as above	
84.6 - 86.0m	Clay, coal and sand as above	
86.0	Clay, green with large granite fragments. Weathered ? Permian diamictite B.O.H 86m	?PERMIAN

80LRM31

0 - 8m	Calcrete, pink and clay, pink	QUATERNARY
8 - 18m	Clay, pink and yellow	EOCENE
18 - 32m	Sand, yellow	
32 - 44m	Clay, green, brown, white and brown carbonaceous. Traces of brown lignite and black sub-bitumenous coal	JURASSIC
44 - 68m	Sand, grey, pyritic and clay brown, carbonaceous. Traces of coal fragments	
68 - 84m	Clay, brown, green, carbonaceous; sand; sub-bitumenous coal fragments 10%	
84 - 126m	Sand, grey, pyritic; clay, grey, brown; Black, sub-bitumenous coal fragments as follows 100-140m 25% 104-108m 40% 108-114m 60% 114-116m 20% 116-118m 40%	
126 - 138m	Clay, brown, green B.O.H. 138m	?JURASSIC

80LRM32

0 - 4m	Calcrete, cream minor sand, clay	QUATERNARY
4 - 8m	Silcrete, white and calcrete	
8 - 12m	Sand, red, hematitic	
12 - 16m	Clay, brown, grey, calcareous	
16 - 36m	Clay, dark green, chloritic Chlorite schist floaters below 26m	EOCENE
36m	Basement - chlorite schist	LOWER PROTEROZOIC
	B.O.H 36m	

80LRM33

Three attempts made to drill this hole were abandoned due to karst topography. Maximum penetration was 6 metres in Quaternary calcrete.

80LRM34

0 - 6m	Calcrete, cream and chert, black	QUATERNARY
6 - 12m	Clay, grey, green, yellow	EOCENE
12 - 16m	Poor recovery, some clay	
16m	Basement (hard).	?PROTEROZOIC
	B.O.H. 16m	

80LRM35

0 - 8m	Calcrete, cream	QUATERNARY
8 - 14m	Clay, yellow green	
14 - 24m	Sand, white and clay, as above	
24 - 40m	Sand, brown, carbonaceous; trace brown woody coal	?EOCENE
40 - 58m	Clay, grey, white and sand, grey, quartzose perhaps reflecting basement	
	B.O.H. 58m	

80LRM36

0 - 8m	Calcrete, cream and clay, yellow	QUATERNARY
8 - 14m	Gravel, white to pink, arkosic and clay, green	?EOCENE
14m	Basement - igneous intermediate rock	?CARPENTARIAN
	B.O.H. 14m	

80LRM37

0 - 10m	Calcrete, cream	QUATERNARY
10 - 22m	Clay, yellow, white, brown and sand, white	EOCENE
22 - 32m	Clay, brown, grey, carbonaceous. Sub-bitumenous coal fragments 10%	
32 - 42m	Sand, white and clay, white, brown. Trace coal.	?JURASSIC
42 - 54m	Sand, pink, with quartz-orthoclase-chlorite fragments	
54m	Basement-Quartz feldspar chlorite gneiss	LOWER PROTEROZOIC
	B.O.H. 54m	

80LRM38

0 - 6m	Calcrete, cream, white	QUATERNARY
6 - 12m	Clay, yellow and white	
12 - 16m	Clay, mustard yellow and green with chlorite fragments and granular quartz-feldspar fragments	EOCENE
16m	Basement Quartz feldspar chlorite gneiss	LOWER PROTEROZOIC
	B.O.H. 16m	

80LRM39

0 - 8m	Calcrete, white, brown	QUATERNARY
8 - 16m	Clay, olive-green	
16 - 26m	Sand, yellow, white; gravel; clay, green	EOCENE
26 - 30m	Clay, dark brown, carbonaceous. Trace sub-bitumenous black coal. Strong natural gamma kick on geophysical log in carbonaceous clay 24-28m	JURASSIC
30 - 36m	Clay, green with chlorite sericite schist fragments	
36m	Basement Chlorite-sericite-feldspar-quartz-schist	LOWER PROTEROZOIC
	B.O.H. 36m	

80LRM40

0 - 2m	Calcrete, cream and loam, brown	QUATERNARY
2 - 6m	Sandstone, white to orange, calcareous	EOCENE
6 - 12m	Clay, white, yellow and sand, white	CARPENTARIAN
12 - 18m	Biotite granite, decomposed	
	B.O.H. 18m	

ENVELOPE 3973

0055

APPENDIX 3

Rotary mud

DRILL CORE LOG

CO-ORDINATES 13600 mE, 852100 mN AZIMUTH Vertical DRILLERS Thompson Drilling COMMENCED 26 Aug 80 DEPTH 158 m HOLE No. SOLRM1

RL COLLAR 432 m (MSL) INCLINATION DRILL TYPE Mayhew 1000 COMPLETED CASING LEFT — DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				yel fg-mg silty sand qtzose SR granules		8840 01				
2	4				mottled yel red silty clay off white calcrete		2				
4	6				red + cream mottled stiff sandy clay cont frags mud sorting	Reference:	3				
6	8				red mottled clay SR-R qtz grains mg-cg gram sand	qtz quartz fspar feldspar	4				
8	10				cg cong sst uncon qtz SR clayey in part max size 1·5cm red clay	qfm qtz,fspar mic pyr pyrite	5				
10	12				mg-cg congsst uncon qtz SA-SR qtz grains cherty fragments light grey clay	lig lignite mic micaceous	6				
12	14				grey white clayey silt poorly consol	ser sericite musc muscovite	7				
14	16				as above	bio biotite chl. Chlorite	8				
16	18				yellow white mottled SR mg-fg qtz sandy clay		9				
18	20				as above well consol	lge large sml small	0 10				
20	22				fg sandy yell white silty clay well sorted well consol	vitr vitreous consol consolidated	11				
22	24				mg-fg sandy clayey silt light grey SR-R qtzose well consol	ferrug ferruginous carb carbonaceous	12				
24	26				fg sandy clayey silt mottled yell orange white cg qtz granules. (contam?)	sim similar +r trace	13				
26	28				mottled red brown light grey fg sandy clay well consol mod well sorted	med medium E with.	14				
28	30				well consol mottled grey red brown fg sandy silty clay qtz grains (contam?)	yel yellow gry grey	15				
30	32				fg grey sandy clay mg-cg qtzose suspensidal conglom sand 1-1·5cm SR-R	brn brown.	16				
32	34				red brown grey mottled clay silty + fg sandy as above	S sub- R rounded	17				
34	36				mottled clay as above	A angular	18				
36	38				clay as above	m medium g grained	19				
38	40				mg-cg reddy gramular 0·8cm cad SR-SA qtzose + cherty clay as above in part	c coarse f fine.	0 20				
40	42				mg-cg reddy sand unconsol SA-SR qtzose + cherty	vf very fine. gran gramular	21				
42	44				some clay as above	pbbl pebble	22				
44	46				grey clay some red mottling silty sandy in part	w - well s sorted.	23				
46	48				light grey mg-fg sandy clayey silt sand SR poorly consol red brown indurated ferrug sst SA-SR		24				
48	50				light grey sandy clay as above + hard ferruginous sandy patches		8840 25				

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SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNC DATE 26 AUG 80

SHEET 1 OF 4

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 1

RL COLLAR _____ INCLINATION _____, DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				as above mg-cg sand frags SR hard ferruginous sst bands.		884025				
52	54				as above less ferug. mtl.		026				
54	56				as above becoming purple/white mottled fg sandy + silty		027				
56	58				mottled purple/white red cg-fg sandy clay/clayey sa SA-SR qtz + clasty grains. clay well consol sandy/clay mtx		028				
58	60				mottled purple white silty clay		029				
60	62				white grey f-mg sandy clay sparse cg R qtz frags yell brown mottled part		030				
62	64				white clay silt well consol		031				
64	66				lt grey silty clay R mg-fg sandy in part cg granular SR qtz sand unconsol for part		032				
66	68				lt grey clay fg sandy		033				
68	70				fg-mg SA-SR sandy clay lt grey well consol mod well sorted		034				
70	72				as above yell brown mottled grey		035				
72	74				as above cg-fg SA-R sandy clay yell mottled		036				
74	76				as above sandy in part clayey sand in part		037				
76	78				as above cg granular in part		038				
78	80				well consol grn grey sim above fg sandy silty clay		039				
80	82				stiff clay as above mg SR-R qtz sandy clay mottled grey mustard colour		040				
82	84				clay as above + SR cg granular white qtz granitic looking		041				
84	86				as above sandy.		042				
86	88				as above cg-fg SR sandy qtz clay + SR qtz as above some red mustard mottling		043				
88	90				clay as above grey brown mottled mg-fg qtz sand SR		044				
90	92				light grey yell mottled mg-fg SR sandy clay		045				
92	94				grey mg-cg SR qtz sst unconsol + orangy yel grey mottled clay + orange calcareous sst band		046				
94	96				sand + clay as above		047				
96	98				mg mod well sorted SR light orangy qtz sst uncon some red hem coated grains.		048				
98	100				white SA poorly sorted cg-mg granular qtz sst unconsol loose		884049				

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 2 OF 4

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DRILL CORE LOG

PROJECT

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 1

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				55% as above & minor fg sandy grey clay		884050				
102	104				conglom sst qtzose as above frags up to 1·5cm SR-SA white qtz granite deco		051				
104	106				mg-cg conglom sst. qtzose as above. some fg sandy clay must be interbeds.		052				
106	108				conglomerate & pyrite cemented SR qtz gran mg sandy clay		053				
108	110				as above some pyr not as cg - 1cm.		054				
110	112	change colour			poorly sorted as above min pyr colour zone from yl grey-br mg-cg SA-SR sand pebbly granules SA-SR, brown grey poorly sorted	* lig chips & brown sand.	055				
112	114				mg-cg SA-SR qtz sand & grey stained sandy clay still as above		056				
114	116				sand as above pebbly lignite clay still		057				
116	118				as above v cg sand pebbly. clayey in part		058				
118	120				mg-cg sand as above mod grey clay cast specks sandy		059				
120	122				clean v pyr mg-cg SR qtz sand uncon grey well consol clay sandy in part		060				
122	124				cg-granular SA-SR qtz sand pyr cemented sand grey clay as above		061				
124	126				fg-mg sand SR qtz sand uncon tr cast-stain pyr.		062				
126	128				poorly sorted A-SR light brown sand & lt grey mg sandy clay pyr		063				
128	130				poorly sorted SR fg-pebbly sand + fg-mg sandy clay light grey		064				
130	132				sand as above minor carb clay lumps lumps lignite		065				
132	134				pyr poorly sorted fg-mg white qtz sand light brown colour lignite cast clay		066				
134	136				fg-mg sand as above lumps of lignite ~10%.		067				
136	138				as above 10% lignite / brown cast clay		068				
138	140				mg-cg sand as above light brown < 10% lignite as discrete lumps tr pyr SR sand		069				
140	142				mg-cg sand SA-SR uncons 10% lignite clay lumps tr mica		070				
142	144				cg pebbly uncon SA-SR qtz sand & yell carb cement band + < 10% lig / lig clay tr pyr		071				
144	146				fg sand - cg pebbly uncon SA-SR qtz sand 5% lig / lig clay poorly sorted		072				
146	148				cg sandy med gravel up to 2·5cm mainly qtz some lithic clasts qtzite. fg pyrite		073				
148	150				as above pyr. ~10% lig / lig clay lumps.		884074				

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SHEET 3 OF 4

DRILL CORE LOG

PROJECT _____

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 1

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
150	152				fg-mg qtz sd some pebbles pyr. 10-20% lt/lt gy clay some woody pieces SR. mod well sorted coarser grained than above <10% lt gy clay + minor sandy grey clay		884575				
152	154						576				
154	156				pyr fg-veg pebbly gravel gtzose SR as above some lt gy clay/clay.		884577				
156	158										

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SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 4 OF 4

0060

CO-ORDINATES 045000yd E 8520000yd N | AZIMUTH Vertical | DRILL ~~CORE~~ LOG
RL COLLAR +126m (M.S.L.) | INCLINATION | DRILLERS Thompson Drilling | DRILL TYPE Mayhew 1000
COMMENCED | COMPLETED | DEPTH 153m | CASING LEFT — | HOLE No. BOLRM 2 | DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				reddy brown sandy clay + calcrete		884078				
2	4.				sandy yel cream calcrete. then reddy brown fg sandy clay		079				
4	6				red brown silty clay		080				
6	8				red brown grey mottled silty clay		082				
8	10				red brown green grey fg sandy clay fg dk red brn fg sst +		083				
10	12				red brown clay + indurated siltstone		084				
12	14.				grey grey carbonaceous specks, yellow red brn clay as above cg sand - fine gravel qtz + chert (jasper) SA poorly sorted		085				
14	16				mottled purple white silty clay		086				
16	18				yellow brown cg - pebbly sst w con SA-SR qtz + chalcedonic sil poorly sorted		087				
18	20				~~fg~~ - pebbly w con sand lumps calcrete as above		088				
20	22				cream + red brown mottled clay sandy in part.		089				
22	24.				yellow silty clay w con some qtz sand in part		070				
24	26				red brown cream mg-fg sandy silty clay		091				
26	28				red brown cream silty clay + mg-cg SR qtz sand as above.		092				
28	30				as above		093				
30	32				- cream some red brn mottled sandy clay + cg sand as above		094				
32	34				mg - fine gravel 1-5 cm multicoloured jasperoid qtz SA-SR (qtz & frags?) some cream sandy clay		095				
34	36				grey green mg qtz sandy clay mottled red brn granular - pebbly sand as above		096				
36	38				mg - granular sand as above green mottled mg sandy clay		097				
38	40				light green pale fg sandy clay consol. cg pebbly as above		098				
40	42				fg-mg qtz sandy green grey clay well consol some red brown clay as above		099				
42	44						100				
44	46				grey green sandy red brown mottled silty clay		101				
46	48				as above more indurated ferruginous sandy frags. fg sst +		102				
48	53				as above indurated in part. red brown indurated fg ferrug sst +		884103				

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SUMMARY AND SPECIAL COMMENTS

LOGGED BY MTNF DATE

SHEET 1 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 2

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				lt grey green purple mottled clay sandy in part		884104				
52	54				as above		105				
54	56				as above		106				
56	58				as above clayey silt + silt stone indurated in part.		107				
58	60				clayey silt as above + indurated dark fg sst indurated.						
60	62				lt greeny grey well consol silty clay		109				
62	64				lt yell grey fg sdy clay. mottled yell.		110				
64	66				as above well indurated		111				
66	68				mg-fg sdy sand sst to above rounded		112				
68	70				as above well consol		113				
70	72				mottled yel green grey mottled clay.						
72	74				as above						
74	76				fg sandy clay as above						
76	78				fg " " " "		117				
78	80				fg-mg SR-SR sdy to lithic grains some fem stain poorly sorted		118				
80	82				fg sandy sdy clayey silt mottled as above		119				
82	84				sand as above + clay as above		120				
84	86				fg-mg sdy SR lt green grey + indurated lt green grey clay		121				
86	88				green-grey silty clay fairly consol		122				
88	90				grey green fg-mg sdy sandy clay SR poorly sorted.		123				
90	92				as above		124				
92	94				grey grey sandy clay as above & fg SR sdy sandy siltstone interbed		125				
94	96				green grey clay as above lenticular sandy [illegible] as above		126				
96	98				grey grey + dk blue grey indurated silty clay stone		127				
98	100				light green + blue grey indurated silty clay stone carb clay 12½		128-130				

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PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 2 OF 3

PROJECT

DRILL CORE LOG

CO-ORDINATES AZIMUTH DRILLERS COMMENCED DEPTH HOLE No. 2

RL COLLAR INCLINATION DRILL TYPE COMPLETED CASING LEFT DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				light green silty claystone + dark grey carb clay interbedded	↓ carb clay inc	884129				
102	104				light green fg sandy claystone & carb specks some dk grey carb clay + poorly sorted fg-cg SA mcon qtz sand.		130				
							131				
104	106				as above, dark carb clay zone to light grey & black specks fg sandy sand as above inc.		132				
106	108				light green claystone light grey + dk grey carb clay as above very fg sandy sand fine grained + bcs		133				
108	110				as above						
110	112				light green claystone becoming v sandy light grey siltstone + dk carb shale.		134				
112	114				light green claystone silty + light grey silty + sandy clay + carb shale mottled sand as above		135				
114	116				as above & claystone poorly indurated all well consol except sand - mainly mg some fg + granular clean white qtz SA-SR		136				
							137				
116	118				indurated light green claystone + light grey/dk grey as above sand cg-granular		138				
118	120				sand rounded cg-granular qtz poorly sorted grey clay > green clay mg sandy.		139				
120	122				sand SR-R mg-granular seas well sorted. mcon light grey some smoky qtz clay		140				
122	124				sand as above & ~ 30% claystone as above						
124	126				sand as above mcon some & clay mtx some med grey sand clay + green claystone (contam?)		141				
126	128				as above + green + grey mg R sandy clay const		142				
128	130				as above & some orangy yel clay mottled green	130	143				
130	132				as above + <5% lumps of brown carb/lig clayey sand	lig sand + lig clay	144				
132	134				sand mainly (as above) greeny + grey sandy clay + lignite/lig clay <5%	"	145				
134	136				sand coarser grained subpathic SR-R lignite stained 2% lig lumps		146				
136	138				light brown cg-granular some pebbles lig stained qtz sand some fspar. tr pyr. cg sandy lig clay		147				
138	140				as above + few chips green + grey clay (contam?)		148				
140	142				mg-granular lig stained sand few lig sand lumps. green + grey clays as above		149				
142	144				mg-granular SR-R qtz sand some fspar green grey mcon clay + dk brown lig clay		150				
144	146				as above 10-20% lig/lig clay		151				
146	148				as above <20% lig brown clay		152				
EOH	153				stopped 153		884153				

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SUMMARY AND SPECIAL COMMENTS

LOGGED BY DATE

SHEET 3 OF 3

CO-ORDINATES 409500 yd E, 849200 yd N — AZIMUTH Vertical — DRILLERS Thompson Drilling
RL COLLAR +118m (m.s.l.) — INCLINATION — DRILL TYPE Mayhew 1000

U.N.A. EXPLORATION PTY. LIMITED — ROTARY MUD DRILL ~~CORE~~ LOG

PROJECT FOLDH — COMMENCED 27 AUG 80 — COMPLETED — DEPTH 152m — CASING LEFT — — HOLE No. 80LRM3 — DPO No(s)

	DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
884152	0	2				orange brown fg-cg sandy clay soil & nodular calcrete		884154				
884153	2	4				lumps & sandy texture as above & so sand & clay sandy in part		155				
884154	4	6				as above clay becoming silty & sandy		156				
884155	6	8				yell grey orange brown mottled mg-cg sandy clay		157				
884156	8	10				fairly well consol as above becoming more yell grey clayey+sandy silt		158				
884157	10	12				mottled sandy clay + cse angular - SA cherty		159				
884158	12	14				+ qtz gravel yell orange. uncon as for hole 2.		160				
884159	14	16				yellow + light greenygrey clayey silt partly consol + cg sand as for gravel above as above		161				
884160	16	18				sandy clay as above + gravel as above		162				
884161	18	20				light greeny fg sandy clay + yell mottled.		163				
884162	20	22				+ gravel as above cg → 1.25 cm as above more reddy yell > green		164				
884163	22	24				yell + tan mottled fg sandy clay + min gravel		165				
884164	24	26				clay as above + cg granular + crystalline		166				
884165	26	28				+ qtz grit - SA uncon. light creamygreen + yell orange mottled uncon		167				
884166	28	30				silty, fg sandy clay grit as above as above + pebbly qtz grit		168				
884167	30	32				cream green clayey silt uncon + yel orange clayey silt		169				
884168	32	34				mg-cg grit as above		170				
884169	34	36				as above more consol green brown consol clay fg sandy in part.		171				
884170	36	38				reddy brown consol fg sandy clay.		172				
	38	40				light green dark red mottled fg qtz sandy clay	clay green red unit.	173				
	40	42				well consol as above		174				
	42	44				as above more sandy.		175				
	44	46				dark red > light green as above		176				
	46	48				clay as above + pebbly grit SA-SR as compare		177				
	48	50				above jasper qtz etc. yell brown ~~green~~ well sorted green red clay as above + grit as above		884178				

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PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNF — DATE

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED 27 AUG 80 DEPTH _____ HOLE No. 3

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED 27 AUG 80 CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				green brown clay ~ to green red above mg-cg sandy.		884179				
52	54				red green fg-mg sandy clay		180				
54	56				as above fairly well consol.		181				
56	58				green clay as above + indurated red ferruginous fg sst. + Unconsol mg-granular grit as above		182				
58	60				as above A-SA qtz, sand + grit. clay ate.		183				
60	62				reddy brown A-SA qtz + qtzite chips dolecombic sil fospar fitting frags. mycon mica green clay		184				
62	64				greeny yell U sandy mg clay + sand as above		185				
64	66		red clay?		green clay as above + reddy brown mg indur sst hematitic + siliceous frags SA grad sandy clay into	end of clay unit	186				
66	68				light green yel mottled mg qtz SR sandy clay		187				
68	70				mottled green yel sandy clay	green clay	188				
70	72				as above green mix yel		189				
72	74				green clay as above qtz mg-fg sandy SA. well consol.		190				
74	76				clay green as above some yell + brown sandy patches.		191				
76	78				clay green + orange patches as above fn sandy		192				
78	80				green clay well consol fg-vfg sandy qtz		193				
80	82				green clay as above some yellow mottling		194				
82	84				as above		195				
84	86				as above mg-fg sandy pantips		196				
86	88				green clay + blue grey clay mottled carbonaceous no sand some silt.		197				
88	90				as above 30-40% carb blue grey clay		198				
90	92				fawn green dark grey some green clay carb well consol fawn v silty consol. green vfg sandy silty in part		199				
92	94				mostly dark grey clay carb? dark grey some creamy grey kaolinitic		200				
94	96				as above		201				
96	98				as above becoming fg-mg sandy		202				
98	100				green grey consol clay		884203				

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 2 OF 3

CRAE 117
PLAN No M414

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED 27 AUG 80 DEPTH _____ HOLE No. 3 0065

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED 27 AUG 80 CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				green + grey + black fgts sandy clay SA-SR well consol		884204				
102	104				as above + black clay flakes smears		205				
104	106				green grey + black clay upl mottled in part as above fg gts sandy		206				
106	108				green grey + soft black earth clay all mainly poorly consol	change at 106 smaller frag size	207				
108	110				soft greenish clay stone + dark grey minor black clay no sand		208				
110	112				green claystone mod consol soft grey + black clay fg sandy qtz flakes smaller frag size		209				
112	114				dark grey grancl layst + clay as above	small chips	210				
114	116				clay as above black clay chips + qtz sand	change soft + sloppy not well consol becomes sandy	211				
116	118				mg - granular A - SA unconsol 40% sa fgts green grey clay silty med grey shale cg - mg granular A-SA qtz gist fgts mod sorting		212				
118	120				as above med grey clay soft + sandy sand mg - cg SA - SR qtz gist		213				
120	122				mg - cg SA - SR qtz sandy light grey poorly consol clay + light green clayst		214				
122	124				as above		215				
124	126				green to black clay + sand as above		216				
126	128				as above		217				
128	130				mainly grey but green + black also as above		218				
130	132				as above mod well consol minor mg qtz sand		219				
132	134				as above no sand.		220				
134	136				green + med grey - black clay silty in part no sand well consol		221				
136	138				well consol mg med grey - dark grey green + brown grey clay silty in part		222				
138	140				as above + cg - granular qtz SA sandy in part		223				
140	142				as above black stuff was earth clay sand mg - cg but as above		224				
142	144				brown white qtz mg - cg SR uncon mod well sorted pronounced clay from above big clay lumps + stains	Sand:	225				
144	146				lumps of clayey fg earthy sand + stained brown fg qtz grains in sand as above		226				
146	148				as above to big + stained		227				
148	150				as above to big		228				
150	152				as above ± 23% lumps big sand		884229				

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SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 3 OF 3

~~AERIAL MAG~~ DRILL ~~CORE~~ LOG

CO-ORDINATES 547300yd N AZIMUTH Vertical DRILLERS Thompson Drillers COMMENCED 27 AUG 80 DEPTH 150m HOLE No. 80 LRM 4

RL COLLAR 115m (m.s.l.) INCLINATION _____ DRILL TYPE Mayhew 1000 COMPLETED 27 AUG 80 CASING LEFT — DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				reddy/pinky calcareous sandy clay + fawn sandy calcrete		884228				
2	4				as above consolidated lumpy calcrete		229				
4	6				as above + calcrete cg granular qtz grit A-SA		230				
6	8				light fawn mottled clayey brown mg-fg sandy brown/greeny fawn mottled clay = sandy calc in part		231				
8	10				fg-vfg mottled greeny brown clay as above		232				
10	12				vfg yell brown sand + sandy grey green clay		233				
12	14				indurated light green silty claystone red + yell calcified ferruy vfg sst-siltstone		234				
14	16				as above		235				
16	18				grey green well consol clay & silty + sandy partings soft mottl yel red & silty clay		236				
18	20				as above still & hematitic lumps indurated		237				
20	22				mottled green red yell all of above very silty + sandy		238				
22	24				grey-yellow mottled waxy green fg-silty clay		239				
24	26				as above		240				
26	28				as above darker green very sandy fg		241				
28	30				mottled yellow green ~ as above		242				
30	32				sandy clay green well consol as above + dark grey carb clay v sandy		243				
32	34				dark black carb sandy fg-mg clay + lt/d green + ^ lg/lg clay * lg.		244				
34	36				clay as above + abund bn lg/lg clay sandy in part. sand qtz mg SA-SR well sorted uncon grit. mg-granular qtz SR- uncon brown lg stain + fg pyr		245				
36	38						246				
38	40				as above darker brown colour. 5% pyr		247				
40	42				as above coarser grained to pebbles A-SR lg + pyr.		248				
42	44				as above		249				
44	46				as above < 5% lg clay lumps		250				
46	48				sand fg-pebbles not sort. SR-WR. qtz lg stain + lg		251				
48	50				Sd as above + tan soft lg sd + silty + green clay		884252				

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SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY MSNF DATE _____

SHEET 1 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 4

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				fg-pebbly (1.5cm) sand SR-R poor sort		884253				
52	54				as above		254				
54	56				as above fg-cg cream clayey in part some fg sst		255				
56	58				pebbly sand up to 2cm uncon clay intra pyr		256				
58	60				as above more clayey		257				
60	62				fg-mg as above + clayey + silty sand in part		258				
62	64				as above		259				
64	66				as above fg-cg some brown lig sandy clay + pyr		260				
66	68				as above (no lig clay) pyr mica		261				
68	70				pebbly fg ss + mg-cg micaceous + pyr as above SR-R well sorted light brown		262				
70	72				as above clayey in part		263				
72	74				mg well sorted fms pyr + mica as above		264				
74	76				as above still clayey intx		265				
76	78				as above well sorted		266				
78	80				as above		267				
80	82				as above some pebbles mica + pyr still		268				
82	84				as above		269				
84	86				fg-mg mica mor pyr		270				
86	88				vfg sandy micaceous silt to coaly specks + fgs coal fragments seams + sand as above		271				
88	90				sand vfg clay sand as above fg silt		272				
90	92				as above mg-cg sand SA-SR + dark grey micaceous clay cut to black coal fg interbeds		273				
92	94				mg sand as above SR-R well sorted clayey intx pyrite. mica		274				
94	96				as above		275				
96	98				Sand as above + sandy clay chips lig <10% + lig flecks = clay + lig clay slabs	more clay than other.	276				
98	100				light grey clay soft not well consol lig chips + mica in clay + bands subbit coal + brown carb clay. mg sandy + sand as above		884277				

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 2 OF 3

CRAE 117. PLAN No 4414

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT POLDA

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 4

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

0068

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
102	104				clay + sandy above beds of brown lig + pebbly coal. brown grey		584278				
104	106				as above less coal micaceous clay lig pebbly + qtz mg sandy		279				
106	108				lig - granular + sand pebbles SR - R + WR, poorly sorted qtz fg sandy clay + micaceous		280				
108	110				lig - pebbly as above less clay.		281				
110	112				as above poor sorty. less clay lig. more pebbly		282				
112	114				as above becoming clayey + lig micaceous		283				
114	116				as above more clayey brown grey & lig. SR sand		284				
116	118				lig mg - cg granular + pebbly grit. clayey as above lig partings = clay		285				
118	120				less sand 50% clay brown grey as above micaceous lignitic		286				
120	122				grey - brown carb + clay + lignitic fg sandy qtz SR fg specks + some sand		287				
122	124				as above + white silty micaceous interbeds		284				
124	126				as above + lig frags		289				
126	128				as above lig clay + sand		290				
128	130				as above lig clay lumps micaceous		291				
130	132				as above less lig clay. still sandy + mica		292				
132	134				clay as above 50% sand mg + lig chips interbeds micaceous		293				
134	136				clay + sand as above		294				
136	138				as above sand mg - cg granular SR.		295				
138	140				as above soft clay + soft greeny silt + red + lt clay		296				
140	142				brown + grey clay + mottled light + green clay sand mg - cg as above		297				
142	144				sand + clay as above + 2% pyr cemented sst + fg - cg lig chips < 2%		298				
144	146				dark brown grey. + mg sandy clay lig specs qtz sand mg - cg as above clay 60		299				
146	148				as above		300				
148	150				as above		584301				

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SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

ROTARY MUD DRILL ~~CORE~~ LOG

80LRM ~~[illegible]~~

CO-ORDINATES 8538000yd N AZIMUTH Vertical DRILLERS Thompson Drillers COMMENCED ____ DEPTH 116m HOLE No. 80LRM5

RL COLLAR +107m (m.s.l.) INCLINATION ____ DRILL TYPE Mayhew 1000 COMPLETED ____ CASING LEFT — DPO No(s) ____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				mg-fg clayey silt yl orange calcrete nodules. a SR sty cg sand in con.		884303				
2	4				calcrete + clayey silt as above mg-fg sty sandy silt		304				
4	6				orange yll mottled sandy clayey silt as above calcrete in lesser proportion	orange red	305				
6	8				orange yll green mottled very sandy fg-vfg clayey silt as above no in con sand		306				
8	10				silt as above mg-cg-granular SA-SR qtz + cherty sand orange red poorly sorted as above + qtz sand pebbles up to 2cm.		307				
10	12						308				
12	14				as above + light green mg-fg sandy clay	orange red clay	309				
14	16				clay as above sparse sand		310				
16	18				green purple red mg-fg sandy silty clay 3in to hole 3 poorly con						
18	20				as above uncon	green purple clay.					
20	22				green red mg sandy clay + cg qtz sst as for sand above very sandy mainly sand						
22	24		as above		cg-pebbly qtz SR red-yellow + fg sandy green clay						
24	26						315				
26	28				sand mg-cg SR as above cherty etc some green sandy clay		316				
28	30				as above		317				
30	32				sand as above vfg + silt green silty frags in thin interbeds of green sandy silt		318				
32	34				as above vfg-cg + pebbly	lost circ	319				
34	36				soft light green vfg sandy clay mod-dk grey consd slightly sandy clay mottled to hole 3.	lost circulation	320				
36	38				as above more green than dark grey.		321				
38	40				as above light green-fawn some reddy silty clay		322				
40	42				light green very sandy fg sty clay dark green grey clay as above mainly grey		323				
42	44				clay as above interbeds of sty sand mg-cg. SA-SR uncon white clay mg-f sandy.		324				
44	46				sand mg-cg uncon SR-R fairly well sorted uncon qtz minor clay as above		325				
46	48				sand mg-pebbly clay etc as above		326				
48	50				as above		884327				

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SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNF DATE 28 AUG 80

SHEET 1 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 5

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52.		60-70%		low grade lignite / lig clay grey clay fg sandy carbonaceous specks mg sandy SA-SR interbeds	lignite 60-70 / 60-70	884328				
52	54.		60-70%		as above		884329				
54	56				lig low grade + slate soft sandy clay fg-mg SA-SR qtz sand uncon	lig 70-80.	884330				
56	58				light grey very sandy mg-cg sandy sand mg-cg. lig clay	lig 40-50.	884331				
58	60				very sandy — , lig clay sand as above	40-50	884332				
60	62				lig clay / low grade lig mg SA-SR qtz uncon sand interbeds.	50-60%	884333				
62	64				lig clay as above sand as above mg-cg	70-80	884334				
64	66				as above lighter brown still lig clay / lig grade		884335				
66	68				as above + light grey brown clay mg-fg sandy in part	60-70	884336				
68	70				soft light grey brown & lig chips + specks some lig slightly micaceous low grade clay	lig 10-20	884337				
70	71				as above lig clay 20-30%		884338				
71	72				Same as above		884339				
72	73				soft grey brown lig clay some lig chips slightly sandy micaceous mg SA-SR		884340				
73	74				soft clayey lig coarse silt some lig clay 10% sand as above.		884341				
74	75				clay as above slightly lig chips 20-30	20-30	884342				
75	76				mg-cg qtz sand SA-SR mod well sorted white light brown micaceous lig clay 20%		343				
76	77				mg-cg qtz fg sand as above		344				
77	78				cg-granular A-SA qtz grit poorly sorted some white clay matrix some lig clay hard brittle sand cg as above light-dark brown micaceous lig clay.		884345				
78	80						884346				
80	82				as above		347				
82	84				cg-granular micaceous as above		348				
84	86				as above		349				
86	88				as above fg-cg poorly sorted sand		350				
88	90				mg-pebbly grit some clay matrix as above A-SA		351				
90	92				cg-granular micaceous as above light brown overall		884352				

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 2 OF 3

CRAE 117
PLAN No M414

EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT

CO-ORDINATES | AZIMUTH | DRILLERS | COMMENCED | DEPTH | HOLE No. 5

RL COLLAR | INCLINATION | DRILL TYPE | COMPLETED | CASING LEFT | DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
92	94				pebbly – fg poorly sorted micaceous clay A–SR micaceous clay matrix		884353				
94	96				mg well sorted as above SR.		354				
96	98				mg – cg A–SR micaceous as above		355				
98	100				poorly sorted fg – vcg pebbly grit A–SR. py.		356				
100	102				fg–vfg – some mg SR qtz sand well sorted some pebbles. some lt grey clay		357				
102	104				fg – cobbles (broken chips) grey-white coloured qtz. SR–SA poorly sorted micaceous some quartz clay with		358				
104	106				cobble bed, broken pebbles up to 2·5cm qtz + cherty frags SR – WR some clay.		359				
106	108				broken pebbly mg sand + white cg – fg white soft clay. lots of		360				
108	110				mg – pebbly qtz sand SA–R banded qtz pebbles micaceous white clay matrix		361				
110	112				sand as above mg – cg sand SR–SA. white clay as		362				
112	114				very micaceous biotite musc ? as above qtz + bio clay, white – green clay		363				
114	116				qtz bio gran frags qtz sand gran clay stone SA mg – cg.	basement.	864364				

SUMMARY AND SPECIAL COMMENTS

LOGGED BY DATE

CRAE 117
PLAN No M 414

0072

ROTARY ~~AUGD~~ DRILL ~~CORE~~ LOG

CO-ORDINATES 405100 yd E, 853800 yd N AZIMUTH Vertical DRILLERS Thompson Drilling COMMENCED ____ DEPTH 78m HOLE No. ~~80-RC~~ 80L5C

RL COLLAR +107m (m.s.l.) INCLINATION ____ DRILL TYPE Mayhew 1000 COMPLETED ____ CASING LEFT — DPO No(s) ____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				as for 5.						
2	4				as above						
4	6				as above						
6	8				as above						
8	10				as above						
10	12				as above						
12	14				"						
14	16				"						
16	18				" sand as for 12–14.						
18	20				+ sand. fg mueg red orange qtz lam stain A–SA unconsol.					1	
20	22				sand mcon cg – pebbly clayey – part qtz + clasty orange red A–SA						
22	24				sand as above + green red mottled + dry clay						
24	26				sand as above fg–mg green clay						
26	28				fg silty – cg sandy + ~~stiff~~ sandy green clay						
28	30				soft ~~light~~ green vfg–fg sandy clay + fg sand qtz						
30	32				as above						
32	34				soft green sandy clayey silt vfg white clayey ~~sst~~ qtz ~~dark~~ green lumps.						
34	36				med grey green clay + ~~light~~ green as above as above + white silty clay med grey silty clay all mod well consol						
36	38				white – light green clayey silt fg sand grey silty clay mainly light green						
38	40				clayey sand as above green + ~~pk~~ orange pink mg–fg clayey sand/sandy clay some cg + green clayst mainly sand						
40	42				Bottom of dk grey carb clay + orange sand fg–cg SR clayey mcon + white clay						
42	44				med grey – dark grey clay, white clay to grey silty clay. some ~~sand~~ as above mod well consol.						
44	46				grey clay sand fg–grannular SA–R mcon white qtz + pyr						
46	47				coring started 47m						

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SUMMARY AND SPECIAL COMMENTS ____

LOGGED BY MJNF DATE ____

SHEET 1 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 5C

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
47	49				Med grey sandy clay fg-mg SA-SR qtz mod-wekk consol, becoming inc sandy down						
49	52.05				Core loss sand						
52.05	52.96				Dark brown black carb clay fg sandy in places, mg lig sandy intervals near base						
52.96	54				Core loss black lig clayey matrix - sand, uncon fg SA-SR.						
54	56.21				Lig clay grading to lignite dark brown, clayey bands 54.82 - 55.36.						
56.21	57.50				Fg sandy silt med brown, lig clayey grading to black mg qtz SA-SR, lig clayey matrix.						
57.50	59.00				Core loss sand						
59.00	59.34				Light brown uncon qtz uncon mg-fg slightly clayey sand SA-SR.						
59.34	60.08				Black very lig sand mg-fg clayey-very clayey lig frags.						
60.08	69.04				Lignite dark brown brown black, lignitic clay some woody frags, some mica.						
69.04	70.44				fg sandy silt light brown micaceous to clayey						
70.44	72.89				Brown clayey sand SA-SR fg-mg fairly clayey						
72.89	74.63				Black lignite, fg-mg SA-SR quartzose, well sorted mod well consol sand lig clay matrix.						
74.63	75.03				Light gr-br to cream micaceous clay; interbedded sandy clay; sandy silt showing X-bedding.						
75.03	78.08				Sand uncon vcg grading to mg-fg silty micaceous SA-SR						
						sampling		60.28	63.08		
								63.08	65.82		
								65.82	69.04		

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PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 2 OF 2

ROTARY MUD DRILL CORE LOG

PROJECT FUNDY 0074

CO-ORDINATES 402500ydE 850900ydN AZIMUTH Vertical DRILLERS Thompson Drillers COMMENCED DEPTH 148m HOLE No. 80LRM6

RL COLLAR +108m (m.s.l.) INCLINATION DRILL TYPE Mayhew 1000 COMPLETED CASING LEFT DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				yell orange sandy clay mod well consol		884365				
2	4				yell orang greeny mottled sa dy clay as above		366				
4	6				as above		367				
6	8				orange green sandy clay mg-cg orangy sand SA SR uncon poor sort as in previous logs		368				
8	10				orange green mottled fg-vfg sandy siltyclay + mobs uncon vfg orange sand + yellow		369				
10	12				vfg sad orngy uncon vfg-fg white siltysst consol slightly ind. clayey in part. gtzone		370				
12	14				vfg sandstone white-yel-red brown indurated		371				
14	16				periods. as above gtz vfg sand as above uncon some clay orange	orange	372				
16	18				vfg-fg-cg sst as above + lite gtz frags very red	SR red sst.	373				
18	20				as above some small gtz pebbles		374				
20	22				sst as above + mottled green red vfg sandy clayey silt	—	375				
22	24				green vfg sand clay + brown mottled patches	clay	376				
24	26				green fg sandy clay brown → red - "		377				
26	28				green reddy purple clay as above red/orng indurated patches		378				
28	30				as above		379				
30	32				green some yellow mottled clay sandy as frabove		380				
32	34				green yell as above fg sandy. Ass well consol		381				
34	36				vfg sandy as above		382				
36	38				as above sdy interbeds		383				
38	40				green clay less yellow silty more consol		384				
40	42				as above silty -		385				
42	44				as above silty + darker grey green rel uncon clay	dark green	386				
44	46				as above darker green prominant		387				
46	48				as above some indurated bands vfg sandy clays		388				
48	50				soft fg-vfg sandy green clay vfg gtz sdy interbeds		884389				

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PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MINF DATE

SHEET 1 OF 3

DRILL CORE LOG

PROJECT

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 6

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				as above + fg SR gtz uncon sand.		884390				
52	54				sand fine		391				
54	56				clay becoming blue grey sand fine		392				
56	58				grey white kaol brown + dark grey very sandy fg gtz sandy SA-SR		393				
58	60				light grey white kaol clay some green grey vfg-silty white clay		394				
60	62				white clay green + grey + vfg sand uncon as above		395				
62	64				white clay fg very sandy gtz SA		396				
64	66				white clay as above some dark grey carb clay silty		397				
66	68				dark green black blotches to dark grey black carb clay		398				
68	70				dark green grey clay silty + sandy in part		399				
70	72				colour as above fg-mg SA-SR gtz sandy clay to clayey sand light grey in part no lam	sandy clay as above	401				
72	74				white green + grey mottled sandy as above		401				
74	76				clay very sandy dark grey carb clay + brown carb clay lots fg sand		402				
76	78				uncon light green + dark carb clay green very sandy + fg sand uncon		403				
78	80				clay colours as above very sandy - sandy clay		404				
80	82				white green light grey uncon sandy clay as above clayey sand		405				
82	84				as above		406				
84	86				as above		407				
86	88				very sandy clays as above light-med grey fg-mg still A-SR green + grey		408				
88	90				sand mg as above		409				
90	92				sand mg-fg SA-SR mod well sorted gtz + clay sandy clay as above		410				
92	94				sand uncon mg-fg as above		411				
94	96				sand as above + stiff dark brown black carb micaceous clay		412				
96	98				soft white fg sandy clay dark brown to carb clay micaceous		413				
98	100				clay as above + mg-fg sand		644414				

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LOGGED BY _____ DATE _____

SHEET 2 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 6

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				dark grey carb clay mg-fg sandy		884415				
102	104				clay as above Vcg-mg SR qtz unconsol sand		416				
104	106				green + black mottled + light grey sandy clay fg sand mg-cg fW sorted		417				
106	108				sand mg-vcg qtz sand SR-R poorly sorted brown lg stain + clay lumps.		418				
108	110				sand as above + clay lg stains		419				
110	112				sand mg well sorted light grey clay + dark black carb clay		420				
112	114				soft light grey mg-fg sandy clay dark grey carb clay lg lumps here + there	lg appears	421				
114	116				sand mg as above lg stained + brown lg clayey sand. light grey clay still		422				
116	118				sand as above lg lumps sandy in part. <10%	1 10	423				
118	120				brown sand mg-cg well sorted lg lumps <5%	1 5	424				
120	122				sand fg-mg. Woody chips lg clay/lg grade 5-10%	1 5-10	425				
122	124				mg sand well sorted SR qtz lg lumps <5	1 5	426				
124	126				mg sand brown as above <5% lg lumps	1 5	427				
126	128				mg-fg sand as above 5-10% lg lumps.	1 5-10	428				
128	130				cg-mg sand as above lg clay / lg very sandy in part + carb clay + light grey sandy silt		429				
130	132				sand fg-mg sandy lg clay lumps + lg sand		430				
132	134				Vcg granules some fg poorly sorted. A-SA unconsol white qtz brown lg stain.		431				
134	136				as above		432				
136	138				becomes more sandy fcg-vcg grain pyr cemented fg		433				
138	140				mg-vcg grain as above		434				
140	142				mg-cg micaceous pyr sand as above 5-10% lg clay		435				
142	144				mg-vcg as above pyr + mica		436				
144	146				fg mg-cg sand as above brown.		437				
146	148				as above SA-R. brown		884438				
148	150										
	153										

mud wet brown

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SUMMARY AND SPECIAL COMMENTS _____

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SHEET 3 OF 3

Core 5 348500 ydE — ROTARY MUD DRILL CORE LOG

CO-ORDINATES 8 49500 yd N — AZIMUTH Vertical — DRILLERS Thompson Drillers — COMMENCED — DEPTH 148 m — HOLE No. 80LRM7

RL COLLAR + 105 m (m.s.l.) — INCLINATION — DRILL TYPE Mayhew 1000 — COMPLETED — CASING LEFT — — DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				clay fg sandy clay orange brown + lge lumps calcrete		39				
2	4				yell orange tan mottled mg sady clay poorly consol. calcrete		884440				
4	6				as above		41				
6	8				yell green brown sandy clay some calcrete		42				
8	10				green red fg sandy clay		43				
10	12				green red purple fg sandy clay		44				
12	14				grey brown grey v.con clayey lumps but fg-mg lithic sandy silt		45				
14	16				light fawn fg-mg lithic sandy clayey silt and gty SA well sorted.		46				
16	18				as above some yellow clayey sand fg-mg as above		47				
18	20				as above sand clay light yell cream + green marl		48				
20	22				clay green cream yellow vfg sady sand mg-fg as above		49				
22	24				clay as above + sand fg-vcg granular SA-SR poorly sorted lithic cemented gty v.con		884450				
24	26				yell white green clay as above sand fg-vcg less cg-vlt mod well sorted.		451				
26	28				fg-mg sand as above + 10% lignite + yellow white green clay as above		452				
28	30				mg-cg sand as above		454				
30	32				fg-cg sand as above + lignite 50%		456				
32	34				mg-cg sand as above + brown soft lignite + fg sand 70-80%		458				
34	36				light yellow green silty claystone		884460				
36	38				as above then vfg silty lt brown sand + v.con micaceous sandy clay v.con + vfg sand		61				
38	40				clyst as above + fg-mg micaceous		62				
40	42				claystone as above + sand as below		63				
42	44				fg-mg well sorted micaceous qtz sand SA-SR v.con		64				
44	46				clay light grey brn dark grey brn sandy fg sandy clay micaceous minor sand		65				
46	48				as above fg sandy in part		66				
48	50				light grey clay as above micaceous fg-mg sandy in part tr lg woody		884467				

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PLAN No M 414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNF — DATE

SHEET 1 OF 3

7

DRILL CORE LOG

0078

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 7

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				-fg well sorted micaceous SR-R		884468				
52	54				fg sand uncon, light grey. as above - some cg - pebbles some light grey clay interbeds as above		69				
54	56				mg-cg sand as above SA-SR mica		470				
56	58				sand as above + clay as below.	sand / clay	71				
58	60				med brown grey clay micaceous silty		72				
60	62				as above fg sandy.		73				
62	64				very silty as above darker grey vfg sandy in parts micaceous. Some white kaol.		74				
64	66				as above fg sandy		75				
66	68				as above fg sandy + fg-mg sand interbeds.		76				
68	70				brown light brown grey + white. - fg sandy + clayey silt very sandy fg sandy brown grey micaceous clay and		77				
70	72				sand fg-mg SA-SR v common light grey. well sorted. minor pebbles qtz, mica		78				
72	74				as above fg-cg		479				
74	76				mg sand as above clayey with bands.		884480				
76	78				sand mg-cg some pebbles less well sorted as above		884481				
78	80				sand mg as above white brown silty micaceous. clay + light brown grey clayey micaceous silt soft		884482				
80	82				soft light grey white micaceous fg sandy clay. light brown sandy clay + mg sand.		884483				
82	84				clay as above fg sand + fg-cg r vcg SA-SR v common grey qtz, mica sand.		84				
84	86				clay mg-cg sand as above.		85				
86	88				sand mg-cg as above clay sandy as above		86				
88	90				mg-cg well sorted mainly mg SR as above tr white clay		88				
90	92				mg-cg-vcg sand as above. - tr white clay tr brown fg clayey sand (contam?)		87				
92	94				mg some granules mod well sorted micaceous 40% white clay as above		90				
94	96				fg-mg clay + clayey brown white fg sandy silt 50%		91				
96	98				mg well sorted sand as above micaceous some granules		92				
98	100				mg-vcg micaceous sand some clay mtx in fg-mg sandy		884493				

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SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 2 OF 3

PROJECT [illegible] 0079

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 7

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				Sand mg clayey tr white clay.		884494				
102	104				grey-light grey brown clayey silt + fg sandy clay some cg sand as above		95				
104	106				clay as above + mg-vcg sand mainly mg well sorted SR etc		96				
106	108				mg-cg sand white clay as before med brown grey-light brown grey clay mic fg sand 65% dk black		97				
108	110				fg sand clayey silt similar		98				
110	112				tan micaceous clay med brown grey clay + mg-granular sand fg-mg granular - pebbly qtz sand mg SA-SR	SR-R	99				
112	114				grey SR-R qtz 2 modes well sorted tr mica	some clay	884500				
114	116				as above only mg - pebbly grey brown clay		501				
116	118				silty-granular sand as above light grey sandy clay		2				
118	120				med grey micaceous very clayey silt black lithic flecks trace chert black		3				
120	122				sand fg-vcg SA-SR poorly sorted light grey fg sandy mic black speckled silty clay		4				
122	124				clay as above sand as above - pebbly		5				
124	126				sand mg - granular few pebbles SR qtz no sand mg - granular " " " no mica med brown grey clay 40%		6				
126	128				silty sand cg-mg poorly sorted as above. clay 10-20		7				
128	130				as above SA-SR		8				
130	132				clay dark brown grey micaceous silty + sand mg - granular as above		9				
132	134				med grey silty clay mica + carb flecks. Some fg sand some sandy intervals		570				
134	136				clay as above + cg - veng granular qtz sand SR etc		11				
136	138				grey sand mg-granular few large pebbles 1/2 cm rip up clay as above & micaceous sand		12				
138	140				sand as above no clay		13				
140	142				fg-vcg sand as above tr pyr		14				
142	144				mg-pebbly pyr chips no mica SR-R poorly sorted light grey-green		15				
144	146				cg-pebbles - very pebbly		16				
146	148				fg-granular sand as above silty + clayey in part		17				

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SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 3 OF 3

0080

398100 yd E
CO-ORDINATES 8545000 yd N AZIMUTH Vertical DRILLERS Thompson Drilling
RL COLLAR +103m (m.s.l.) INCLINATION DRILL TYPE Mayhew 1000

ROTARY MUD DRILL CORE LOG

PROJECT PCDM COMMENCED DEPTH 102m HOLE No. 80LRM8
COMPLETED CASING LEFT DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				orange to cream mg-cg ft sandy clay and mg sandy calcrete		8844 518				
2	4				clay as above very stoney ∈ calcrete		519				
4	6				green + yellow brown mottled clayey silt + cream coloured calcrete		520				
6	8				green + red purple indurated claystone yellow green calcrete. lg lumps		521				
8	10				green + red vfg sandy silt + lots silty sst. poorly consol		522				
10	12			×	sand vfg-fg white poorly consol light yellow white silty ∈ pant qtz fspar?		523				
12	14				as above becoming clayey		524				
14	16				light brown fg sandy clay + fg silty sand		525				
16	18				as above some indurated grey claystone bands		526				
18	20				light grey yellow mottled fg-cg R qtz sandy clay fg-vcg sand SR-R qtz		527				
20	22				as above very sandy		528				
22	24				clay as above very sandy uncon sand fg-vcg SR-R qtz to mica well sorted		529				
24	26				light grey fg sand as above some mg-cg		530				
26	28				fg light grey yellow mottled sand as above clayey ∈ pant		531				
28	30				dark grey brown sand fg lg flecks + tg stain		532				
30	32				dark brown uncoh lg sand fg as above SA-SR some cg frags of qtz mica		533				
32	34				dark brown lg stain fg sand as above some lg sand.	lg	534				
34	36				dark brown lg stained sand mg-cg as above lg clay lg lumps 30%		535				
36	38				lg clay bright lg slightly micaceous		536				
38	40				as above		537				
40	42				fg sand as before sandy lg clay lumps 40%		538				
42	44				fg well sorted lg brown sand uncon as above some black lumps + lg clay silty 30-40%		539				
44	46				fg-cg brown qtz sand SA-R no mica		540				
46	48				sand vfg-cg as above minor lg lumps		541				
48	50				as above vfg-vcg as above		8844 542				

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNF DATE

SHEET 1 OF 2

CRAIG Form No. 414

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 8

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				vfg-vcg granular sand as above		884543				
52	54				as above fg ppn cemented sand		544				
54	56				well sorted cg-vcg as above		545				
56	58				as above		546				
58	60				vfg-vcg granular as above		547				
60	62				fg-vcg as above		548				
62	64				cg-vcg sand SR-R well sorted as above		549				
64	66				mg-vcg " " mod " " "		550				
66	68				vfg-vcg " as above more cg		551				
68	70				lots vfg-cg more vfg as above		552				
70	72				vfg-fg sand as above <4% lt brown		553				
72	74				vfg-cg. sandy lt grey clay lumps.		554				
74	76				brown lt grey sand 1% ppn + ppn cemented sand. fg-granular SA-SR uncon		555				
76	78				fg-granular/pebbly as above some clay grits & white or fg-mg sand.		556				
78	80				fg-pebbly 75cm clayey in part 1% ppn. SR-SR		557				
80	82				fg sand then light grey micaceous soft clayey silt		558				
82	84				fg sandy clayey silt light grey grey micaceous rel uncon		559				
84	86				as above rel uncon		560				
86	88				as above rel uncon		561				
88	90				as above		562				
90	92				fg sandy grey clayey silt very musc soft + developed		563				
92	94				as above + min gt (contam)		564				
94	96				grey clay as above musc bio.		565				
96	98				grey silty lineation ang gt, bio musc		566				
98	100				as above		567				
100	102				as above gt bio red oxidized clayey lumps	(basement ?)	884568				

basement?

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PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

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ROTARY MUD DRILL CORE LOG

CO-ORDINATES 394900 yd E, 852100 yd N | AZIMUTH Vertical | DRILLERS Thompson Drillers | COMMENCED | DEPTH 154m | HOLE No. 80LRM9
RL COLLAR +90m (m.s.l.) | INCLINATION | DRILL TYPE Mayhew 1000 | COMPLETED | CASING LEFT | DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				sandy soil then calcrete sandy fractured		884568				
2	4				calcrete as above + consol light green clayst		884569				
4	6				green yel mottled fg sandy silty clay.		884570				
6	8				green some yel mottled silty clay		571				
8	10				green yellow mottled vfg silty clay		572				
10	12				as above		573				
12	14				as above well consol vfg sandy becom's darker green		574				
14	16				as above		575				
16	18				darker green vfg-fg clayey silt fg sandy qtz SA ysl sandy clay		576				
18	20				becomes white green clayey sand fg SA-SR poorly consol mottled green yell very sandy		577				
20	22				clayey sand as above		578				
22	24				white kaol consol clayst fg sand clayey as above consol light green clay		579				
24	26				green sandy clay as above + fg silty incon light grey sand		580				
26	28				white sandy clay as above 10% lgsand fg SA-SR well sorted		581				
28	30				yell grey mottled clay + dark brown cemented mg-fg qtz sst. vhard + brown lgsand.		582				
30	32				white clay + sst as above		583				
32	34				med grey fg sandy SA-SR qtz clay vfg sand interbeds mottled yel green clay as above		584				
34	36				fg med grey clay as above		585				
36	38				clay as above + fg-vfg light brn lg stained sand qtz no mica		586				
38	40				as above		587				
40	42				vfg sandy light grey clay + mobs vfg sand SA SR well sorted qtz incon		588				
42	44				as above + med grey clay		589				
44	46				white kaolinitic sandy clay + dark grey carb clay		590				
46	48				as above more carb grey clay fg-cg SA-SR qtz sand incon poor sorted		591				
48	50				as above mg mod grey clay also + interbeds mg-vlog SR qtz sand		884592				

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SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNF DATE

SHEET 1 OF 4

PROJECT _____

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 9

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				loose m-con grey fg-cg SR sand + sandy clay		884593				
					med grey mtx well con + dark grey carb clay						
52	54				as above more dark grey		594				
54	56				clay light grey to dark grey as above		595				
56	58				stiff light to dark grey carb clay fg-mg sandy		596				
					sandy interbeds fg-cg SR m-con qtz.						
58	60				as above more sand		597				
60	62				soft to stiff light to dark grey clay sandy interbeds as		598				
					above + lig sandy clay.						
62	64				as above		599				
64	66				clay as above mg qtz sand SR m-con		600				
					brown lig stained well sorted some light brown clay						
66	68				clay as above sand as above lignite sand		601				
					< 5%						
68	70				sand mg SR-R lig stained m-con qtz well		602				
					sorted typ.						
70	72				as above fg-mg lig stained		603				
72	74				as above fg-cg sand + lig clayey sand lumps		604				
74	76				as above		605				
76	78				clay light grey → dark grey + sandy lig clay/ lig to low grade		606				
					60%						
78	80				as sand fg → cg as above SR-R m-con		607				
					qtz typ. fg sandy lig						
80	82				sand fg - vcg as above lig clayey sand		608				
					lumps 30-40%						
82	84				mg - vcg sand as above + (lig clayey sand		609				
					+ v low grade lig) 20-30%						
84	86				sand fg - mg well sorted lig stained as above		610				
					no lig lumps.						
86	88				sand as above		611				
88	90				sand fg-cg mod well sorted as above		612				
90	92				^ Vfg-mg ^ lig · fg sandy		613				
					lig lumps 10%						
92	94				as above med grey clay stiff lards		614				
94	96				mg sand as above low grade lig lumps 40%		615				
96	98				fg-mg sand as above lig lumps		616				
98	100				as above		884617				

CRAE 11?
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 9

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				vcg to small pebbly SA-SR qtz mod WS pyr lig clay lumps 10%		884618				
102	104				granular - pebbly gravel A-SA sorted.		619				
104	106				fg-pebbly SA-R some lig clay lumps +		620				
106	108				sand mg - small pebbles up to 1.25 cm SA-R lig sandy lumps + white + grey - dk grey sandy clay		621				
108	110				sand fg - pebbly SA-R some lig sandy clay		622				
110	112				sand as above more brown micaceous clay min lig clay		623				
112	114				as above		624				
114	116				pyr fg - granular grey sand mainly cg + tr lig		625				
116	118				fg - granular more fg-mg brown sand SA-R mica + pyr		626				
118	120				fg - cg as above more mg-cg white clay lumps sandy brown lig clayey sand		627				
120	122				fg - granular more cg - granular SA A-SR qtz		628				
122	124				cg - granular sand SA-SR min lig sand + brown clay		629				
124	126				mg - granular as above		630				
126	128				mg-cg as above some clay fragments as above		631				
128	130				fg - vcg as above no clay		632				
130	132				mg-cg micaceous fg - grey clay as above		633				
132	134				mg-cg micaceous pyr minor brown clay		634				
134	136				mg - brown sand some lig sandy clay micaceous		635				
136	138				fg - vcg as above SA - SR pyr muse		636				
138	140				mg-cg as above		637				
140	142				mg - cgs as above brown lig micaceous clay 5%		638				
142	144				mg Soft mod grey clay sand fg - vcg - lig sandy beds 5%		639				
144	146				mg - cg clay soft brown micaceous clay		640				
146	148				as above white Rad silty clay pyr SA-R		641				
148	150				sand mg white fg sandy clay pyr 30% lig clay micaceous		884642				

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 3 OF 4

0085

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 9

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
150	152				cg sandy pebbly gravel SR-R white kaol mg sandy clay 10-20%		8814643				
152	154				poorly sorted cg-vcg pebbly gravel A-SR qtz		8814644				

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 4 OF 4

388900ydE — ROTARY MUD — Thompson Drillers — Vertical — Maybew 1000

CO-ORDINATES 853400yd N — AZIMUTH Vertical — DRILLERS Thompson Drillers — COMMENCED — DEPTH 120m — HOLE No. 80LRM 10

RL COLLAR +110m (m.s.l.) — INCLINATION — DRILL TYPE Maybew 1000 — COMPLETED — CASING LEFT — — DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				pink yellow fg sandy clay + nodular calcrete.		334668				
2	4				fg-vfg cemented sandstone ferruginous lateritic pebbles.		69				
4	6				vfk yel clay + calcrete fg-vfg cemented laird white - yel red stone		670				
6	8				sst SA-SR well sorted sandstone as above graded bedding		71				
8	10				~~sand~~ sst as above mg-cg clasts in places.		72				
10	12				mcon sandy yell fg-cg SA-Rgts -mcon sand as above some lag		73				
12	14				pebbles 1-7cm WR sandstone clasts fg+cg bimodal sand as above white - yel fg + cg-vcg bimo SR-SAR. gts		74				
14	16				as above v. white.		75				
16	18				as above fg-granular white yel tint SR		76				
18	20				" " fg-pebbly. yel white mcon gts		77				
20	22				as above		78				
22	24				yel white fg-silty + minor white clay.		79				
24	26				cg-granular sand SA-SR micaceous red purple clay blotches white hard sandy clay		680				
26	28				fg-clayey sand mcon pink/purple blotches		81				
28	30				sand as above white hard sandy clay + purple sandy clay		82				
30	32				sand poorly sorted fg-pebbly minor white clay		83				
32	34				as above SA-SR		84				
34	36				" mg-cg white clay cement in part		85				
36	38				mg-pebbly white + yel clayey micaceous fg sandy clay 50%		86				
38	40				white clay hards fg-granular SA-R		87				
40	42				pinky clayey white mcon sand. white-yell clayey sst + silty clay, mica		88				
42	44				sand SA-SR fg-granular gts as above very clayey mcon some white hard clayey sst hards.		89				
44	46				sand interbed of white - lt grey hard fg sandy silty clay. lots of clay		690				
46	48				pink red grey soft fg sandy silty clay micas		91				
48	50				as above fg-pebbly sand in parts		334692				

CRAE 117 PLAN No M 414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MBNF — DATE

SHEET 1 OF 3

DR ___ CORE ___ LOG

CO-ORDINATES ___ AZIMUTH ___ DRILLERS ___ COMMENCED ___ DEPTH ___ HOLE No. 10

RL COLLAR ___ INCLINATION ___ DRILL TYPE ___ COMPLETED ___ CASING LEFT ___ DPO No(s) ___

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				clay as above bfld thin grey micaceous sand mg-cg > clay		84693				
52	54				sand as above SR-R very clayey ppy + mica		94				
54	56				sand as above <20% clay		95				
56	58				" fg-vfg very clayey		96				
58	60				cg-pebbly some clay white grey SA-R		97				
60	62				fg-cg very clayey + silty clay as above		98				
62	64				mg-cg some clay, not sandy		99				
64	66				fg fg micaceous very clayey & clay lumps		84700				
66	68				light grey - white		701				
68	70				mg small pebbly SR-R mica minor clay		2				
70	72				mg-cg micaceous slightly clayey		3				
72	74				vfg-fg mica, vfg mafic flecks. very silty + clay pens clay lumps		4				
74	76				fg-vcg biotite specks + mica clayey		5				
76	78				fg-cg clayey SA-R		6				
78	80				f-cg slightly clayey	clay & disc mica	7				
80	82				mg micac. slight clay mafics ABL on Tour		8				
82	84				mg-pebbly SA-SR clayey bands mica, fg mafics		9				
84	86				mg-cg clayey & clay bands some pebbles		710				
86	88				cg-pebbly + fg-mg clayey + silty lumps		11				
88	90				fg-vcg light grey soft clay some clay		12				
90	92				fg-cg-vcg fg & clayey micaceous		13				
92	94				fg-mg clayey lumps 40% clayey		14				
94	96				vfg-fg clay mostly clayey sandy silt clayey micaceous		15				
96	98				fg-mg clayey white-light grey micaceous		16				
98	100				fg-mg clayey + cg-granules not clayey		84717				

CRAE 117
PLAN NUMBER

SUMMARY AND SPECIAL COMMENTS ___

LOGGED BY ___ DATE ___

SHEET 2 OF 3

0088

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 10

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				fg-cg slightly clayey		718				
102	104				fg " "		719				
104	106				mg well sorted " " pumice		720				
106	108				fg-granular clayey silt lumps clayey. Sl. R		21				
108	110				vfg-mg qtz mica a clayey not clayey		22				
110	112				fg-cg " " slightly clayey		23				
112	114				mg slightly clayey		24				
114	116				fg-mg some pebbles 30% clay lumps.		25				
116	118				fg-mg some clay clayey		26				

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 3 OF 3

386100yd E
CO-ORDINATES 8503000yd N
RL COLLAR +110m (m.s.l.)

ROTARY MUD DRILL
AZIMUTH Vertical
INCLINATION
DRILLERS Thompson Drillers
DRILL TYPE Mayhew 1000

COMMENCED 1 SEP 86
COMPLETED
DEPTH 152m
CASING LEFT
HOLE No. 8ØLRM11
DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				orange red ferruginous sandy clay unconsolidated calcrete fg sandy ferruginous silt		884726				
2	4				v.f.g sandy silty - sst. green - red well consolidated		884727				
4	6				vfg-fg well sorted sst + yell to orange well consolidated SR with cemented sandy clay		884728				
6	8				sst as above + calcrete nodules orange sandy clay		884729				
8	10				sst well cemented qtz fg-vfg white - brown-red.		884730				
10	12				as above +		884731				
12	14				as above + uncon light yell - white silty sand qtz fg-mg SA-SR.		884732				
14	16				vfg uncon sand as above		884733				
16	18				sand as above fg + white - light grey		884734				
18	20				vfg-fs qtz sandy clay uncon S-R as above white to light brown/grey clayey sandy silt		884735				
20	22				fg rimed ≤ cg-vcg SR-R qtz light yellow mainly fg		884736				
22	24				fg - granular silty pinky yellow uncon qtz SR-WR		884737				
24	26				sand as above yellow fg-cg no silt		884738				
26	28				sand fg-granular white - light brown grey clayey silt ≤10%		884739				
28	30				light yell grey qtz fg-cg no clay as above		884740				
30	32				qtz sand pinkypl silt-granular to mucas some brown		884741				
32	34				vfg - vcg sand vfg is silty + mica SA-SR. specs brown light yellow		884742				
34	36				very light yel silty mg - granular SA-SR some white clay + mica		884743				
36	38				as above some clay micaceous		884744				
38	40				fg - mg silty + clayey to vfg clayey silt white micaceous slightly yellow grey		884745				
40	42				pebbly mg sand uncon 30% clay white silty. SA-R		884746				
42	44				fg as above silty + clayey		884747				
44	46				pyr mica fg-cg silty + clayey slightly qtz SA-R		884748				
46	48				vfg to mg micaceous qtz SA-SR light grey		884749				
48	50				fg-cg as above		884750				

CRAE 117
PLAN No. 8M/14

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNF DATE 15 Sep 86
SHEET 1 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80 LRM 11

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				sand as above cg - Vcg SR nodays		884751				
52	54				mg - granular as above "		884752				
54	56				Vfg - cg micaceous incon qtz pip tr		884753				
56	58				Vfg - mg micaceous " clay 40%		884754				
58	60				Vfg - - mg some granules as above clayey 2%		884755				
60	62				mg - Vcg granules silty.		884756				
62	64				Vfg - fg. micaceous. silty white clay 10%		884757				
64	66				as above some mg fg no clay tr pip SA - SR		884758				
66	68				as above		884759				
68	70				fg - mg micaceous as above		884760				
70	72				mg - granular micaceous SA - SR		884761				
72	74				fg - cg clayey micaceous.		884762				
74	76				fg Vcg micaceous SA - R		884763				
76	78				mg - cg as above		884764				
78	80				mg - fg slightly silty.		884765				
80	82				mg as above		884766				
82	84				fg - mg cg micaceous slight clay		884767				
84	86				mg - cg SA - R 5% clay white mtx		884768				
86	88				fg - mg mainly fg micaceous.		884769				
88	90				mg - cg some clay		884770				
90	92				mg - cg " tr mica fg		884771				
92	94				mg as above		884772				
94	96				mg - cg clay 5% cg mica		884773				
96	98				cg Vcg mica 2% clay		884774				
98	100				fg - cg slightly clayey		884775				

CRAE 117

SUMMARY AND _____ LOGGED BY _____ DATE _____

SHEET 2 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM 11

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				mg fg mica no clay		884776				
102	104				fg mg uncon SA-SR		884777				
104	106				fg- granular 2% clay + silt white		884778				
106	108				mcg SR-R.		884779				
108	110				mg SA-R. tr mica		884780				
110	112				mg - pebbly SA-SR tr mica.		884781				
114	114				fg clayey micaceous.		884782				
116	116				fg - mg SA-R		884783				
118	118				as above		864784				
120	120				mg SR		884785				
122	122				fg SR-R.		884786				
124	124				fg - mg + cg micaceous slightly clayey		884787				
126	126				fg - granular SA-R. tr mica		884788				
128	128				light grey mg well sorted A-R. tr mica		884789				
130	130				fg - vcg tr clay		884790				
132	132				cg - granular ppr.		884791				
134	134				fg - mg same cg + gran SR tr vitreous lig chips	* vitreous lig	884792				
136	136				fg-mg white clay soft brown lig clay micaceous lig chips + woody frags brown + dk blk.	small band <30%	884793				
138	138				as above tr clay chips 20%		884794				
140	140				fg-mg white clayey < 5% lig chips blk		884795				
142	142				fg-vfg white light hmgy clayey silt tr lig		884796				
144	144				fg - mg micaceous and SA-SR + sandy silt 20% light grey		884797				
146	146				vfg-fg sand dom, silt as above 40-50 tr with lig		884798				
148	148				fg sand micaceous sandy clayey silt white soft.		884799				
150	150				as above		884800				
	152				[illegible]						

CRAE 117

SUMMARY AND SPECIAL COMMENTS _____ LOGGED BY _____ DATE _____

SHEET 3 OF 3

ROTARY MUD DRILL ~~CORE~~ LOG

CO-ORDINATES 582100 yd E 850600 yd N AZIMUTH Vertical DRILLERS Thompson Drillers COMMENCED 15 Sept 80 DEPTH 148m HOLE No. 80LAM12

RL COLLAR +128m (m.s.l.) INCLINATION _____ DRILL TYPE Mayhew 1000 COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				pink orange grey clayey soft + calcrete		88430 2				
2	4				clay as above + ss + white well cemented fg SA-SR white + calcrete qtz		3				
4	6				white-red brown sst as above + tr calcrete		4				
6	8				sst as above some clay as above		5				
8	10				fg-mg micaceous sand pale orange SA-SR qtz iron stained		6				
10	12				sand as above fg		7				
12	14				as above fg-vfg qtz.		8				
14	16				fg sandy white clay some sand vcg+cg SR		9				
16	18				light grey white mg white clayey in part SA-SR micaceous		810				
18	20				fg-mg sand micaceous SR some clay lumps white		11				
20	22				vfg-fg sand some soft white sandy clay		12				
22	24				vfg + clayey + vcg granular + pebbly SA-SR		13				
24	26				vfg-mg light yellow		14				
26	28				as above some clay		15				
28	30				fg-vcg white clay fg sandy 50%	sands clayey	16				
30	32				soft white fg sandy clay pinkish in part	clay	17				
32	34				clay as above 60% sand fg as above		18				
34	36				clay as above fg-mg		19				
36	38				clay as above 30% sand fg micaceous clayey.		820				
38	40				mg-cg yellow sand SA-SR micaceous		21				
40	42				fg-granular as above no mica clay white 30%		22				
42	44				fg-vcg SR-SA clay 10%		23				
44	46				fg-mg clay 5%		24				
46	48				sand mg-vcg SA-R		25				
48	50				fgfg-mg + tr vfg mica some clay		26				

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY MJNF DATE _____

SHEET 1 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED 2SEP84 DEPTH _____ HOLE No. 80LRM12

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				vfg-fg micaceous slightly clayey		8848 27				
52	54				as above + cg SR slightly clayey		28				
54	56				vfg-fg 5% clay tr mica		29				
56	58				fg-granular some clay tr "		830				
58	60				fg-mg micaceous		31				
60	62				mg-cg qtz sand SR-SA. light brown clay sandy 30%		32				
62	64				fg-granular some clay		33				
64	66				mg-cg clayey		34				
66	68				fg-vcg clayey		35				
68	70				cg-pebbly clayey 60% light brown soft mica		36				
70	72				fg-cg 5% clay		37				
72	74				fg-granular clayey		38				
74	76				granula-pebbly 2cm conglom qtz SR clayey tr mica		39				
76	78				fg-mg clay 20%.		840				
78	80				mg-gran micaceous pyrite clay <20%		41				
80	82				vfg-vcg " pyrite clayey.		42				
82	84				fg-mg clayey+clay <10% micaceous		43				
84	86				vfg-fg clayey micaceous		44				
86	88				white-light brown clayey micaceous silt +cg sd pyrite. pyr		45				
88	90				mg sd + silt as above		46				
90	92				fg some gran silty + silt 30% mica		47				
92	94				mg-gran + silty sand soft.		48				
94	96				fg-mg some clayey silt		49				
96	98				cg-gran slightly silty		850				
98	100				fg-cg silty clay 30%		51				

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 2 OF 3

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

0094

PROJECT

CO-ORDINATES | AZIMUTH | DRILLERS | COMMENCED | DEPTH | HOLE No. 80RM12

RL COLLAR | INCLINATION | DRILL TYPE | COMPLETED | CASING LEFT | DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				mg clayey silt light fawn brown 40–50%		848 52				
102	104				fg – mg clayey		53				
104	106				mg SR qtz no clay		54				
106	108				mg – cg no clay		55				
108	110				cg – vcg SA – SR. no clay no mica		56				
110	112				cg – pebbly SR pyr.		57				
112	114				mg as above no clay pyr.		58				
114	116				mg – vcg " "		59				
116	118				fg – mg vcg SA – SR. "		860				
118	120				mg – cg no clay tr pyr.		61				
120	122				mg – vcg A – SR.		62				
122	124				mg – cg some clay. no mica		63				
124	126				fg clay ≤ 10%		64				
126	128				mg SR – R no clay		65				
128	130				mg – vcg some clayey silt		66				
130	132				fg – silty clayey micaceous		67				
132	134				as above tr granules silty		68				
134	136				cg SA – SR		69				
136	138				fg slightly micaceous		870				
138	140				fg – mg " "		71				
140	142				mg – cg tr clay		72				
142	144				fg tr clay		73				
144	146				mg – pebbly clayey SA-SR		74				
146	148				fg – gran "		848 75				

SUMMARY AND SPECIAL COMMENTS

LOGGED BY | DATE

SHEET 3 OF 3

CRAE 117
PLAN No M414

0095

PROJECT TUCUM.

3772oo yd E — ROTARY MUD DRILL ~~CORE~~ LOG

CO-ORDINATES 853300 yd N — AZIMUTH Vertical — DRILLERS Thompson Drillers — COMMENCED — DEPTH 194 m — HOLE No. 80LRM13

RL COLLAR +140m (m.s.l.) — INCLINATION — DRILL TYPE Mayhew 1000 — COMPLETED — CASING LEFT — — DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				orange red-green clayey silty sand fg		8848				
2	4				as above + fg cemented qtz sst ~~spl~~-red. & calcrete.		77				
4	6				sandy clay as in 4 above sst + calc		78				
6	8				as above sandy clay fg sst		79				
8	10				clay + ~~sst~~ red yell fg.		880				
10	12				orngy clay + sand uncon qtz mg-gran SA-SR clayey from above some fspar		81				
12	14				fg-granular mainly fg-mg + orangey silt orange coloured SA-SR		82				
14	16				as above yellow.		83				
16	18				sand as above but mainly soft white kaol vfg sand mic clay		84				
18	20				as above sand fg-mg		85				
20	22				white clayey silt carb mic + vfg sand. uncon		86				
22	24				as above more sand + brown silt		87				
24	26				" sand coarser grained		88				
26	28				white to brown & black carb trans soft clay micaceous silty sand vfg-mg SA-SR.		89				
28	30				as above		890				
30	32				" sand fg-granular		91				
32	34				as above		92				
34	36				white-light brn. micaceous clay		93				
36	38				light brn grey clay as above some sandy		94				
38	40				" " " " " sand mg-vcg		95				
40	42				sand + clay as above <50% vcg-SA-SR qtz		96				
42	44				" mg-vcg silty + clayey mod grey brn mic sil ~~stf~~ clay carb +/- lig	tr lig	97				
44	46				mod grey carb clay as above		98				
46	48				as above + white + brn black clay as above some sand SA-R vcg-granular		99				
48	50				carb clay some sand mg-c grain		8A900				

SUMMARY AND SPECIAL COMMENTS

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C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT 0096

CO-ORDINATES ____ AZIMUTH ____ DRILLERS ____ COMMENCED ____ DEPTH ____ HOLE No. SDLRM13

RL COLLAR ____ INCLINATION ____ DRILL TYPE ____ COMPLETED ____ CASING LEFT ____ DPO No(s) ____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				as above minute carb specks		884901				
52	54				clay as above some cg pebbly sand		2				
54	56				" " " sand cg-vcg		3				
56	58				soft light grey lig dirtys + specks micaceous		4				
56	60				" " " clay sandy mica sand		5				
60	62				SA-SR mg-gran as above fg " " + clay 50% light yyybrn		6				
62	64				vcg-gran SA-SR clay light brn-grey lig specks soft. SA		7				
64	66				mg-gran as above clay <20%		8				
66	68				cod chip cg-gra + pebbly pyr pale light brown clayey silt micaceous lig flecks		9				
68	70				as above - A-SR lig specks pyr		910				
70	72				cg-pebbly pyr clayey as above +/ lig flecks		11				
72	74				mg-pebby pyr SR-R mica +/ lig light grey clay		12				
74	76				mg-vcg silty + clayey ✓pyritic		13				
76	78				sand mg-vcg clay light grey brn clay 5%		14				
78	80				as above clay 60%		15				
80	82				Jurassic patty consol light grey micaceous sandy + silty micaceous lignitic specks		16				
82	84				as above		17				
84	86				" " soft + clayey silt.		18				
86	88				soft light brn grey clay silt as above lignitic specks		19				
88	90				sand cg-vcg SR-R very pyr lig specks some clay		9120				
90	92				vcg-gran SR-R pyr some clay		21				
92	94				mg-cg pyr sand as above		22				
94	96				mg-gran as above pyr 10% clay		23				
96	98				mg-pebbly clay light grey brn lig flecks concos bands part		24				
98	100				cg-vcg A-SR pyr lig specks clay 40%		25				

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C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT

CO-ORDINATES | AZIMUTH | DRILLERS | COMMENCED | DEPTH | HOLE No. 13

RL COLLAR | INCLINATION | DRILL TYPE | COMPLETED | CASING LEFT | DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				mg-cg fpyr clay 40% lard s schist frags		884926				
102	104				mg-cg A-SA mpyr clay light brn grey lig blk specks		27				
104	106				fg-vcg very fpyr clay 10% lig flecks throughout clay		28				
106	108				cg-gran A-SR 5% fpyr some clay lig specks		29				
108	110				fg-gran A-SR very pyritic clayey		930				
110	112				as above 20% clay very pyritic		31				
112	114				qtz mg-cg clay as above 60% fpyr		32				
114	116				mg-vcg fpyr clay 20%		33				
116	118				clay as above 20% sand fg-cg lig flecks fpyr		34				
118	120				as above light grey-brn grey mg-mg fpyr		35				
120	122				clay 40% sand mg-vcg fpyr		36				
122	124				lots fpyr clay 30-40% sand cg-vcg		37				
124	126				mg-cg brn grey clay lig specks still mg SA-SR fpyr		38				
126	128				clay as above 30% sand fpyr		39				
128	130				white light brn grey clay lig black flecks 20-30% sand vcg fpyr		940				
130	132				as above mg-cg (lig flecks = clay minor) minor sand		41				
132	134				granules-pebbly qtz A-SR. mobs fpyr some white clay		42				
134	136				mg-cg fpyr dark brn carb clay micaceous lig white clay v fsandy-silty		43				
136	138				cg-pebbly lig brn fpyr SA-SR qtz some clay		44				
138	140				med grey brn silty clay micat lig specks soft (cg-vcg sand minor) fpyr		45				
140	142				cg-vcg pebbles fpyr soft light grey clay sandy + white		46				
142	144				fg-gran A-SR qtz some fspar fpyr clay brn lig as above		47				
144	146				cg-gran A-SR white clay lig specks		48				
146	148				cg-pebbly SA-SR qtz fpyr some white clay lig specks		49				
148	150				mg-pebbly SA-SR as above		884950				

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SUMMARY AND SPECIAL COMMENTS

LOGGED BY | DATE

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT

CO-ORDINATES | AZIMUTH | DRILLERS | COMMENCED | DEPTH | HOLE No. DDLRM13

RL COLLAR | INCLINATION | DRILL TYPE | COMPLETED | CASING LEFT | DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
150	152				fg-mg fspr + minor clay as above		884951				
	154				fg- vcg SA-SR some fspr to mica fspar.		52				
	156				fg mainly - pebbly SA-SR qtz fspathic fspr to clay	less fspr ± fspar	53				
	158				fg-vfg sand + fspr minor clay as above		54				
	160				med grey brown silt clay fg specks + chips fmlst fspr fg-cg A-SR		55				
	162				vfg light brn gy sand micaceous fg chips with black		56				
	164				sand as above + silty clay black with chips 2-5%. sandy → clay mainly black		57				
	166				as above		58				
	168				as above vfg some clay fg chips cg with black		59				
	170				vfg silty sand coaly chips fspr + clayey silt lumps micaceous		60				
	172				as above micaceous		61				
	174				as above		62				
	176				vfg - vcg fspathic qtz coaly chips tr. clay as above A-SR.		63				
	178				mg - cg fspar fg mica qtz some clay		64				
	180				gran - pebbly qtz fspar fspr SA-SR.		65				
	182				mg - gran as above		66				
	184				vfg - vcg silty sand thin black coaly bands silty clay		67				
	186				vfg - gran fspathic gst + qtz A-SR fspr. mica tr gran sltst (basement)		68				
	188				vfg - vcg as above		69				
	190				fg - mg as above fspathic fspr		70				
	192				cg - vcgr clayey		71				
	194				cg - vcg some clay		72				

mud thinned

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SUMMARY AND SPECIAL COMMENTS

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ROTARY MUD DRILL ~~CORE~~ LOG

CO-ORDINATES 115000yd E 847800yd N | AZIMUTH Vertical | DRILLERS Thompson Drilleas | COMMENCED | DEPTH 124m | HOLE No. BOLRM14
RL COLLAR +129m (m.s.l.) | INCLINATION | DRILL TYPE Mayhew 1000 | COMPLETED | CASING LEFT — | DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				orange yell sandy clay some calcrete		884973				
2	4				" clayey + silty sand.		974				
4	6				" clayey sand.		75				
6	8				poorly sorted some clay as above fg well cemented ferug SST pebbles some red-white + yellow		76				
8	10				vfg-fg sst well cemented red & white qtz ove very well sorted		77				
10	12				as above		78				
12	14				as above + uncon sand fg-mg SA-SR orange qtz		79				
14	16				sand as above mg-vcg white+yel clayey		980				
16	18				orange white mottled sand fg-cg white clay		81				
18	20				sand fg-vcg yellow clay matrix some white clay A-SR.		82				
20	22				fg-cg as above clayey		83				
22	24				cg-pebbly few cobbles 4cm white micaceous clayey		84				
24	26						85				
26	28				mg-vcg clay 50% white-light fawn mica v silty.		86				
28	30				clay light grey/fawn mod stiff sandy + silty some sand micaceous		87				
30	32				sand fg-pebbly 20% clay		88				
32	34				fg-pebbly SA-SR sand qtz micaceous white clayey silts 30%		89				
34	36				mod grey-dark grey carb clay silty		990				
36	38				white-yel clay as above some sand vcg-mg grey clay as above black pipstains + flecks. lig clay some lig clay light-dk grey		91				
38	40				off white-fawn-light grey micaceous clayey silt silty clay + lig specks		92				
40	42				soft clay as above		93				
42	44				sand mg-cg SR-SA qtz light grey micaceous clayey		94				
44	46				fg sandy silty mod grey micaceous + brown lig clay + lig dk grey lig specks <10%		95				
46	48				as above + black coal chips	black coal specks <10% + coal chips	96				
48	50				clay as above + sand 30%		97				

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SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNF DATE

SHEET 1 OF 3

PROJECT

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. BOLRM14

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				as above sandy slop fg-vfg		884998				
52	54				light grey-brown silty vf-f sandy clay brown woody lig chips 5-10	5-10% woody lig chips	999				
54	56				as above soft		885000				
56	58				light brn-grey-clay lig specks as per Dia 13 black-brn lig rubbit coaly frags typ sd vfg-mg SR	black brn rubbit coal.	1				
60	60				as above		2				
62	62				light brn grey mod consol fg sandy clay lig specks <5%	<5% coal	3				
64	64				soft light grey brn clayey silt micaceous + lig coal chips.	coal chips	4				
66	66				as above sft + lig chips	tr coal chips	5				
68	68				as above brown lig clay clays as above		6				
70	70				clay as above lig chips 2-5%	2-5% lig bands	7				
72	72				as above silt lig + micaceous		8				
74	74				as above		9				
76	76				" "		885010				
78	78				light grey red brn + vfg-fg carb specks		11				
80	80				clay as above becoming sandy lig chips + as above		12				
82	82						13				
84	84				soft clay as above becoming sandy		14				
86	86				sand fg-mg SR qtz light grey f spar micaceous clay as above 40-50% lig specks	40-50% lig specks	15				
88	88				sand fg-cg micaceous qtz f spar clay as above sparse lig		16				
90	90				vfg-fg sand minor clay <20%		17				
92	92				sand vfg-cg f speckled clay micaceous f spar. as above		18				
94	94				sand as above mg-cg f spathic clay 30%		19				
96	96				silt-fg as above some clay		885020				
98	98				as above vfg black specks		21				
100	100				fg-mg typ qtz f spar clay 30% as above		22				

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PROJECT

DRILL CORE LOG

CO-ORDINATES | AZIMUTH | DRILLERS | COMMENCED | DEPTH | HOLE No. 80LRM14

RL COLLAR | INCLINATION | DRILL TYPE | COMPLETED | CASING LEFT | DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				sand fg micaceous light Brn grey ftg SA-SR		885023				
102	104				sand fg-mg micaceous lithic. tr clay + lig chips (contam)? SA-SA	tr coal chips	24				
104	106				cg gft lithic SA light grey Jasper tr dkr		25				
106	108				mg-vcg as above some clay + lig specks		26				
108	110				cg-fg A-SR f-spar micaceous sand.		27				
110	112				some clay light grey Brn soft silty clay lig specks.		28				
112	114				as above + some sand		29				
114	116				as above light grey brn micaceous specks	Black lig Black coal chips	885030				
116	118				" " less specks		31				
118	120				light brn grey clay some lig speckled clay		32				
120	122				as above		33				
122	124				brown clay as above white clayey sandy silt soft. no lig. hard yellow gel contained		34				

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SUMMARY AND SPECIAL COMMENTS

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0102

380500yd E
8461000yd N

ROTARY MUD DRILL ~~CORE~~ LOG

PROJECT FOLDM

CO-ORDINATES AZIMUTH Vertical DRILLERS Thompson Drillers COMMENCED DEPTH 122m HOLE No. 80LRM15

RL COLLAR +102m (m.s.l.) INCLINATION DRILL TYPE Mayhew 1000 COMPLETED CASING LEFT — DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				yellow clayey sand + calc		885035				
2	4				calcrete clayey sand & sandy clay as above		36				
4	6				sandy clay then SST fg-mg qtz ~~yellow~~ white & red		37				
6	8				white qtz SST well cemented white & red		38				
8	10				fg ~~SA~~-SR well sorted, some clay stone as above		39				
10	12				~~SST~~ as above upto mg + sand mg uncon		40				
12	14				sand qtz SR reddish ferruginous. orange mg-cg uncon sand qtz SR		41				
14	16				fg-mg ~~white~~ pink qtz uncon as above.		42				
16	18				as above		43				
18	20				as above + red green mottled v sandy clay		44				
22	22				vfg-mg sand qtz yel pink as above no clay		45				
24	24				fg-vcg sand yel light grey + red uncon as above		46				
26	26				light grey brn qtz A-SR fg-gran uncon		47				
28	28				fg-cg as above ferug stain in part clayey light green in part		48				
30	30				fg-granular white sand uncon SA-SR qtz + feldspar.		49				
32	32				as above + white kaol clay fg-mg sandy 20%		50				
34	34				white-light grey silty micaceous lig speckled soft clay ?zeolitic		51				
36	36				as above light white some brown lig chips.		52				
38	38				as above 10-20% lig chips		53				
40	40				sand uncon white qtz SA-SR mg-gran		54				
42	42				as above mg + white kaol + light grey clayey silt micaceous fg sandy		55				
44	44				sand fg-cg 20% clay as above		56				
46	46				sand fg-cg mainly mg-cg no clay		57				
48	48				sand mg-vcg clay as above		58				
50	50				clay silt mica lig clayey speckled light brown soft organic clay white sandy ~~kaolin~~ some sand		885059				

Colour change

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SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNF DATE

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0103

PROJECT

DRILL CORE LOG

CO-ORDINATES | AZIMUTH | DRILLERS | COMMENCED | DEPTH | HOLE No. 80LRM15

RL COLLAR | INCLINATION | DRILL TYPE | COMPLETED | CASING LEFT | DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION		SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
52	52				sand cg SA-SR as above			885060				
54	54				cg-veg gran SA-SR "			61				
54	56				light grey brown silty micaceous lg speckled			62				
56	58				light brown silty clay lg specks + chips some lge black cg sandy	* lg	C	63				
58	60				as above micaceous + brown org clay lg 5-10	*	C	64				
60	62				light grey brn + dark brown org clay mix. + lg speckled no chips			65				
62	64				as above no chips			66				
64	66				" - lg chips micapyr + mg-gran			67				
66	68				f-SR qtz f-fspar. med grey clay light brown lg speck sand as above			68				
68	70				as above clay mg sand to lg chips			69				
70	72				light grey grey brn clay micaceous silty lge flecks			70				
72	74				light grey clay micaceous as above, sandy mg-cg f-patchy. SA-SR + lg chips			71				
74	76				as above light gy - gy brn. sand cg f-patchy.			72				
76	78				sand cg-pebbly qtz, some f-spar. A-SR some clay			73				
78	80				as above mg-gran some white brn			74				
80	82				f-g pebbly brn sand as above clay light brn grey lg speckled			75				
82	84				cg sand + clay 90% as above			76				
84	86				light grey-brown silty clay-mica lg specks. sand cg-veg			77				
86	88				as above + sand as above f-spar etc.			78				
88	90				dark brown grey " micaceous clay some mg sand lg chips +			79				
90	92				" as above to lg chips			80				
92	94				as above			81				
94	96				dark brn grey silty mica lg specks.			82				
96	98				as above thin band lg + brown black lg [illegible]			83				
98	100				mg-cg f-spar qtz SA-SR light brn gy			885084				

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SUMMARY AND SPECIAL COMMENTS

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SHEET 2 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM 15

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				sand micaceous mg-cg as above		885085				
102	104				" mg-cg clay 30% lig chips <5		86				
104	106				clay brn-gy as above-tr lig		87				
106	108				clay grey brown sand mg-vcg.		88				
108	110				sand cg-gran SR qtz fspar		89				
110	112				vcg-gran SR qtz fspar.		90				
112	114				fg-vcg pep mica fspar		91				
114	116				mg-cg fspar pep tr lig 5% clay as above		92				
116	118				mg-cg " " clay as above 10%		93				
118	120				mg-vcg + pebbly silt clay as above 15-20 fspar.		94				
120	122				cg-vcg qtz fsp no clay		885095				

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PLAN No. 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

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379800 yd E ROTARY MUD DRILL ~~CORE~~ LOG

CO-ORDINATES 6408000 yd N AZIMUTH Vertical DRILLERS Thompson Drillers COMMENCED 3SEP80 DEPTH 76m HOLE No. 80LRM16

RL COLLAR +100m (m.s.l.) INCLINATION ____ DRILL TYPE Mayhew 1000 COMPLETED 3SEP80 CASING LEFT — DPO No(s) ____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				well consol orange fg sandy clay		885096				
	4				light orange sandy clay ft some fg red sst poorly cemented ft base		885097				
4	6				stiff waxy clayey sand fg light pink orange calcrete		885098				
	8				fg reddy orange sst poorly consol clay matrix gft SA-SR		885099				
8	10				white-yel fg well cemented sand gft		885100				
	12				as above + fg mica in clay sand		885101				
12	14				sand as above mica fg yell white SA-SR gft		885102				
	16				fg pink → pebbly cg white clayey white sand bed?		885103				
16	18				mg-VCg sand gft A-SR kaolinitic white. white kaol clay matr micaceous		885104				
	20				sandy as above fg-mg clayey as above		885105				
20	22				white clay micaceous 20% stiff dark grey brown micaceous carbonaceous clay		885106				
	24				clay light brn grey micaceous sand interbeds fg-cg gft sand fr pap + pyr sand ≤10%	as per hole 15	885107				
22	26				as above light grey - light fawn sand cg-VCg A-SA. pyr ≤5%		885108				
	28				clay light-dark grey fg flecks + chips 50% sand pyritic	C	885109				
28	30				fawn sand brn gry + dk gy fm micaceous clays + sand bg chips fg-pebbly sand A-SR gft pyritic	C	885110				
	32				light brn gry + fawn 50:50 clay minor sand		885111				
32	34				light gy fm fg fleck clays + fawn minor sand all soft		885112				
	36				it gry brn fm clay fg flecks mica		885113				
36	38				as above: cg-gran A-SA. mica fg chips	C	885114				
	40				light brn gry bg speckled clay sand cg-gran A-SA - calcrete etc		881115				
40	42				dark grey - light grey mg-cg A-SR gfm coal chips	C	885116				
	44				50:50 light white fawn dark brn grey fg flecked silty clay sand-mg gf pyr		885117				
44	46				light grey brn ± as above gf pyr cg A-SA		885118				
	48				fawn white grey fm micaceous silty clay matrix sand fg-cg A gf fm pyr	≤50%	885119				
48	50				as above fg-mg A-SA gf m pyr	50-50	885120				

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SUMMARY AND SPECIAL COMMENTS ____

LOGGED BY MJNF DATE ____

SHEET 1 OF 2

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80CRM16

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
	52				sand fg-cg A-SA qfm ppr 30% clay as above		885121				
	54				" mg-vcg A-SA qf ppr 40% clay as above		22				
	56				sand fg-mg some lig chips clay 20%	C	23				
	58				sand vfg mg very feldathic A-SA lg+ clay ~~not~~ 30%		24				
	60				sand vfg-cg clay light grey-brn lig bands as above		25				
	62				as above fg light grey brown clay		26				
	64				sand fg clay/blm @ 10% coal frags	C	27				
	66				mg-vcg A-SA ppr qfm coaly chips orange calcareous band		28				
	68				fg-cg sand minor clay as above		29				
	70				fg-cg sand A-SA qfm ppr		130				
	72				fg-vcg pebbly ppr qfm some clay lag surface-SR gray clay coal chips	coal chips	31				
	74				fg-pebbly 2cm Sdub clay as above some hard qtz fm granite? some R pebbles. Fr fg chloritic mica sch.		32				
	76				SR-WR pebbly A-SA qfm hard green sandy clay ppr flecks rounded pebbles		885133				

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PLAN No M414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 2 OF 2

POLDA 0107

ROTARY MUD DRILL ~~CORE~~ LOG

CO-ORDINATES 382400 ydE 5407 000yd N AZIMUTH Vertical DRILLERS Thompson Drillers COMMENCED ____ DEPTH 124 m. HOLE No. POLRM17

RL COLLAR +90m (m.s.l.) INCLINATION ____ DRILL TYPE Mayhew 1000 COMPLETED ____ CASING LEFT — DPO No(s) ____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
	2				pink calcrete		885133				
	4				well con orange sandy clay some calcrete		885134				
	6				as above		885135				
	8				fg sst well com gty white-orange tuneon sand. fg-mg.		885136				
	10				as above		885137				
	12				sand mcon SA-SR white vfg-vcg.		885138				
	14				gf. as above mg white kaol clayey		885139				
	16				as above mg-cg white kaol bands		885140				
	18				as above kaol 40%. gfm SA-R mg-cg		885141				
	20				fg-mg 10% kaol bands.		885142				
	22				mg some gran - clayey.		885143				
	24				fg-mg 10% clay		885144				
	26				mg-cg clayey gfm		885145				
	28				fg-cg + light fawn grey kaol clay		885146				
	30				fg-vcg gf white kaol some brown gfm		885147				
	32				vfg-mg some clay + ~ lig. + brown sandy clay	tr lig	885148				
	34				mg clayey		885149				
	36				fg-mg gf, feldspar mica		885150				
	38				vfg-cg slightly micaceous		885151				
	40				fg-cg gf, feldspar		885152				
	42				fg-mg gf A-SR white gf sand mcon		885153				
	44				mear 43.5 goes to well com light brn grey micaceous fg sandy clay		885154				
	46				as above		885155				
	49				light grey micaceous to lig chips,	tr coal chips	885156				
	50				- - brn micaceous clay		885157				

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PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNF DATE

SHEET 1 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM17

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				light brn grey light grey brn clay micaceous black carb flecks sand qf fg-cg SA-SR.	frac woody frags	885158				
52	54				light-dark grey brown clay lg chips micaceous	lg chips	885159				
54	56				mg-cg qf clay as above cg-gra-sand as above		885160				
56	58				fg-cg some clay		885161				
58	60				fg-mg + white clayey silt micaceous vc grn mica dark grey clay light gray		885162				
60	62				fg-pebbly micaceous mica schist pebbles A-SR.		885163				
62	64				sand qfm fg-gram A-SR		885164				
64	66				mg-cg as above		885165				
66	68				mg-cg clay white 20%		885166				
68	70				cg-pebbly clay 30%		885167				
70	72				fg-cg qf some f sparse m		885168				
72	74				vfg-gran white clay 10%		885169				
74	76				cg-vcg clayey		885170				
76	78				fg-pebbly mainly cg qf some m		885171				
78	80				fg-pebbly - " vcg qf SA-R		885172				
80	82				" - gran " cg		885173				
82	84				mg-pebbly mg-gran clay 30% white		885174				
84	86				as above clay 20		885175				
86	88				fg-gran clayey		885176				
88	90				cg-pebbly		885177				
90	92				fg-mg clayey		885178				
92	94				sand mg-pebbly frn white clay the dark gy brn zinc clay		885179				
94	96				sand fg-mg 10% clay some white some frn		885180				
96	98				fg-cg clay 10% white - brn grey lg flakes micaceous		885181				
98	100				as above lt to dark clay some pebbly sand		885182				

slowed down ?

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PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY _____ DATE _____

SHEET 2 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM17

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
	102				sand arg-gran pebbly SA-SR light grey micaceous clay - dark grey pyritic		885183				
	104				clay med grey brown soft black coaly flecked micaceous 1% gran black coal chips	1% coal chips	885184				
	106				ag above ± cg gr sand SA-SR 2% coal chips as above	2% coal chips	885185				
	108				as above + fg sand minor + coal frags	coal frags	885186				
	110				clay as above sand 40% gr sand pyrite cg-gran SA-R coaly	coal frags	885187				
	112				clay as above + cg-gran 30% bands micaceous thin lig clasts	thin coal clasts	885188				
	114				clay as above mg-gran SA-SR tr coaly frags	tr coal	885189				
	116				mg-vcg q some f clay as above 80%		885190				
	118				SAA-SA q f pyr mg-vcg slightly clayey sand		885191				
	120				as above + pebbly some clay 10-20% small lig partings		885192				
	122				mg-gran slightly clayey		885193				
	124				fg-gran as above pyr 2-5% + clay		885194				

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SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 3 OF 3

386300ydE
CO-ORDINATES 6390000ydN AZIMUTH Vertical DRILLERS Thompson Drillers COMMENCED 10 Sep 80 DEPTH 124m HOLE No. SOLRM18
RL COLLAR +90m(m.s.l) INCLINATION ____ DRILL TYPE Mayhew 1000 COMPLETED 10 Sep 80 CASING LEFT — DPO No(s) ____

ROTARY MUD DRILL ~~CORE~~ LOG

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				fg sand qtz SR + silt + orange fe-k calc		885195				
2	4				calcrete as above minor clay		885196				
4	6				calcrete tan green + red mg sandy clay very sandy 40%		885197				
6	8				mod well consol green sandy clay cg-fg SR qtz		885198				
8	10				fg-mg sand qtz some feldspar minor silt, white kaol clay		885199				
10	12				mod well consol micaceous kaol clay slightly silty		885200				
12	14				clay as above + sand fg-cg micaceous SA-SR 40%		885201				
14	16				fg-cg sand white clay kaol clay muscovite SA-SR qtz some feldspathic		885202				
16	18				sand cg-pebbly clay 30%		885203				
18	20				fg-mg qtz feldspar sand micaceous		885204				
20	22				sand fg-mg some pebbles clay white + light fawn micaceous 10%		885205				
22	24				mg-cg A-SA qtz fm <5% clay		885206				
24	26				SA-SR mg-gran qtz clay white light fawn 40%		885207				
26	28				pebbly qtz A-SR clay 30		885208				
28	30				A-SR fg-gran clay light brown micaceous 30%		885209				
30	32				A-SR some small pebble 2½-5cm qtz in clay 10%		885210				
32	34				cg-gran micaqt clay 40		885211				
34	36				cg-pebbly clay white-fawn SA-SR m		885212				
36	38				pebbly clay 40%		885213				
38	40				cg-gran clay 10% SR		885214				
40	42				interbedded clay gran-pebble clay 40% mica		885215				
42	44			pyr	fg-gran SR-R clay 40% incon		885216				
44	46				pyr fg-pebbly SA-SR clay 20% mg		885217				
46	48				vfg-fg + pebbly SA-SR clay 10%		885218				
48	50				fg-cg micaceous qtz clay cg-gran some clay		885219				

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SUMMARY AND SPECIAL COMMENTS

LOGGED BY MSNE DATE 10 SEP 80
SHEET 1 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM18

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				fg-gran gfm 2% clay SA-SR		20				
	54				as above exact. +tr pyr		21				
54	56				as above		22				
	58				fg-vcg A-SR gfm +tr clay		23				
58	60				light grey - med brn grey clay cart micaceous specks woody partic +tr		24				
	62				med grey rock coarse clay cart specks micaceous sparse brn woody chips		25				
62	64				clay as above 2-5% pyr gran + pebbly 30% qtz SA-SR woody chips		26				
	66				pebbles SR-R clay light brn + grey micat specks & chips.	pyrite > 2% chips	27				
64	68				sml-lge pebbley 2cm SR-R some granules pebble Pod + musc clay 5%		28				
	70				cg-pebb A-R +tr clay gfm		29				
70	72				fg-cg SA-SR gfm pyr clay 2%		885230				
	74				fg-pebbly mn g pyr clay 2%		31				
74	76				gran-pebbly SA-SR clay 20% gfm pyr		32				
	78				cg-gran gfm pyr clay speckled 10%		33				
78	80				as above mg-gran clay + brown lty clay micaceous pyr mega		34				
C	82				fg clay cart speckled minor sand & woody frg chips		35				
C 82	84				as above + brn grey clay frg speckles. lgC 2%		36				
	86				mg-gran qtz minor micaceous pyr clay brown + white. pyr some qtz cg SR.		37				
86	88				as above		38				
	90				soft light brn grey micaceous silty some soft brn as above minor sand pyr		39				
C 90	92				light grey - med brn gy cart flecked woody lumps <2% sand mg-cg A-SR pyr musc <10		885240				
C	94				as above woody partic 5% lumps		41				
94	96				clay as above blackish brn frg chips 10-20% fg-mg mica pyr sand minor		42				
	98				as above 20-30% + as above		43				
98	100				clay as above rarely to 20-30 sized as above		885244				

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PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY [illegible] DATE 10 SEP 80

SHEET 1 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. BOLRM18

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				clay as above coaly traces 10-20% minor sand hard band indurated lower 1/2 sltst lt brn - grybrn calc speckled clay.		245				
	104						246				
					as above coaly clay 5% minor sand + silty as above coaly interbeds < 5%	< 5%	247				
104	106										
					as above lip clays etc + coaly bands < 5%	< 5%	248				
	108										
					as above soft - med consol lig chips 5-10% siltstone lighter hard as above	5-10%	249				
108	110										
					med - dk grey micaceous clay : well consol < 2% lig.	< 2%	250				
	112										
					med grey clay micaceous thin lig		88S251				
112	114				lrs do < 2% sand mg - gran gf subang	< 10 < 2%					
					grey clay as above sand 20% cf A-SR		252				
	116				gf, pyr + coal chips pyr replacing coal						
					soft clay as above lig speckle 2-3%	2-3%	53				
116	118				pyr replacing wood. sand mg - kg SA-SR						
					soft clayey micaceous silt carbonaceous	2%	54				
	120				lig chips < 2%						
					clay as above some sand thin	trace coal	55				
120	122				pyr sand 20-30%						
					sand VCg - gran SA-SR gfm clay		56				
	124				20% some lig chips	trace coal					
124	126										

SUMMARY AND _____ LOGGED BY _____ DATE 10 Sept 84

SHEET 3 OF 3

CRAE 487

ROTARY MUD DRILL LOG

CO-ORDINATES 398100 ydE 8836900 ydN AZIMUTH Vertical DRILLERS Thompson COMMENCED ____ DEPTH 120m HOLE No. BOLRM19

RL COLLAR +95m (m.s.l.) INCLINATION ____ DRILL TYPE Mayhew 1000 COMPLETED ____ CASING LEFT — DPO No(s) ____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				vfg-fg aeolian sandy silt + white calcrete		885257				
2	4				white calcrete		258				
4	6				well con red orange + green clayey + very sandy silt fg red clay + hard lamin under fg green sst		259				
6	8						260				
8	10				green + white well ~~sorted~~ cemented fg sst silty +		61				
10	12				yellow sandy clay fg white grey sand + white fg sst		62				
12	14				mod well con sol clay mtx is white fg sst + yellow clayey sst		63				
14	16				incon white fg sand incon grey stone as above		64				
16	18				as above		65				
18	20				as above + mod well consol sandy + silty grey clay		66				
20	22				as above		67				
22	24				Sand as above + yell clay no clay + brown grey clay + sand + fine white fg		68				
24	26				white greenish grey + med grey clay + brown sandy up to 30%		69				
26	28				stiff navy grey silty clay + brown lig clay + fg sand mg-vfg pyrite mottled grey clay 30% clay + brown micaceous lignite clay		270				
28	30				silty + grey clay, navy clay mg-grn sand hvy 10-20%		71				
30	32				+ stiff dark grey clay + brown lig sand 40% well con		72				
32	34				as above some white micaceous		73				
34	36				brown lig/lig clay minor grey clay		74				
36	38				as above + micaceous light brown lig sand mg-fg some lig 30%	C	75				
38	40				Cg sand well con white clayey sand fg-mg stiff grey lig + fg sand mg		76				
40	42				as above stiff silty grey lig 20%	C	77				
42	44				sand fg-mg H SR 50% mg SA-SR g m sand incon white silty clayey sand 10%		78				
44	46				sand as above grys no clay		79				
46	48				fg-cg sand dec-sandy stiff 80%		280				
48	50				lig brown 2% fg-vfg sand g m hvy lumps sandy 10-20		885281				

CRAE117

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNF DATE

SHEET 1 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80CRM19

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				clay white sandy very micaceous cg-gr		885282				
					sand 10%						
	54				sand fg-gran A-SR gtz clay sand well		83				
					con 30%						
54	56				~~fg-mg gfm~~ 2% clay.		84				
	58				fg - pebbly clay 40-50 SA-SR		85				
58	60				fg - cg clay 30-40		86				
	62				fg-mg SA-SR gfm. no clay		87				
62	64				mg gfm A-SR clay 5%.		88				
	66				~~vfg~~ - fg gfm 2% clayey - d		89				
66	68				fg - vcg A-SR. gfm clayey 5%.		885290				
	70				mg-cg. clay 10%		91				
70	72				~~fg-mg gfm~~ clay 2%		92				
	74				fg - cg mainly mg clay <2%		93				
74	76				mg SA-SR slightly clayey		94				
	78				fg - pebbly clay 2% gfm		95				
78	80				fg-mg micaceous gm		96				
	82				cg-vcg SR-R clay 5%		397				
82	84				mg-vcg. SR-R gtz sand to clay		98				
	86				fg - cg gm SR-R		99				
86	88				fg - vcg mainly fg-mg gtz fm. tr clay		885300				
darker brn grey											
	90						1				
					(cg-gran gfm SA-SR pyr +						
90	92				mica clay <2%		2				
	94				fg and cg-gran gtz slightly clay 2%		3				
					v fg beds						
94	96				silty - vcg A-SR clay 5-10 pyr		4				
	98				vcg - pebbly clay 30% pyr		5				
98	100				fg-mg R-SR gfm clay <2%		885306				

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY _____ DATE _____

SHEET 2 OF 3

OR CC CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM19

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO %o(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				fg-vcg SA-SR clay 5% gf in pays		885304				
	104				mg-cg gfm clay <2		885305				
104	106				g ~5% uncon mg SR-R		885306				
	108				g- fg-gran SA-SR clay 2%		885307				
108	110				fg-gran clay 5-10% pays SA-SR		885310				
	112				fg-vcg gm minor clay+silt		885311				
112	114				mg-pebbly gfm gran dy mj-cg tr clay		885312				
	116				mg-gran SA-SR gfm clay 10-20%		885313				
116	118				mg-cg gfm SA-SR tr clay		885319				
	120				fg-pebbly gfm clay soft+silty		885315				
120	122										
	124										
124	126										

SUMMARY AND _____ LOGGED BY _____ DATE _____

SHEET 3 OF 3

CRAE 117

395600 yd E — ROTARY MUD — LOG

CO-ORDINATES 8332000 yd N — AZIMUTH Vertical — DRILLERS J Thompson — COMMENCED — DEPTH 122m — HOLE No. 80CRM20

RL COLLAR — INCLINATION — DRILL TYPE Mayhew 1000 — COMPLETED — CASING LEFT — OPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				sand mg-cg SR-R ltgrose + white clay some granules uncon.		885316				
2	4				orange + light grey sand fg-cg SR-R clayey + silty gtgrose		885317				
4	6				albeit + orange salty clay + some sand as above		885318				
6	8				as above		885319				
8	10				calcrete + orange calcrete cemented sand + sand as above		885320				
10	12				fg-mg sand + calcrete orangey yellow		885321				
12	14				sand as above fg + clay soft light grey clayey silt + dark grey cart soft clay, clay as above		885322				
14	16						885323				
16	18				Soft dark brown black cart clay + some light grey clay		885324				
18	20				light grey some dark grey silty + fg sandy in part fg sandy interbeds		885325				
20	22				clays as above sand as above brown cart clayey silt all soft		885326				
22	24				as above brown lig clayey silt 10-20% clays as above		885327				
24	26				sand cg-vcg SR-R pyrite lumps qtz rose lt grey		885328				
26	28				lignite / lig clay + light brown + light grey clay sand granules ste lig 30-40	Lignite	885329				
28	30				lignite lig clay underlain by sand vfg-mg SR-R qty light brn		885330				
30	32				sand fg some cg some white clay mite 2% lig		885331				
32	34				sandy fg some vcg to mica minor clay		885332				
34	36				fg-granular micaceous qty clay sub very sd sand bands clay 50%		885333				
36	38				fg-mg gran + pebbly in part 5% clay	mts	885334				
38	40				as above silty + clayey SA-SR		885335				
40	42				fg-gran SA-SR qty white clay to mica sandy clay 40		885336				
42	44				vcg-pebbly SA-SR pyr lumps clay 10%		885337				
44	46				pyr lumps sand as above, lt clay with clay + soft clay coarse dy clays	coal fragments	885338				
46	48				as above ltbrown colour clays	other coal chips	885339				
48	50				pyr lumps sand cg-gran clay soft micaceous SA-SR		885340				

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DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM20

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
	52				sand cg - gran qtz clay light brn gy		885341				
					30% coaly frags subvert.						
	54				sand fg - mg qtz + mica + silt clay		885342				
					white + light grey brown clay woody + sand vert chips						
	56				sand mg - vcg qtz. brn lumps clay		885343				
					as above 40% woody frags + coaly bits						
	58				cg - vcg qtz clay as above coaly		885344				
					bits + lignitic clay						
	60				clay as above cg - gran light gy brown coaly		885345				
					chips						
	62				clay as above soft brn + grey some		885346				
					sand qtz SA-R coal still						
	64				sand + clay as above cg - gran SR-R		885347				
					coaly chips < 5%						
	66				fg gran sand qtz SR-R		885348				
	68				sand mg - gran clay light grey brn 30		885349				
					no coaly chips						
	70				semi stiff grey brn clay + light brn grey		885350				
					30% sand mg - gran SR						
	72				sand mg - cg SA-SR qtz minor light grey		885351				
	74				brn grey brown soft clay + light grey tr coal tr coal		885352				
					coal speckled clay coaly mg - cg sand < 20						
	76				fg - gran qtz SA-R grey brn + white clay		885353				
					+ coaly chips 40% clay coal chips						
	78				clay brn grey speckled soft - well con		885354				
					coaly chips < 20% 42% coal chips						
	80				sand minor mg - gran SA-SR qtz tr		885355				
					clay + mica						
	82				as above vcg - gran qtz + clay		885356				
	84				fg - vcg clay 20% coaly + woody chips 20%		885357				
	86				sand fg gran SA-R clay brn grey speckled coal chips		885358				
					+ white + tr coaly chips						
	88				clay med brn grey some sand gran fg chips coal chips		885359				
	90				grey clay brn woody chips minor sand coal chips		885360				
	92				clay as above brn grey speckled 40% sand		885361				
					vcg typ SA-R						
	94				grey clay soft 90% tr brn coal trace coal		885362				
					fg gran SA-R						
	96				as above more fly		885363				
	98				clay as above 10% sand fg - gran 2% coal		885364				
					SA-SR < 2% coaly chips						
	100				minor clay grey cg - vcg coal 40-50% coal 40-50%		885365				
					brn woody + black wit coal						

coal c

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SHEET 2 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. SOLRM20

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
	102				grey clay cmt speckled very coaly blocky + lt brown + black 30-40%		885366				
	104				lt g + brown grey clay coal 25%		885367				
	106				clay + coal ~~50~~ 60%		885368				
	108				brn grey clay + brn coal bands 10% g sand mg - cg A-SR qtz, mainly clay		885369				
	110				clay soft med brn grey + light brown cmt coaly ~~bands~~ ~~5%~~ qtz fg - cg A-SR < 20		885370				
	112				brn brn grey clay + brn lt g flecks sd as above		885371				
	114				med soft lt brn grey clay cmt speckled sand mg - lge pebbles 2.5cm A-R		885372				
	116				brn grey clay sand mg 20-30 cg A-SR qtz		885373				
	118				clay brn grey lt g chips < 2% qtz sand A-SA qtz clear f-fg - gran		885374				
	120				clay + sand as above 50/50 coaly ~~bands~~ stripes ~10 mica		885375				
	122				fg - poorly A-SA qtz sand 5% clay + lt g		885376				

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CO-ORDINATES 355700 yd E / 38100 yd N AZIMUTH Vertical DRILLERS Thompson COMMENCED 11Sep80 DEPTH 68m HOLE No. 80CRM21

RL COLLAR +60m (m.s.l.) INCLINATION DRILL TYPE Mayhew 1000 COMPLETED CASING LEFT — DPO No(s)

ROTARY MUD

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				calcrete + minor clay m-cg pink+white		885377				
2	4				as above ss+c calcareous		885378				
4	6				fg pebbly consol white + yell ltgrse sst silty SA-SR		885379				
6	8				stiff white clayey sand as above		885380				
8	10				as above		885381				
10	12				as above + uncon sand light grey + red brown fg		885382				
12	14				red brown hem stained qtz sand + light grey sand uncon fg		885383				
14	16				Vfg red sand + silt		885384				
16	18				as above		885385				
18	20				as above hem stain		885386				
20	22				as above		885387				
22	24				as above silty becoming lighter		885388				
24	26				as above thin clay interbeds white + sandy		885389				
26	28				as above		885390				
28	30				Vfg light brn-grey mcon qtz sand lgnite sand + light grey to dfg sandy + clayey silt		885391				
30	32				Vfg sand as above mainly sand uncon		885392				
32	34				sand as above Vfg light brown + pebbly beds. A-SR qtz pebble beds & bivalves	2%	885393				
34	36				fg - pebbly A-SA lg clay/lgnite 40-50 bivalve shell lg clay mg sandy	lignite 40-50 bivalves & clam shells + frags	885394				
36	38				Vfg & pebbly bits A-SA to lg clay		885395				
38	40				as above VA-A Vmg qtz lgn sandy clay + shells.		885396				
40	42				as above lgn < 20% < 10% sand		885397				
42	44				Vfg + cg - pebbly VA-SA qtz pyr lgn clay + sandy chips < 20		885398				
44	46				qtz VA-A Vcg + gran some white + ly-lgy pyr		885399				
46	48				as above mg - pebbly some fg clay 30%		885400				
48	50				mg-cg as above 10% white clay soft	pyr	885401				

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2.55 Stainless CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM21

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				vfg-fg as above SA-SR		885402				
52	54				vcg-gran A-SR		885403				
54	56				qtz fg-gran tonmica tr pyp VA-BR		885404				
56	58				mg-pbbly as above white clay 10%		885405				
58	60				mg-as above <10% clay pyp VA-A		885406				
60	62				vcg-pbbly VA-A weathered feldspar 15% tool <5% micaceous pyp		885407				
62	64				mg-vcg. as above		885408				
64	66				mg-pebbly white clay silty, lumps stiff 30-40		885409				
66	68				cg-pebbly white clay <10%		885410				

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TOLRM

CO-ORDINATES 356300mE 8430084mN AZIMUTH Vertical DRILLERS Thompson COMMENCED DEPTH 68m HOLE No. 80LRM22

RL COLLAR +70m (m.s.l.) INCLINATION DRILL TYPE Mayhew 1000 COMPLETED CASING LEFT — DPO No(s)

ROTARY MUD

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				silty calcrete		885411				
2	4				cream calcrete		885412				
4	6				fg-mg red orange sand + clayey sand + sandy clay SA-SR		885413				
6	8				clay as above + fg sst white + yell brown well cemented clayey in part		885414				
8	10				white red orange + yellow fg silicified stone sst well sorted SA-SR low porosity		885415				
10	12				as above		885416				
12	14				vfg-fg mean sand stone silty pinkish white band sst bands as above		885417				
14	16				vfg-fg as above		885418				
16	18				vfs-fs sand stone some bands to creamy pink as above		885419				
18	20				vfg-mg sand as above		885420				
20	22				as above		885421				
22	24				as above		885422				
24	26				vfg sand pinkish as above		885423				
26	28				vfg sand as above		885424				
28	30				as above		885425				
30	32				vfg-fg SR-R sand pink → red-yellow black		885426				
32	34				vfg-fg sand pink-black red brown pinkish as above fg pink sand		885427				
34	36				vfg-mg gty sd as above to fg stone		885428				
36	38				vfg-mg pinkish to black fg stone / gty sand		885429				
38	40				as above		885430				
40	42				as above darker black brown some lignite thin bed fg clay	tr lignite	885431				
42	44				darker pink black vfg-fg sand SA-SR tr lig clay soft white micaceous clay		885432				
44	46				brown black sand pinkish as above tr lig clay		885433				
46	48				as above + mg-cg gty SA-SR sd <2%		885434				
48	50				white kaolinitic clay & mg-vcg sand gty SA-R <20%		885435				

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SHEET 1 OF 2

DR ___ CORE ___

CO-ORDINATES ___ AZIMUTH ___ DRILLERS ___ COMMENCED ___ DEPTH ___ HOLE No. JOCRM 22

RL COLLAR ___ INCLINATION ___ DRILL TYPE ___ COMPLETED ___ CASING LEFT ___ DPO No(s) ___

DEPTH FROM(M)	DEPTH TO(M)	CORE REC (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				vfg-fg dk grey sd micaceous clay 10-20% fg sd clay cg-vcg gt sd micaceous clay soft wet sandy + micaceous sand VA-SR mica gt mg-pebbly 30%		885436				
52	54				A-SR sd gt mica pyr clay as above 40-50		885437				
54	56				clay as above mg-cg A-SR as above pyr 30-40		885438				
56	58				as above mg-cg 30-40		885439				
58	60				clay as above >60 sd very pyritic mg-vcg SA-SR		885440				
60	62				sd mg-pebbly clay 40-50 pyritic		885441				
62	64				fg-mg gt sd pyritic SA-SR clay 30%		885442				
64	66				as above micaceous + pyr. Spar. grains		885443				
66	68						885444				

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374000 ydE
CO-ORDINATES 847400 ydN AZIMUTH Vertical DRILLERS Thompson COMMENCED DEPTH 124m HOLE No. 80LRM23
RL COLLAR +118m (m.s.l.) INCLINATION DRILL TYPE Mayhew 1000 COMPLETED CASING LEFT DPO No(s)

ROTARY MUD

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				soil sandy + calcrete nodules pink + orange clay		885445				
2	4				pink calcrete + fg-mg sandy orange stiff clay		885446				
4	6				vfg-cg orange sand lens staining on grains. fg. well cemented qtzose sst white to yellow coloured		885447				
6	8				fg well cemented qtzose sst white yellow pink + red coloured		885447				
8	10				sst as above + mg-vcg SR-R yellow-orange coloured qtz sand uncon orange clay + silt.		885448				
10	12				light greeny cream well consol claystone silty in part some sand as above		885449				
12	14				claystone as above less well consol + pinky brown soft clay		885450				
14	16				as above + yellow silty clay		885451				
16	18				as above light brown clay mainly		885452				
18	20				mod well con light brown micaceous clay		885453				
20	22				as above		885454				
22	24				as above		885455				
24	26				as above + light green claystone + light orange yellow claystone		885456				
26	28				soft mod grey micaceous clay + cream-fawn clay		885457				
28	30				as above		885457				
30	32				soft light fawn grey micaceous clay + white micaceous clayey silt		885459				
32	34				light brown-fawn micaceous soft clay		885460				
34	36				light grey + fawn soft micaceous silty clay		885461				
36	38				as above + sand qtz mg-cg A-SR		885462				
38	40				sand mg-vcg qtz SA-SR uncon micaceous clayey + some clay as above		885463				
40	42				sand fg-cg qtz as above		885464				
42	44				bedded vfg-pebbly sand qtz A-SR clayey + clay as above		885465				
44	46				as above		885466				
46	48				vfg-pebbly 1cm qtz f spar mica sand SA-SR some light grey-fawn clay		885467				
48	50				light grey-pink vfg-fg qtz mica sand uncon silty + clayey		885467				

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DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. BOLRM23

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				vf g – mg sad qtz as above micaceous some light – med grey clay silty + micaceous		885469				
52	54				as above some cg – gran SA–SR qtz sand interbeds pyritic		885470				
54	56				clay light grey/brown + brown lg cart speckled sand fg – gran SA–SR qtz micaceous + pyritic tr coal chips	trace coal chips	885471				
56	58				clay and sand mg – gran as above pyritic		885472				
58	60				light grey + brown grey silty micaceous carbonaceous speckled clay. Coal frags subbitum <2%	<2% coal	885473				
60	62				as above	<2%	885474				
62	64				light grey cart speckled clay tr subbitum coal frags some sand fg – cg SA–SR qtz in part	tr	885475				
64	66				light grey + grey brown speckled clay		885476				
66	68				mod well consol med brown grey micaceous clay		885477				
68	70				as above + brown clay coal frags <2%	<2%	885478				
70	72				as for 66–68 + sand cg SA–SR qtz		885479				
72	74				as above + tr coal fragments	trace	885480				
74	76				med – light grey clay micaceous poorly consol tr coal fragments	trace coal	885481				
76	78				med – light brown grey clay as above		885482				
78	80				as above sparse carbonaceous speckled		885483				
80	82				as above		885484				
82	84				light grey + med grey micaceous clay mod well consol		885485				
84	86				as above tr coal + tr coal frags	trace coal	885486				
86	88				med brown grey clay cart speckled, sand qtz fspar SA–SR fg – cg uncon interbeds		885487				
88	90				med – dark grey mod well consol micaceous clay		885488				
90	92				clay as above light grey + thin chert band reddish very hard some coaly frags	trace coal	885489				
92	94				as above		885490				
94	96				light green grey micaceous + carbonaceous clayey silt soft some med grey clay		885491				
96	98				as above + tr coal some mg – cg qtz sand	trace coal	885492				
98	100				as above + pyrite		885493				

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DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 804RM23

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				sand f g-gran qtz f-gran mica uncon sand some clay as above		885494				
102	104				med brown grey slightly micaceous mod well consol some sand fg-gran SA-SR qtz f-gran interbeds		885495				
104	106				med-light grey clay minor sand as above		885496				
106	108				med brown grey micaceous clay mod well consol		885497				
108	110				as above + grey brown + minor black coal parting		885498				
110	112				soft light brown grey micaceous clay minor < 2% coal chips	< 2%	885499				
112	114				as above		885500				
114	116				mod consol light-med grey micaceous clay tr coal.	trace coal	885501				
116	118				as above + light green grey clay + clayey silt		885502				
118	120				light greeny gray well consol mg-fg qtz sandy clay		885503				
120	122				as above		885504				
122	124				well consol light greeny grey mg-fg qtz sandy clay		885505				

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370000ydE ROTARY MUD [illegible] LOG

CO-ORDINATES 848300ydN AZIMUTH Vertical DRILLERS Thompson COMMENCED ____ DEPTH 120m HOLE No. 80LRM24

RL COLLAR +130m (m.s.l.) INCLINATION ____ DRILL TYPE Mayhew 1000 COMPLETED ____ CASING LEFT ____ DPO No(s) ____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				~~c~~ yellow brown sandy clay stiff some calcrete		885507				
2	4				green yell + orange mottled fg sandy clay stiff well consol		885508				
4	6				as above green + red		885509				
6	8				sst fg-vcg SA-SR qtz mod well lithified white to red clay matrix poorly sorted		885510				
8	10				as above white fg sst.		885511				
10	12				white siltstone well lithified + white kaolinitic clay fg-cg sandy		885512				
12	14				bedded fg white qtz sst + white siltstone. White to orange sandy clay + light greyey fawn clay		885513				
14	16				light grey fawn clay soft		885514				
16	18				as above		885515				
18	20				as above + white kaolinitic soft micaceous clay. cg-vcg qtz sand interbeds SA-SR in part		885516				
20	22				white kaolinitic clay cg-pebbly qtz grit SA-R bands		885517				
22	24				white + fawn clay some grit as above		885518				
24	26				soft white kaolin silty + vfg sandy		885519				
26	28				as above + fawn clay		885520				
28	30				as above		885521				
30	32				as above some sand		885522				
32	34				white kaolin micaceous vfg-fg sandy		885523				
34	36				as above mg-gran SA-SR uncon qtz sand interbeds		885524				
36	38				mg-vcg sand qtz SA-R micaceous + kaolinitic clay white soft sandy		885525				
38	40				mg-cg as above clay as above		526				
40	42				light grey-white qtz fspar mg-cg some gran SA-SR uncons to mica		527				
42	44				sand as above mg + white kaolinitic clay 30%		528				
44	46				cg-pebbly SR-R qtz fspar fg mica sand uncon + white kaol clay 30%		529				
46	48				gran-pebbly as above sand + clay		530				
48	50				fg-vcg sand minor clay		885531				

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DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM24

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
	52				Vfg - mg sand 5% fspar as above 10% kaol clay		885532				
	54				fg-vcg sand as above minor clay		533				
J?	56				mg - pebbly qtz sand SR-R pyrite patches of yellow partially bituminized sst & clay matrix		534				
J	58				fg-cg sand as above + med grey brown micaceous clay mod well consol		535				
	60				clay med grey brown carb speckles + mg-cg sand as above		536				
	62				clay as above carbonaceous in part + tr black subbituminous coal chips + sand gf		537				
	64				med brown grey stiff micaceous carbonaceous speckled clay + some sand mg-vcg		538				
	66				as above + tr black coal chips		539				
	68				clay as above + tr black subbit coal flaps		540				
	70				clay as above 2% coal thin coal partings		541				
	72				clay as above 2-5% coal as above minor fg-cg sand thin quartzite band		542				
	74				med grey brown micaceous clay coal partings tr coal		543				
	76				as above + light brown grey clay tr coal		544				
	78				light grey + med grey soft - mod well consol micaceous clay		885545				
	80				med grey well consol micaceous clay		546				
	82				clay as above		547				
	84				olive green grey clay well consol micaceous brown carbonaceous clay + tr coal		548				
	86				clay as above coal flaps 5-7%		549				
	88				clay as above + light grey micaceous clay coal flaps 2%		550				
	90				light ol green grey clay + brown green grey clay banded silty in part		551				
	92				brown grey soft - poorly consol clay micaceous		552				
	94				as above + band soft orange daystone		553				
	96				light brown grey micaceous soft clay to carbonaceous speckles		554				
	98				med grey brown well consol micaceous clay tr coal		555				
	100				as above black subbituminous coal 5-7%		885556				

CRAE 117
PLAN No M 618

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE 12 SEP 80

SHEET 2 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM24

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
	102				dark grey - brown grey clay lignitic in part, coaly fragments.		885557				
	104				as above		885558				
	106				as above + light grey carbonaceous speckled tr coal		885559				
	108				tan, olive green grey + clay as above tr black coal		560				
	110				as above		561				
	112				dark grey brown clay micaceous tr coal. minor silt, A-SR mg-pebbly		562				
	114				as above		563				
	116				as above + olive green + brown grey clay 10-20% sand A-SA mg-cg qtz		564				
	118				as above no sand		565				
	120				well consol dark brown grey stiff clay		885566				

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE 12 SEP 86

SHEET 3 OF 3

366800 yd E
CO-ORDINATES 5200 cyd N AZIMUTH Vertical DRILLERS Thompson
RL COLLAR + 142m (msl) INCLINATION DRILL TYPE Mayhew 1000

ROTARY MUD DRILL ~~CORE~~ LOG

COMMENCED DEPTH 120m HOLE No. 80LRM25
COMPLETED CASING LEFT ~ DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				soil + stiff creamy pink sandy clay fg-mg.		885567				
2	4				stiff cream pink sandy clay		568				
4	6				as above + calcrete		569				
6	8				clay as above + sst fg-mg q~~tz~~ose white & red		570				
8	10				sst as above clay mtx fg-cg SA-R		571				
10	12				sst as above pebbly in part white-yellow-pink		572				
12	14				white-pink sst qtzose well consolidated well sorted		573				
14	16				sand uncon cg-gran SA-SR qtz clayey in part white		574				
16	18				sand fg-mg as above minor white clayey bands.		575				
18	20				sand fg-cg as above		576				
20	22				sand mg-cg & pebbly bands SA-R some white kaol clay		577				
22	24				sand fg-gran as above 5% clay as above		578				
24	26				sand fg-cg + white kaol clay + orange fawn 40%		579				
26	28				sand white cg-gran SA-R minor white clay		580				
28	30				sand fg-mg as above micaceous tr clay		581				
30	32				vcg-granular sand as above micaceous 2% clay white		582				
32	34				fg-pebbly SA-R qtz sand unconsol 5% clay		583				
34	36				sand mg-pebbly micaceous qtz white kaolinitic clay 30%		584				
36	38				mg-pebbly sand clay white as above 60%		585				
38	40				fg-vcg sand as above clay upto 50%		586				
40	42				sand mg-pebbly white + fawn clay 40%		587				
42	44				clay white + ~~light brown~~ fawn micaceous sand mg-gran SR-R 10%		588				
44	46				clay as above 30% sand cg-pebbly 2cm max SR-R		589				
46	48				clay white + fawn as above + sand qtz mg-pebbly as above 40%		590				
48	50				clay white kaol micaceous soft + sand vcg-pebbly SA-R 30%		885591				

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNF DATE 12SEP85

SHEET 1 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM25

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				clay white kaol micaceous + yellow + sand cg-gran as above 20%		885592				
52	54				clay white and fawn + sand mg-pebbly as above 20%		593				
54	56				clay white + fawn brown cg-pebbly sand as above 10%		594				
56	58				as above		595				
58	60				clay as above + sand mg-granular as above 20%		596				
60	62				clay white + fawn micaceous + sand vcg-gran 20%		597				
62	64				clay white + fawn + sand fg-pebbly as above 10%		598				
64	66				white clay + sand as above + stiff grey brown micaceous clay		599				
66	68				as above		600				
68	70				light grey + dark brown grey carbonaceous speckled stiff clay + tr coal particles (black) + sand	trace coal	601				
70	72				as above		602				
72	74				med - light grey + med brown grey micaceous clay + tr coaly fragments	trace coal	603				
74	76				clay as above carb speckled		604				
76	78				light brown grey + grey brown brown carb speckled clay micaceous		605				
78	80				as above + tr coal	trace coal	606				
80	82				light grey sandy + clayey silt micaceous orange + white clay + sand mg-cg SA-SR ft,		607				
82	84				as above carb speckled + med grey brown clay		608				
84	86				light grey carb speckled silt + clay + tr coal frags some orange clay + mg SR sand pt,	trace coal	609				
86	88				light grey brown clay micaceous sandy carb flecked sand fg-pebbly SA-R 30-40% some orange clay		610				
88	90				sand fg-mg SA-SR pyr qtz + light grey clay as above 10-20% some orange clay		611				
90	92				sand vfg-mg as above + tr light grey + brown grey sandy clay 20% + some orange clay		612				
92	94				sand fg-gran as above pyr + bituminous clay + 2%-5% black coal fragments	2-5% coal	613				
94	96				Sand mg as above pyrite + light grey, grey brown clay + sandy clay 40% 5% carb shale / coal fragments	5% coal?	614				
96	98				carb light grey, light brown grey + light grey micaceous clay carb speckled 1% black coal fragments some cg sand	decrease 1% coal chips trace bituminous coal	615				
98	100				clay as above + tr black coal frags		885616				

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE 12 SEP 80

SHEET 1 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM25

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				clay as above mod soft some orange clay		885617				
102	104				med brown grey mod well consol clay + light grey clay micaceous		618				
104	106				clay as above		619				
106	108				clay as above		620				
108	110				soft med grey + brown clay micaceous + pyrite		621				
110	112				soft light grey to med grey clay micaceous carb speckled		622				
112	114				clay as above		623				
114	116				clay as above + well consol white kaol sandy clay + gran-pebbly qtz gravel 5%-5% + 7-10% pyr		624				
116	118				grey brown fawn clay carb speckled + white clay + gravel as above 7% pyr large pyrite pin		625				
118	120				as above		626				

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SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE 12SEP80

SHEET 3 OF 3

366900ydE
8544000ydN

ROTARY MUD DRILL CORE LOG

0132

CO-ORDINATES 366900ydE 8544000ydN AZIMUTH Vertical DRILLERS Thompson COMMENCED ____ DEPTH 120m HOLE No. 80LRM26

RL COLLAR +130m (msl) INCLINATION ____ DRILL TYPE Mayhew 1000 COMPLETED ____ CASING LEFT — DPO No(s) ____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				orangey brown sandy clay + concretionary calcrete nodules		885627				
2	4				as above		885628				
4	6				as above + red fg clayey sandstone qtzose SA-SR mod well lithified sst as above		885629				
6	8						885630				
8	10				red + yellow brown sst as above		885631				
10	12				sandstone as above + fg-cg uncon orange red qtz SA-R sand.		632				
12	14				mg-cg qtz SA-R iron stained red-orange uncon sand.		633				
14	16				sand as above fg-vcg		634				
16	18				fg sand as above + well lithified clayey white fg sst.		635				
18	20				orange sst vfg-mg some white clayey sst		636				
20	22				yellow orange fg-vcg sand as above some white well cemented claystone		637				
22	24				as above mg-fg		885638				
24	26				as above fg-mg		639				
26	28				as above mg + minor limonite? clay		885640				
28	30				as above vfg-mg + mod well consol white kaol clay minor		641				
30	32				as above vfg-mg + clay white as above 10%		642				
32	34				vfg + mg sand SA-R orangey red minor white clay		643				
34	36				as above vfg + mg-cg white clay 10%		644				
36	38				mg sand as above minor clay		645				
38	40				sand A-R vfg-gran mainly vfg-mg clay 5%		646				
40	42				vfg-fg sand SA-R micaceous qtz as above patchy white		647				
42	44				stiff white kaolinite very sandy fg-gran SR-R qtz sand clay + sand uncon		648				
44	46				sand+clay as above pebbly in part		649				
46	48				clay white + light brown grey+fg-vcg SR-R qtz sand		650				
48	50				as above sand mainly		885651				

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PLAN No M414

SUMMARY AND SPECIAL COMMENTS ____

LOGGED BY ____ DATE 13SEP80

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM26

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				sand mg-gran SA-R qtz uncon some clay as above		885652				
52	54				mg-vcg as above light grey + white silt		653				
54	56				cg-pebbly sand as above light yell grey some clay		654				
56	58				sand as above minor clay		655				
58	60				light grey sand cg-pebbly grit SA-SR pyr clayey in part		656				
60	62				cg-gran sand as above		657				
62	64				light grey pyritic fg-pebbly qtz sand light to med grey clay very sandy + clayey sand 10%		658				
64	66				sand and clay as above mg-gran light grey clayey sand 10%		659				
66	68				sand + clay mg-pebbly clay carb speckled		660				
68	70				mg-pebbly sand pyritic clay light-med grey 70%		661				
tr coal 70	72				fg-granular sand as above		662				
72	74				mg-vcg sand some grey clayey sand.		885663				
C 74	76				mg-pebbly + tr black coal frags		664				
C 76	78				mg-gran tr mica fspar tr black coal frags		665				
C 78	80				mg-pebbly some clay qtz fspar mica tr coal SA-R		666				
C 80	82				mg-vcg qtz fspar (grey) micaceous minor white-light grey clay tr coal		667				
82	84				vcg-pebbly sand as above SA-R 10% light grey clay carb speckled		668				
84	86				fg-pebbly pyritic 10% clay carbonaceous speckled		669				
86	88				mg-pebbly as above minor clay fg well cemented sst band		670				
88	90				mg-gran qtz fspar SA-SR light grey micaceous sandy clay 10%		671				
90	92				sand mg-~~gr~~ vcg light-dark grey clay 50%		672				
92	94				~~sha~~ fg-gran SA-SR light grey qtz fspar sand light + med grey clay 40% carb speckled.		673				
94	96				cg-vcg SA-SR sand as above clay as above 40%		674				
96	98				fg-gran sand as above light grey + med grey soft sandy clay 10-20%		675				
98	100				gran-pebbly sand as above + sandy clay 40-50		885676				

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PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE 13 SEP 80

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM26

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				fg-gran mainly cg sand as above some light + med grey clay		885677				
							677				
102	104				cg-gran sand pyritic clay 10%		678				
104	106				mg-pebbly qtz f.span sand pyritic clay 10%		679				
106	108				mg-cg clay 20%		680				
108	110				fg-cg sand pyrite SA-SR clay <7% micaceous		681				
110	112				vfg-fg light grey qtz f.span sand tr black substitum coal		682				
112	114				vfg-mg some gran clay <5% micaceous		683				
114	116				vfg-cg sand minor clay		684				
116	118				fg-cg sand		685				
118	120				fg-gran sand qtz f.span SA-SR		885686				

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PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

SHEET 3 OF 3

372000ydE
CO-ORDINATES 8532000ydN AZIMUTH Vertical DRILLERS Thompson
RL COLLAR +140m(m.s.l.) INCLINATION DRILL TYPE Mayhew 1000

ROTARY MUD DR[illegible] LOG
COMMENCED 13Sep80 DEPTH 150m HOLE No. 80LRM27
COMPLETED CASING LEFT — DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				sandy soil + calcrete		885687				
2	4				calcrete + unconsolidated fg-pebbly SA-SR qtz yellow lim stained sand		688				
4	6				fg-pebbly qtz sand qtz hem + lim stained SA-SR some well cemented bands		689				
6	8				pebble sml-lge gravel SA-R well consol white kaol claystone bands		690				
8	10				fg mod well cemented yellow brown qtz sst well sorted + creamy sandy silt 60%		691				
10	12				as above + yellow + white silty clay		692				
12	14				fg-mg qtz sand SA-SR uncon reddish		693				
14	16				fg-pebbly sand as above + white + fawn silty clay		694				
16	18				fg-cg some pebbles SA-R sand clayey some white + yellow clay		695				
18	20				mg-vcg sand as above pinkish yellow		696				
20	22				fg-cg sand as above + some white kaolinitic clayey silt light yellow		697				
22	24				fg-vcg sand as above		698				
24	26				light yellow fg-mg some pebbly sand as above 10% white clay		699				
26	28				fg-cg. light yellow sand as above 7% white clay		700				
28	30				fg-mg sand as above minor clay		701				
30	32				mg-gran sand as above		702				
32	34				mg sand as above		703				
34	36				cg-vcg sand qtz fspar SA-R light yellow		704				
36	38				fg-mg some pebbles sand as above 10% clay		705				
38	40				fg qtz fspar + r mica as above white clay 7%		706				
40	42				mg-cg sand clay 30-40%		709				
42	44				vfg-mg sand as above minor clay		708				
44	46				vfg-fg sand + clay white micaceous very sandy to clayey sand 50%		709				
46	48				vfg some mg-pebbly sandy clay white kaol micaceous 40-50		710				
48	50				vfg silty micaceous sand as above clayey white silty sand lumps 40%		885711				

CRAE 117
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SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJWF DATE 13SEP80
SHEET 1 OF 3

BH 22 CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM27

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				vfg qtz micaceous sand 10-20% sandy silt bands light yellow grey white unconsol		885712				
52	54				light fawn + fawn grey micaceous clayey silt + clay + vfg qtzose sand 50%		713				
54	56				med grey brown + light white silty clay + vfg sand micaceous		714				
56	58				vfg-pebbly SA-R sand qtzose light brown grey		715				
58	60				mg-vcg sad as above		716				
60	62				vfg-fg qtz sand dark grey carb clay fawn + white silt 30%		717				
62	64				as above 30% clay		718				
64	66				fg-cg light grey qtz sand SA-SR micaceous stiff micaceous clayey sand 20%		719				
66	68				fg-vcg sad as above clayey silt micaceous carbonaceous speckled 30%		720				
68	70				vfg-pebbly sand as above clay light brown grey + light grey brown carb speckled clayey silt 40%		721				
70	72				gran-pebbly qtz sand pyrite + clay as above 30%		722				
72	74				fg-mg sand as above + clay as above 30% tr black coal.		723				
74	76				vfg-mg+cg sand as above silty lumps 40%		724				
76	78				minor sand fg-mg med grey brown carbonaceous speckled clayey silt micaceous		725				
78	80				fg-mg sad as above light grey + grey brown tr carbonaceous speckled clayey silt tr black coal frags	trace black coal	726				
80	82				mg-cg sand SA-R sand clay as above 20% tr black coal frags.	trace	727				
82	84				mg-gran sad as above clay as above 30%		728				
84	86				fg-cg sand + clay as above 10% carb speckled		729				
86	88				vfg-cg sad as above + clay 5-10%		730				
88	90				light grey brown micaceous clayey + sandy silt soft poorly consol minor vfg-fg sand		731				
90	92				vfg light grey sand micaceous + tr coal frags + clayey silt as above 25%	tr coal	732				
92	94				as above + silt 40%		733				
94	96				stiff sand + clayey silt bolight-med greyey brown micaceous + vfg-fg sand 30%		734				
96	98				as above + vfg-mg sand 20%		735				
98	100				fg-mg qtz sad light grey tr coal fragments 10% clayey silt as above	tr coal	885736				

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PLAN No M414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE 13 SEP 80

SHEET 2 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM27

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				fg-mg qtz pyritic sand, mucon light grey SA-R light grey fawn brown micaceous sandy silt	+tr black coal frags carbonaceous speckled	885 737				
102	104				fg-cg sand as above + clayey silt as above 20-30%		738				
104	106				vfg-vcg sand as above + clay + silt 40%		739				
106	108				fg-cg sand as above pyritic + clayey silt as above tr coaly black fragments	tr black coal.	740				
108	110				fg-vcg sand some pebbles as above clayey silt as above 30-40%	"	741				
110	112				fg-cg sand mainly fg; clay sandy med grey micaceous tr black coaly specks	tr black coal	742				
112	114				med grey brown silty micaceous clay		743				
114	116				med brown grey clay micaceous silty in part some sand + pys		744				
116	118				as above		745				
118	120				clay as above some carb speckled sd mg-cg SA-R qtz f spar 40-50%		746				
120	122				fg-cg sand pyritic + clay as above 40%		747				
122	124				vfg-mg sand silty in part		748				
124	126				vfg sand silty + clay vfg carb speckles		749				
126	128				vfg sand + med brown grey clay 10-20%		750				
128	130				vfg sand micaceous clayey in part.		751				
130	132				vfg-mg qtz sand brown grey + grey brown clay 40%		752				
132	134				fg-vcg qtz qtz sand pebbly in part pyritic some clay		753				
134	136				mg-granular qtz f spar sand SA-SR minor clay		754				
136	138				fg-granular sand as above pyritic		755				
138	140				cg-pebbly sand as above white + grey brown clay in part		756				
140	142				mg-granular sand as above pyritic micaceous clay as above		757				
142	144				fg-vcg sand as above pyritic micaceous some clay		758				
144	146				fg-gran pyritic sand as above clayey in part		759				
146	148				cg-vcg sand pyritic qtz f spar SA-SR mucon light grey		760				
148	150				fg-cg sand as above		761				

intersected 13

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE 13 SEP 80

SHEET 3 OF 3

CRAE 117
PLAN No M414

552900 m E (A.M.G.) ROTARY MUD
CO-ORDINATES 6304800 m N AZIMUTH Vertical DRILLERS Thompson Drilling COMMENCED DEPTH 66m HOLE No. 80LRM28
RL COLLAR +69m (msl) INCLINATION DRILL TYPE Mayhew 1000 COMPLETED CASING LEFT DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				calcrete		885 762				
2	4				browny grey fg sand qtzose + micaceous		763				
4	6				calcareous fg clayey well sorted pink sst + soft pink clay		764				
6	8				sst + clay as above yellow red + white		765				
8	10				pink soft clay yellow + white fg qtzose sst		766				
10	12				yellow - brown fg-mg qtzose sst well cemented + minor green clay		767				
12	14				as above yellow + brown sst		768				
14	16				vfg - fg unconsolidated sand light yellow qtzose hematitic coating on some		769				
16	18				as above		770				
18	20				as above		771				
20	22				as above + mg - cg		772				
22	24				fg - vcg sand qtz fspar SA-SR minor brown lignitic clay		773				
24	26				fg - vcg sand as above + brown lignitic clay/silt 20%		774				
26	28				fg-mg sand as above lignitic clay 10%		775				
28	30				mg-cg sand SA-SR lignite 10%		776				
30	32				mg-pebbly sand as above + lignite 30%		777				
32	34				vfg-mg sand as above + tr lignite		778				
34	36				vfg-fg sand micaceous as above 10% lignite		779				
36	38				vfg - mg sand micaceous		780				
38	40				mg sand as above micaceous		781				
40	42				cg - gran sand tr lignite / lig clay	trace	782				
42	44				mg sand as above		783				
44	46				mg-cg sand light brown A-SR qtz fspar mica		784				
46	48				cg - vcg A-SR brown lig stained sand qtz fspar mica + tr brown lig clay		785				
48	50				sand uncon brown lig stained qtz fspar micaceous 1% brown lignitic clay		885 786				

SUMMARY AND LOGGED BY DATE 13 SEP 80

CRAE 117 SHEET 1 OF 2

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80CRM28

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				fg-mg A-SR qtz fspar mica sand light brown unconsolidated minor olive gram grey soft clay		885787				
52	54				as above mg		788				
54	56				as above mg-cg some olive gram clay		789				
56	58				fg-mg + light olive brown clay minor		790				
58	60				cg SA-SR sand as above		791				
60	62				mg-cg sand light gray SA-SR qtz mica fspar some pebbly qtz A-SA ~~unconsol~~ + white sandy clay 10%		792				
62	64				sand fg-pebbly as above + some white clay		793				
64	66				sand as above + stiff cream fawn clay		885794				

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE 13 SEP 80

SHEET 2 OF 2

ROTARY MUD DRILL CORE LOG

CO-ORDINATES 5404ccm E (AMG) 6304800m N | AZIMUTH Vertical | DRILLERS Thompson | COMMENCED | DEPT 86m. | HOLE No. 80LRM29

RL COLLAR +52m (m s l) | INCLINATION | DRILL TYPE Mayhew 1000 | COMPLETED | ~~CASING LEFT~~ Cemented | DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				calcrete		885795				
2	4				calcrete + minor pink clay		796				
4	6				stiff green + red yellowish mottled fg ~~ft~~ sandy clay		797				
6	8				clay as above		798				
8	10				some clay as above + white - yellow fg well consol sst qtzose		799				
10	12				some clay as above + fg - silty qtz sand uncon white		800				
12	14				vfg - fg uncon qtz sand white SA-SR		801				
14	16				fg unconsol qtz sand as above		802				
16	18				fg - mg sand as above		804				
18	20				fg well sorted sand as above		806				
20	22				fg - mg sand as above		808				
22	24				fg well sorted brown lig stained sand as above th lignite + woody frags		809				
24	26				fg sand as above		885810				
26	28				fg sand some granular SA-SR ~~ft~~ sand as above light brown		811				
28	30				~~fg~~ sand as above		812				
30	32				fg - mg + brown ~~lig~~ sand lumps 30%		813				
32	34				fg some cg sand as above + lignite sand 30-90%		814				
34	36				fg - mg sand qtz fspar mica lig sand lumps 20%		815				
36	38				fg - cg sand as above 10% lig sand		816				
38	40				~~fg~~ sand some mg - cg qtz fspar mica lig sand 10%		817				
40	42				fg - mg sand as above SA-SR 5% lig sand + th woody frags		818				
42	44				fg sand + lig + lig sand lumps 60% - 70%		819				
44	46				lignite sand as above 70% then small - large pebbly gravel SA-R qtz brown		820				
46	48				vfg ~~dg~~ sand some lignite		821				
48	50				sand fg then mg - vcg A-SR sand as above then clay stiff dark green ? glauconite + light brown micaceous		885822				

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY | DATE 14 SEP 80

SHEET 1 OF 2

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80CRM29

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				stiff green brown clay as above						
52	54				clay as above						
54	56				gran - pebbly SA-SR qtz minor fspar minor light grey gravel						
56	58				cg - gran gravel as above						
58	60				mg-cg pyritic sand as above + minor white kaolinitic sandy clay						
60	62				mg - vcg sand as above + minor white clay + some stiff brown/grey carbonaceous? glauconitic sandy clay						
62	64				stiff white kaolinitic sandy clay minor brown clay (contam?) + mg - cg sand as above						
64	66				white clay + cg - vcg sand as above 30%						
66	68				white micaceous clay as above + fg - cg sand as above micaceous 40%						
68	70				white sandy clay as above + mg - vcg SA-SR sand						
70	72				white sandy clay as above + cg - gran sand as above 60%						
72	74				white clay as above + sand cg - vcg SA-SR sand 40-50%						
74	76				white clay as above micaceous + sand mg - cg. 30-40%						
76	78				light greeny white clay as above very sandy cg - gran sand 20-30%						
78	80				stiff greeny white clay as above + cg - vcg sand 20-30%						
80	82				fawny white + greeny white clayey sand similar to above + fg - cg sand 20-30						
82	84				some white clay + soft green biotite very biotite rich micaceous sandy clay + sand mg as above green + black micaceous clay as above		8838				
84	86				broke tungsten off bit						
+	+										
+	+										

weathered basement

Basement

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE 14 SEP 81

SHEET 2 OF 3

CRAE 117
PLAN No M414

0142

ROTARY MUD DRILL CORE LOG

CO-ORDINATES 3372CC ydsE 8565OCydN AZIMUTH Vertical DRILLERS Thompson COMMENCED ____ DEPTH 112m HOLE No. 80LRM30

RL COLLAR + 52m (m.s.l.) INCLINATION ____ DRILL TYPE Mayhew 1000 COMPLETED ____ CASING ~~LEFT~~ Cemented OPO No(s) ____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				fg calcareous sand + massive cream calcrete		885839				
2	4				fg-mg calcareous sst cream well sorted SA-SR qtz grains		840				
4	6				as above		841				
6	8				as above		842				
8	10				v.f.g consol light green claystone sandy + clayey silt		843				
10	12				green claystone as above		844				
12	14				green clay, yellow green sand clay + light blue very sandy clay + yellow + red sandy clay		845				
14	16				green yellow, light blue + yellow red sandy clay as above		846				
16	18				clays as above + uncon fg qtz sand white brown SA-SR lig stained		847				
18	20				fg-mg SR qtz sand brown as above		848				
20	22				mg-cg SR-R qtz sand as above light brown		849				
22	24				fg sand as above		850				
24	26				fg-cg R sand as above		851				
26	28				fg-cg SR-R sand some f.spar light brown		852				
28	30				Vfg-fg white qtz sand + f.spar		853				
30	32				Vfg-fg + band black subbit coal frags 2%	2% coal chips	854				
32	34				Vfg-fg sand as above + tr black coal	trace	855				
34	36				Vfg-fg sand light brown grey + f.spar		856				
36	38				Vfg-fg sand as above clayey, micaceous + part some lge pebbles of black coal 2-5% + f.spar	2-5% coal	857				
38	40				fg-mg uncon light brown micaceous sand no coal		858				
40	42				fg-mg sand as above tr black coal	trace	859				
42	44				fg-mg sand micaceous + slightly clayey + tr black coal grey sand	trace	860				
44	46				light brown grey mg sand as above some band black coal frags	1-2% black coal	861				
46	48				fg micaceous sand as above + tr lignitic clay + black chips	trace black coal	862				
48	50				mg-cg qtz f.spar mica sand as above + tr black coal frags	trace black coal	863				

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNF DATE 14 SEP 80

SHEET 1 OF 3

RAE 117
LAN No M 414

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80RM30

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				cg-mg sand as above + soft brown lignite + hard black subbitum coal frags 2%	2% chips	865864				
52	54				fg-cg SA-R sand as above <2% lignite + black coal	<2%	865				
54	56				fg-mg SA-R sand as above tr black coal chips	trace	866				
56	58				fg-cg sand as above tr black + lignite particles	trace	867				
58	60				fg-mg sand as above 2% soft black brown lignite	2% lig	868				
60	62				fg-cg sand qtz fspar no mica + 50% black med hard subbit coal fragments	50%	869				
62	64				sand as above + calcareous sst + coal 40-50%	40-50	870				
64	66				coal 70-80% hard black resinous sand. qtz fspar SA 30%	70-80	871				
66	68				coal as above 50-60% fg-cg sand qtz fspar as above large hard coal frags	50-60	872				
68	70				coal 40-50 + fg-cg sand as above	40-50	873				
70	72				coal + sand boggan chunks 2-3cm	80-90	874				
72	74				granular-pebbly SA-R qtz fspar tr white clay 5% black coal.	5%	875				
74	76				fg-pebbly sand as above		876				
76	78				mg-pebbly SA-R qtz fspar minor soft camel brown clay + tr coal chips (contam?)	trace	877				
78	80				fg-vcg some pebbly + brown soft micaceous clay 2% coal frags	2%	878				
80	82				granular sand some R pebbles minor soft brown clay coal 20%	20%	879				
82	84				vcg-gran sand qtz (cgr+mm) fspar coal frags 20-30% + minor soft brown clay	20-30	880				
84	86				coal 30-40% large hard black frags + sand vcg gran minor brown clay	30-40	881				
86	88				mg-gran qtz fspar micaceous SA-SR coal 20% brown clay + white kaol clay 20% frgs.	20%	882				
88	90				sand fg-vcg SA-R + coal 20-25%	20-25	883				
90	92				sand cg-gran as above + coal frags large 20%	20	884				
92	94				vcg-gran sand + white soft kaol clay frgs + black coal 10-15%	10-15	885				
94	96				greeny white soft clayey silt + sand qtz fspar mica + green mica mg SA-SR coal small frgs 10%	10	886				
96	98				greeny white clayey silt as above sand mg-cg minor black coal 7-10	7-10	887				
98	100				cg sand green clay + sand as above coal 15-20	15-20	888				

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE 15 SEP 80

SHEET 2 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM30

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.
100	102				fg-cg gt's + spkl mica SA-SR sand as above some white + brown clay coal 5-7%	5-7	885889
102	104				fg-cg sand as above + dk blue grey silty frags + brown clayey particles coal 5-7%	5-7	890
104	106				dk blue grey + brown fragments some mg-cg SA-R gt's sand tr coal	trace	91
106	108				well consol apple green clay + brown clay frags some gt's sand.		97
108	110				as above		93
110	112				as above basement.		885894

FROM (M)	TO (M)	REC (M)	ASSAY VALUES

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE 15SEP80

SHEET 3 OF 3

CRAE 117
PLAN No M 414

C.R.A. EXPLORATION PTY. LIMITED — ROTARY MUD DRILL ~~CORE~~ LOG

PROJECT POLDA — 0145

CO-ORDINATES $37200ydE, $56500ydN — AZIMUTH Vertical — DRILLERS Thompson

RL COLLAR +52m (mSL) — INCLINATION — DRILL TYPE Mayhew 1000

COMMENCED 15Sep80 — DEPTH 90·35m — HOLE No. 80630C

COMPLETED 16Sep80 — ~~CASING LEFT~~ Cemented — DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				sandstone cream fg calcareous (massive calcrete)	massive calcrete	885964				
2	4				as above		965				
4	6				as above		966				
6	8				as above		967				
8	10				sand light apple green fg-mg SA-SR clayey + silty unconsolidated + some sst as above		968				
10	12				clayey sand as above +		969				
12	14				clay light bluey green + light apple green + sandy + silty some red + yellow clay		970				
14	16				light green clay as above + sand white light grey unconsolidated Qtz f/spar mica 5% black lignitic sand		971				
16	18				sand white-grey fg-vcg SR-R qtz f/spar pyr. <2% lignitic sand		972				
18	20				sand as above fg-gran + lignitic sand		973				
20	22				sand as above mg-gran lignitic as above light brown grey SA-SR + lignitic sand		974				
22	24				sand cg-gran as above + fg-mg sand as above + lig sand		975				
24	26				fg & some vcg SR-R sand as above + lignitic sand		976				
26	28				vfg-fg sand as above + lignitic sand		977				
28	30				vfg-fg sand as above + black coaly specks light-brown grey		978				
30	32				vfg-fg sand as above 1% coal frags		979				
32	34				fg sand as above		980				
34	36				fg-mg sand as above + coal		981				
36	38				mg-cg sand as above		982				
38	40				fg-cg sand as above		983				
40	42				fg-cg sand as above		984				
42	44				mg-cg sand as above		985				

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MINF — DATE 15SEP80

PROJECT

DRILL CORE LOG

CO-ORDINATES AZIMUTH DRILLERS COMMENCED DEPTH HOLE No. 80L30C

RL COLLAR INCLINATION DRILL TYPE COMPLETED CASING LEFT DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
44.58	46.58				core loss.						
46.58	48.16				sand clayey grey micaceous + feldspathic						
48.16	54.02				coal black brown blocky resinous/bre do - vitrain bands do woody to stirred fragments abundant grading to lignite + bit clay down hole						
51.02	54.15				clay light brown stiff micaceous lignitic wood bearing.						
54.15	55.70				core loss ?						
55.70	57.6				clay soft sticky light brown mic. sandy						
					sand fg-vfg at ± C/bar mica well sorted light grey slightly silty grading to v/an-fg fg, v/poorly sorted SA-SR fg sand.						
57.6	58.49										
58.49	59.8				coal sulphur hard blocky dark black brown clarain + vitrain bands. brown lignitic clay + low grade lignite in places + black coaly fragments 59.42-59.52						
59.80	59.91				sand mg SA-SR grey feldspathic light to dark brown, clayey + coal chips						
59.91	60.12				gravel with grey mainly unconsol brown clayey in part A-R gran-pebbly (1-5cm)						
60.12	62.02				coal as above. Black + dull brown banded subfusainous clarain + vitrain bands.						
62.02	62.05				clay light grey brown lignitic						
62.05	62.84				coal as above						
62.84	63.06				clay brown lignitic						

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PLAN No M 414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY DATE

SHEET 2 OF 5

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

0147

PROJECT

CO-ORDINATES AZIMUTH DRILLERS COMMENCED DEPTH HOLE No. 80C30C

RL COLLAR INCLINATION DRILL TYPE COMPLETED CASING LEFT OPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
63.06	63.17				clay light grey brown micaceous laminated with thin coal partings + brown lignitic clay						
63.17	63.81				clay brownish grey micaceous silty + fg sandy laminae some current bedding						
63.81	64.78				sand fg-mg some cg-vcg grey sand grains feldspathic SA-R clayey graded bedding						
64.78	68.41	core loss			core loss ? sand brown grey gt fsp poorly consol ?						
68.41	69.29				sand grey clayey fg-mg some cg SA-SR gt fsp moderately well consolidated						
69.29	72.29				sand grey brown clayey as above, interbedded silty and clay laminae up to 5cm micaceous						
72.29	73.70				core loss ?						
73.70	74.17				sand grey clayey gran-mg fg-mg bands becoming finer down hole light grey brown + thin black coally bands <1cm						
74.17	74.41				clay brown carbonaceous well consolidated coal frags throughout						
74.41	74.67				coal hard black brown becoming subvitreous + crumbly						
74.67	74.79				clay grey brown bedded silty micaceous grading to clayey siltstone						
74.79	75.41	core loss			sand fg-mg gt fsp grey clayey relatively unconsolidated core loss ?						
75.41	75.89				sand stiff grey brown fg pebbly fg-cg beds some black + brown coal bands coal seams 75.51-75.53, 75.72-75.74 75.79-75.81						
75.89	76.61				coal black hard + blocky						

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY DATE

DRILL CORE LOG

PROJECT

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80L30C

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
76.61	76.82				clay red grey brown thinly laminated micaceous silty						
76											
76.82	77.49				coal black brown blocky grading from + to brown sub lig + lig clay + shale + black vitrain partings						
77.49	78.61				clay + clayey silt + fg - vfg sand gtz + fspar mica light fawn - mod bedded thinly bedded siltstone coaly partings current bedding in parts.						
					sand clayey + silty vfg light fawn - dark grey clay sand silt. laminae <3-4 cm clay laminae up to ½ cm coaly bands = sand						
78.61	79.32				clay grey brown - dark brown silty laminae up to 5cm clay lam < ½ cm sparse coal partings well consolidated						
79.32	80.61				coal black crumbly, + thinly laminated sooty brown carb clay						
80.61	82.60				core loss? pebbly gravel with gtz SR-R						
82.60	82.98				clay brown thinly laminated coally speckled + v thin black coal partings +2cm						
82.98	83.26				sand light fawn grey fg-mg SR-SR fspar gtz mica thin grey clay loam + coal wisps no x beds						
83.26	83.40				coal crumbly black brown thin stacked seams						
83.40	83.53				clay dark brown as above well consol						
83.53	83.87				coal black crumbly interbedded carb clay bands up to 3cm pyrite						
83.87	84.6				silt light fawn + brown laminated fg sand + clayey micaceous gt fspar Thinly laminated +2cm well consol						
84.60	84.98				clay brown slightly silty carbonaceous thin coal partings						
84.98	85.02				coal black crumbly						

SUMMARY AND SPECIAL COMMENTS

LOGGED BY _____ DATE _____

SHEET 4 OF 5

CRAE 117
PLAN No M414

CRA EXPLORATION PTY. LIMITED

PROJECT

DRILL CORE LOG

CO-ORDINATES | AZIMUTH | DRILLERS | COMMENCED | DEPTH | HOLE No. 80L30C

RL COLLAR | INCLINATION | DRILL TYPE | COMPLETED | CASING LEFT | DPO No(s)

DEPTH FROM (M)	DEPTH TO (M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
85.02	85.16				sand fawn fg-mg qtz felspar carbonaceous thin coaly partings + flecks clayey + silty in part thinly laminated						
85.16	86.07				clay brown-black brown sandy qtz felspar micaceous carbonaceous silty finely laminated thin coal partings						
				≡	coal 85.29 - 85.33 gran - pebbly pyr in part						
86.07	~~90.12~~				clay light green sandy qtz felspa fg-mg some vcg SA-SR still some light fawn silty patches some vcg felspar frags some dark sandy laminae & pyrite large pyrite nodules up to 3cm decomposed granite frags						
90.12	90.35				vcg - gran decomposed felspar qtz grey clay + pyr						
90.35					clay as above						

Basement

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY | DATE

SHEET 5 OF 5

POLDA 0150

337200ydE ROTARY MUD DRILL ~~CORE~~ LOG
CO-ORDINATES 853300ydN AZIMUTH Vertical DRILLERS Thompson COMMENCED DEPTH 138m HOLE No. 80LRM31
RL COLLAR +78m (m s l) INCLINATION DRILL TYPE Clayton 1000 COMPLETED ~~CASING~~ LEFT Cemented DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FRDM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				sand sandy, brown, calcrete cream massive		885895				
2	4				calcrete cream pink sandy		896				
4	6				calcrete as above, clay pink soft, sst red brown fg well cemented ferruginous		897				
6	8				calcrete as above + black cherty angular frags clay pink stiff sandy		898				
8	10				calcrete as above + mainly clay pink sandy clay white soft, sandy fg-mg qtz		899				
10	12				clay pink sandy + minor yellow well cemented fg qtz vein sst		800				
12	14				clay pink + sandy as above + clay yellow very sandy + yellow mainly yell sand		901				
14	16				pink + yellow sandy clay stiff		902				
16	18				pink + yellow clay as above + grey well indur claystone + above qtz sand		903				
18	20				clayey yellow sand as above + vfg-fg yellow qtz sand uncon		904				
20	22				fg pink yellow qtz sand uncon SA-SR		906				
22	24				sand uncon fg-pebbly SA-SR qtz + yellow clay mtx cemented sst yellow		905				
24	26				fg-granular qtz sand SA-SR-feldspar clayey yellow in part.		910				
26	28				cg-pebbly SA-SR sand as above + white-yellow clayey silt micaceous in part.		912				
28	30				mg-fine pebbly qtz feldspar as above + white green sandy clay + black coaly frags tr.	trace coal	914				
30	32				light yellow sand as above some white + yellow sandy clay tr lig.	trace coal	916				
32	34				soft yellow green silty clay micaceous + white silty + sandy clay + brown micaceous cart soft clay	some qtz sand as above + black subbit coal chips <5%	917				
34	36				soft brown carb clay + brown woody coaly frags minor + white + yellow clay sand lmg as before	coaly frags	918				
36	38				light grey brown micaceous stiff clay + carbonaceous particles glauconitic? green clay		919				
38	40				light grey brown green clay clay as above + soft white green clay + soft brown lig clay + black coal frags 5%	black coal 5%	920				
40	42				med grey brown micaceous clayey silt black carb flecked		921				
42	44				light grey brown green micaceous clay carb speckled coaly chips some large <10%	coal chips <10%	922				
44	46				sand green grey qtz feldspar frags 70% SA uncon + soft brown green grey clay cart flecked micaceous		923				
46	48				cg-vcg SA-SR as above light fawn-brown clay micaceous carbon speckled clay 30%		924				
48	50				vcg-pebbly A-SR qtz feldspar uncon sand very pyrite + clay as above		885925				

CRAE 117

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MSNF DATE 15SEP80

SHEET 1 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80LRM31

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				sand grain SA as above pyr some brown clay stiff micaceous carb speckled tr coal	trace coal	885926				
52	54				fg – gran qtz fspar chert A-SA sand minor clay		927				
54	56				fg – vcg SA-SR sand clay light grey – brown soft micaceous + lignite		928				
56	58				fg – pebbly A-SA + brown grey clay in part		929				
58	60				vcg – granular A-SA qtz fspar clayey in part		930				
60	62				fg – cg micaceous as above A-SR		931				
62	64				mg – cg qtz fspar mica A-SR + light brown grey clay mod soft carb speckled + tr black coal	trace black coal	932				
64	66				sand qtz fspar pyr + light brown grey soft silt + brown clay coal frags 2-5% pyr	2-5%	933				
66	68				sand cg – vcg A-SA as above + clay light greeny grey brown + brown coal frags <5%	<5%	934				
68	70				brown micaceous soft clay + light grey green as above + coal 10% some large frags	10%	885935				
70	72				clay as above + coal <5%	<5%	936				
72	74				soft brown + cream grey brown micaceous clay carb speckled coal frags <5%	<5% black coal	937				
74	76				soft grey green brown + brown carb speckled micaceous clay + tr coal frags	trace	938				
76	78				clay as above coaly fragments <5%	<5%	939				
78	80				light brown grey + brown clay + tr black coal + sand qtz fspar 10% pyr minor SA-SR	trace	940				
80	82				clay as above + 40% sand vcg SA-SR coal frags <10% pyr	<10	941				
82	84				clay as above + sand cg-vcg SA-SR mod pyr coal frags <10%	<10	942				
84	86				sand vcg – gran A-SA qtz fspar pyr light grey micaceous clay + soft brown clay coal <10%	<10	943				
86	88				mg – vcg as above minor + white + light grey + brown pyr 10% coal 10%	10	944				
88	90				sand cg-vcg as above + clay as above coal frags 10-15% lignitic	10-15	945				
90	92				light brown micaceous clay + well consol brown clay coal 10% + sand cg – gran as above pyr	10	946				
92	94				clay grey brown micaceous + carb flecked + sand vcg A-SA pyr qtz fspar coal chips 15%	15%	947				
94	96				soft brown clayey silt well consol brown carb shale coal frags 5-7% sand mg-cg qtz fspar	pyr 5-7	948				
96	98				grey grey + brown clay + carb shale as above + sand mg – vcg A-SA qtz fspar coal 5%	5	949				
98	100				cg – gran A-SR sand minor brown + brown clayey silt 2% coal	2	885950				

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE 15SEP80

SHEET 2 OF 3

DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 80 LRM 31

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
100	102				light grey + grey brown clay - mainly sand cg-vcg fspar sft, pyr A-SA coal 20% chunks/frags	20	885951				
102	104				grey brown clay as above sand cg-vcg as above coal 25-30% some large chips	25-30	952				
104	106				soft light grey brown - med brown micaceous clay + coal 40-50%	40-50	953				
106	108				as above + some sand coal 30-40%	30-40	954				
108	110				clay as above + black coal 60-60% minor cg-vcg qtz fspar	50-60	955				
110	112				soft light grey clayey silt + coal 60-70	60-70	956				
112	114				as above coal 50-60	50-60	957				
114	116				sand mg-vcg qtz very feldspathic pyrite minor clay as above + coal frags 20%	20	958				
116	118				minor clay as above sand qtz fspar weathered granite frags coal chips +0%	40	959				
118	120				well consol light grey brown micaceous clay coal 10% (washed ?)	10	960				
120	122				light grey brown micaceous clay coal frags <10%	<10	961				
122	124				light grey brown clay as above + coal 10-15%	10-15	962				
124	126				brown - dark grey black silt + sandy carbonaceous clay < 5% coal	<5	963				
126	128				50% stiff white - light brown micaceous sandy clay + 50% carb clay as above		964				
128	130				stiff yellowy green-grey sandy + silty clay kaolinitic + weathered fspar + some brown carb clay		965				
130	132				light grey green fspathic sandy clay + brown fspathic sandy clay		966				
132	134				green grey + brown clay as above		967				
134	136				grey green fspathic sandy clay + brown sandy clay as above		968				
136	138				clay as above mainly brown clay		969				

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE 15 SEP 80

SHEET 3 OF 3

0153

CO-ORDINATES 3276 CCyd N AZIMUTH Vertical DRILLERS Thompson
RL COLLAR +37m (m.s.l.) INCLINATION DRILL TYPE Mayhew 1000
COMMENCED DEPTH 36m HOLE No. BOLRM 32
COMPLETED CASING LEFT — DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				sand black soil clayey calcrete in part		8860A				
2	4				calcrete cream white massive sandy texture some clay cream sandy		75				
4	6				as above + quartzite white massive sandy texture clay yellow white sandy soft		76				
6	8				quartzite white massive sandy texture some calcrete		77				
8	10				sand red vfg-mg qtz hem stained SA-SR uncon		78				
10	12				sand red vfg-mg qtz hem stained SA-SR indurated in part		79				
12	14				[illegible] soft grey sand size hem stained sand [illegible] clay		80				
14	16				[illegible]		81				
16	18				[illegible] clay [illegible]		82				
18	20				clay as above		83				
20	22				clay as above		84				
22	24				clay as above		85				
24	26				clay dark green, soft, sandy, chloritic, micaceous		86				
26	28				clay as above + fragments of light green chloritic micaceous sand + qtz quartz + pebbles		87				
28	30				clay + rock-like as above		88				
30	32				as above		89				
32	34				as above less weathered		90				
34	36				as above less weathered		886091				

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNF DATE

SHEET 1 OF 1

0154

15500yd N ; 15200yd N ; 17100yd N . ROTARY MUD DRILL CORE LOG PROJECT COCOA BASIN

CO-ORDINATES _____ AZIMUTH Vertical DRILLERS Thompson Drilling Co.

RL COLLAR 20, 22, 26 m (MSL) INCLINATION _____ DRILL TYPE Mayhew 1000

COMMENCED _____ DEPTH 6 m HOLE No. 80LRM33

COMPLETED _____ CASING LEFT — DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
					3 attempts to drill this hole were abandoned due to extreme loss circulation problems with karste topography						
					Maximum penetration 6 m						
					Calcrete + "puddingstone" calcrete to 6 m						

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY M Fitzsimons DATE _____

SHEET 1 OF 1

0155

ROTARY MUD DRILL CORE LOG

CO-ORDINATES 8/1560cyd N AZIMUTH Vertical DRILLERS Thompson
RL COLLAR + 18m (m.s.l) INCLINATION DRILL TYPE Mayhew 1000
COMMENCED 10 Oct 80 DEPTH 16m HOLE No. 80LRM34
COMPLETED 10 Oct 80 ~~CASING LEFT~~ Cemented DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				calcrete cream white breccia angular flinty fragments abundant fine to brown		886092				
2	4				calcrete as above		93				
4	6				calcrete as above		94				
6	8				clay green grey + yellow stiff sandy some calcrete as above		95				
8	10				clay as above		96				
10	12				clay green yellow white as above		97				
12	14				clay + calcrete sample erroneous		886098				
14	16				lost circulation no water return hit basement.		886099				

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNE DATE 10 OCT 80

SHEET 1 OF 1

0156

ROTARY MUD DRILL CORE LOG

PROJECT [illegible]

CO-ORDINATES 8262000yd E 8262000yd N AZIMUTH Vertical DRILLERS Thompson

RL COLLAR +30m (m.s.l.) INCLINATION DRILL TYPE Mayhew 1000

COMMENCED DEPTH 58m HOLE No. BOLRM35

COMPLETED CASING LEFT ~~Cemented~~ DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TD (M)	REC (M)	ASSAY VALUES
0	2				calcrete, cream-pink massive sandy + concretionary fg-vcg		886010				
2	4				calcrete as above + sst + calcareous ? + oolite last fg-cg oolites		11				
4	6				as above		12				
6	8				as above		13				
8	10				calcareous sst as above + light green clay fg-mg qtz sandy clay		14				
10	12				as above		15				
12	14				stiff green yellow brown fg-mg sandy		16				
14	16				sand fg-cgran white SA-SR qtz + some f-spar. Unconsol clay light green as above		17				
16	18				sand fg-cg some pebbles qtz f-spar clayey white + white-green clay sandy as above		18				
18	20				sand fg-pebbly as above some clay as above		19				
20	22				sand vfg-vcg as above qtz f-spar SR-R		20				
22	24				sand vfg-vcg as above brown ; clay		21				
24	26				sand vfg-pebbly qtz f-spar as above ; clay grey brown calc specks ; slightly sandy		22				
26	28				sand fg-cgran qtz f-spar mica ; clay as above pyr		23				
28	30				sand fg-mg as above + sandy brown clay as above		24				
30	32				sand fg-cg as above ; clay as above		25				
32	34				sand mg-cg as above SR-R ; clay light brown grey as above + tr woody coal frags brown	trace coal	26				
34	36				sand cg-vcg SA-SR qtz f-spar pyr some clay as above + tr woody coal frags	trace woody coal	27				
36	38				sand vfg-cg as above clay dark brown laminated coal partings, brown sandy micaceous kaolinitic	+ black coal	28				
38	40				sand fg-cg as above ; clay as lignite + brown as above		29				
40	42				clay stiff light fg-vfg micaceous kaolinitic qtz sandy A-SR brown lignitic minor ; sand mg-cgran SA-SR.		30				
42	44				clay soft ? stiff light grey fawn to white kaolinitic clay sandy as above pyr		31				
44	46				clay + sand as above		32				
46	48				clay + sand as above		33				
48	50				clay as above		886034				

lower drilling basement clay?

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNG DATE 21 SEP 87

SHEET 1 OF 2

PROJECT

DRILL CORE LOG

CO-ORDINATES AZIMUTH ORILLERS COMMENCED DEPTH HOLE No. 80LRM135

RL COLLAR INCLINATION DRILL TYPE COMPLETEO CASING LEFT DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
50	52				clay light grey white kaolinite sand g/s A-SA		886035				
"					weathered + spar gran - pebbly						
52	54				clay + sand as above		36				
54	56				clay + sand as above		37				
56	58				clay + sand as above		86038				

SUMMARY AND SPECIAL COMMENTS

LOGGED BY DATE 21 SEP 85

SHEET 2 OF 2

CRAE 117
PLAN No M414

328400 ydE
CO-ORDINATES 826200 yd EN AZIMUTH Vertical DRILLERS
RL COLLAR + 19m (msl) INCLINATION DRILL TYPE

ROTARY MUD DRILL ~~CORE~~ LOG

PROJECT FOLDER
COMMENCED DEPTH 16m HOLE No. FOLRM36
COMPLETED CASING ~~LEFT~~ Cemented DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				calcrete white f-mg qtz sandy; clay cream massive sandy		886002				
2	4				calcrete cream yellow massive sandy as above; clay yellow sandy		003				
4	6				calcrete + clay as above		04				
6	8				calcrete as above; clay yellow sandy, light green soft, sandy		05				
8	10				gravel white, mg-pebbly f-spar ~~5%~~ 50% VA-A kaolinized-part qtz A-SR qtz f-spar + tal aggregates; clay green sandy as above		06				
10	12				sand + gravel mg-pebbly as above, red coloured stain on grains; clay green/brown as above		07				
12	14				as above f-spar qtz + pink granite frags + biotite		08				
basement	14-16						886009				

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MSNF DATE

SHEET 1 OF 1

CRAE 117
PLAN No M414

0159

ROTARY MUD DRILL CORE LOG

PROJECT FULRM

~~28000~~ yd E
CO-ORDINATES 8385000 yd N. AZIMUTH
RL COLLAR +60m (mSL) INCLINATION Vertical

DRILLERS Thompson
DRILL TYPE Haylow 1000

COMMENCED COMPLETED

DEPTH 54m HOLE No. 80LRM37
CASING LEFT Cemented DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				calcrete cream sandy texture massive		886039				
	1										
2	4				calcrete cream + pink as above massive		886040				
4	6				calcrete cream as above		41				
6	8				calcrete as above + clay cream yellow soft sandy siliceous		42				
8	10				clay yellow white sandy soft; calcrete white hard		43				
10	12				clay yellow white light grey moderately stiff sandy		44				
12	14				clay light grey + yellow mottled stiff silty + sandy sand white qtz f-spar lyr vfg uncon.		45				
14	16				clay light grey very sandy quartzose; dark brown soft carbonaceous; light grey yellow stiff sandy; sand white qtz f-spar SA cg-vcg		46				
16	18				clay white - fawn soft waxy silty. sand minor as above vcg - pebbly		47				
18	20				clay fawn kaolinitic as above; dark brown stiff lignitic carbonaceous.		48				
20	22				clay as above, white + brown micaceous coal fragments black brown sl/t 2%		49				
22	24				clay brown + grey carbonaceous ~~coal~~ coaly flags. Coal bands mod hard sublit 7.5% soft lignite clay		50				
24	26				clay brown fawn grey micaceous carbonaceous speckled. coal flecks sublit hard 7-10% sand A-SA qtz f-spar mica cg-pebbly		51				
26	28				clay sandy + coal as above. coal 2-5%		52				
28	30				light brown fawn grey + cream sandy soft carbonaceous coal flags 5%		53				
30	32				clay as above coal <5%; sand grey qtz f-spar mg - vcg A-SR uncon		54				
32	34				sand qtz white qtz f-spar mg - gran SA-SR. uncon		55				
34	36				clay white + fawn soft kaol micaceous salty + coal sand + clay as above		56				
36	38				sand as above vcg-gran some white clay		57				
38	40				sand as above qtz very feldspathic some white clay as above lyr		58				
40	42				sand as above some light grey clay some pink feldspar fragments		59				
42	44				sand granular white + pink qtz + pink feldspar		60				
44	46				clay albitic + kaolinitic A-SA decomp gneiss as above + granular qtz f-spar intergrowths		61				
46	48				as above		62				
48	50				sand + clay as above + qtz chl intergrowths		886063				
	5										

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNF DATE 30 SEP 80

SHEET 1 OF 3

ROTARY MUD DRILL CORE LOG

0161

CO-ORDINATES 316400yd E, 824700yd N AZIMUTH ____ DRILLERS Thompson
RL COLLAR +25m (m.s.l.) INCLINATION Vertical DRILL TYPE Mayhew 1000
COMMENCED ____ DEPTH 16m HOLE No. SOLRM 38
COMPLETED ____ ~~CASING LEFT~~ Cemented DPO No(s) ____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				calcrete cream white massive sandy		886084				
2	4				calcarenite as above; + brown angular fragments flint + calcrete		85				
4	6						86				
6	8				clay yellow white soft sandy; calcrete as above		87				
8	10				clay yellow white sandy as above + tuff		88				
10	12				clay as above + claystone white hard green chlor chips		89				
12	14				clay yellow green stiff sandy sticky		90				
14	16				clay as above + thin bed sands green chl fragments couldn't be drilled Reason ??		886091				

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS ____

LOGGED BY MJNF DATE ____

0162

C.R.A. EXPLORATION PTY. LIMITED

ROTARY MUD DRILL CORE LOG

PROJECT POLDA

CO-ORDINATES 205400 yd E, 837100 yd N AZIMUTH _____ DRILLERS Thompson COMMENCED _____ DEPTH 36m HOLE No. 20LRM39

RL COLLAR + 20m (m.s.l.) INCLINATION Vertical DRILL TYPE Mayhew 1000 COMPLETED _____ CASING LEFT ~~Cemented~~ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				calcrete white + light brown massive sandy calcarenite		886066				
2	4				as above		67				
4	6				calcrete as above		68				
6	8				calcrete as above; clay green grey stiff		69				
8	10				clay olive green as above		70				
10	12				clay olive green stiff sandy		71				
12	14				clay as above some calcrete		72				
14	16				clay green yellow very stiff + claystone;		73				
16	18				clay as above sand; sand gran-pebbly R-WR of feldspar		74				
18	20				clay olive green as above; sand orange hem fg-bd vfg-f; pebbly-gran qtz WR-R iron con		75				
20	22				sand yellow vfg + gran-pebbly; clay yellow green stiff sandy		76				
22	24				sand yellow vfg-fg + gran-pebbly R-WR, some clay as above		77				
24	26				sand as above some clay as above		78				
26	28				clay mar dark brown mod well consol carbonaceous	high γ	79				
28	30				clay green soft chlorite sericite chips some clay as above		80				
30	32				clay brown soft carbonaceous micaceous clay green soft felsite fragments		81				
32	34				calcrete chlorite, felspar qtz.		82				
34	36				as above		83				

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY MJNF DATE 30SEP80

SHEET 1 OF 1

ROTARY AIR BLAST DRILL CORE LOG

PROJECT

CO-ORDINATES 807300yd N AZIMUTH — DRILLER Thompson COMMENCED 10Oct80 DEPTH 18m HOLE No. BOLRM40

RL COLLAR +20m (m.s.l.) INCLINATION Vertical DRILL Mayhew 1000 COMPLETED ~~CASING LEFT~~ Cemented DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				loam brown sandy, calcrete creamy+ sandy		886100				
2	4				sandstone yellow calcareous weathered poorly sorted fg-cg A-SA		101				
4	6				sst as above yellow, white gran, clay stks soft sandy		102				
6	8				clay stste some yellow sst sericitic + red gran A-SA		103				
8	10				clay stste soft kaolinitic micaceous sandy		104				
10	12				clay as above, gravel grey shaley+ foliation VA-QR some sst in frags		105				
12	14				granodiorite decomposed vcg VA-Rstlp, bio musc some clay as above		106				
14	16				as above		107				
16	18				as above		108				

CRAE 117
PLAN No M 414

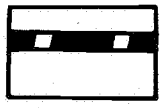
SUMMARY AND SPECIAL COMMENTS

LOGGED BY MJNF DATE 10Oct80

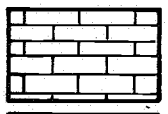
SHEET 1 OF 1

APPENDIX 4

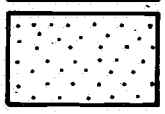
0165



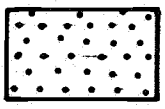
Coal Seam Interpreted From Geophysical Logs.



CALCRETE

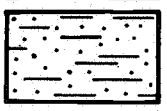


SAND

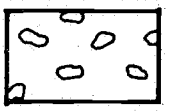


SANDSTONE

CLAY

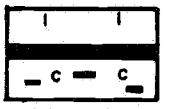


SANDY CLAY

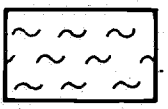


GRAVEL, Quartzose

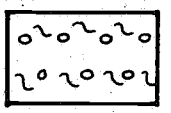
CHERTY FRAGMENTS



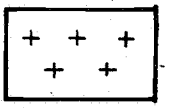
LIGNITE, Unconsolidated
LIGNITE BANDS
COAL FRAGMENTS



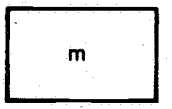
SCHIST



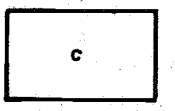
GNEISSIC BASEMENT



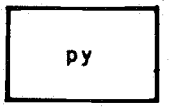
BASEMENT GRANITE



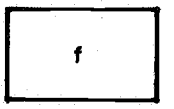
Micaceous



Carboniferous

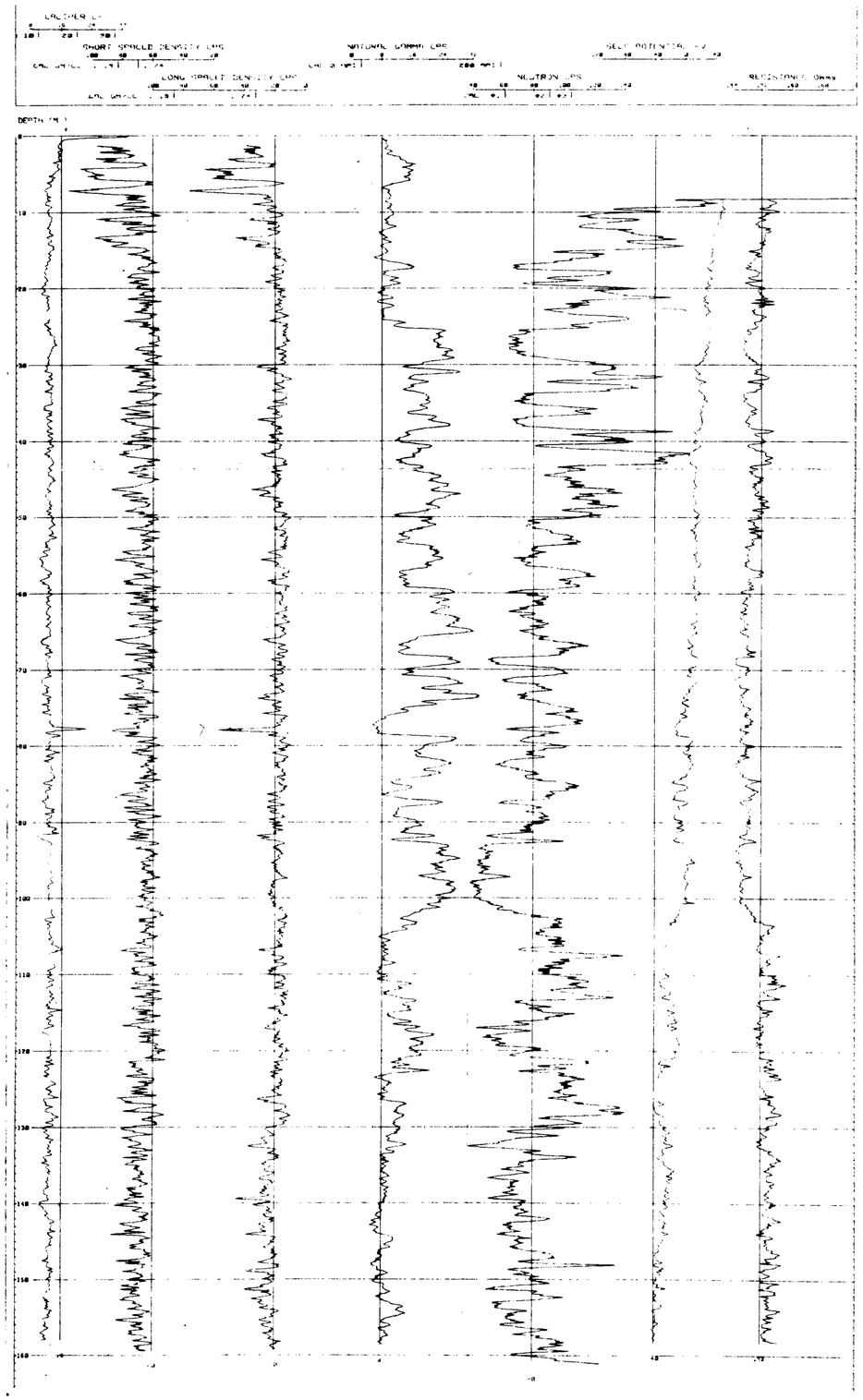


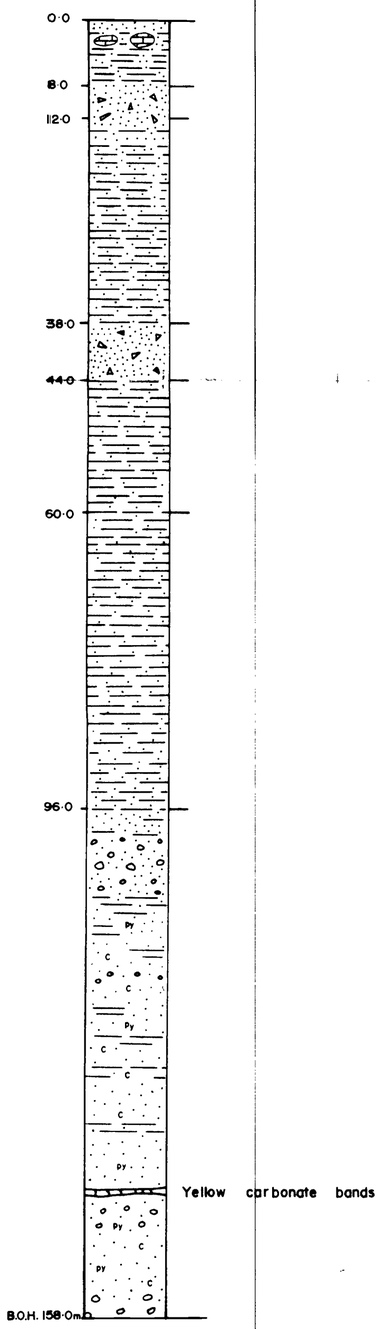
Pyritic



Fossiliferous

CRA EXPLORATION PTY. LTD.	
1980 DRILL HOLE LEGEND FOR POLDA & ROBINSON BASINS Refer to Plans SAa 601 & 609	
Drawn: D.W.	Report N°: 10307.
Date: 6 NOV. '80	Plan N°: SAa 600

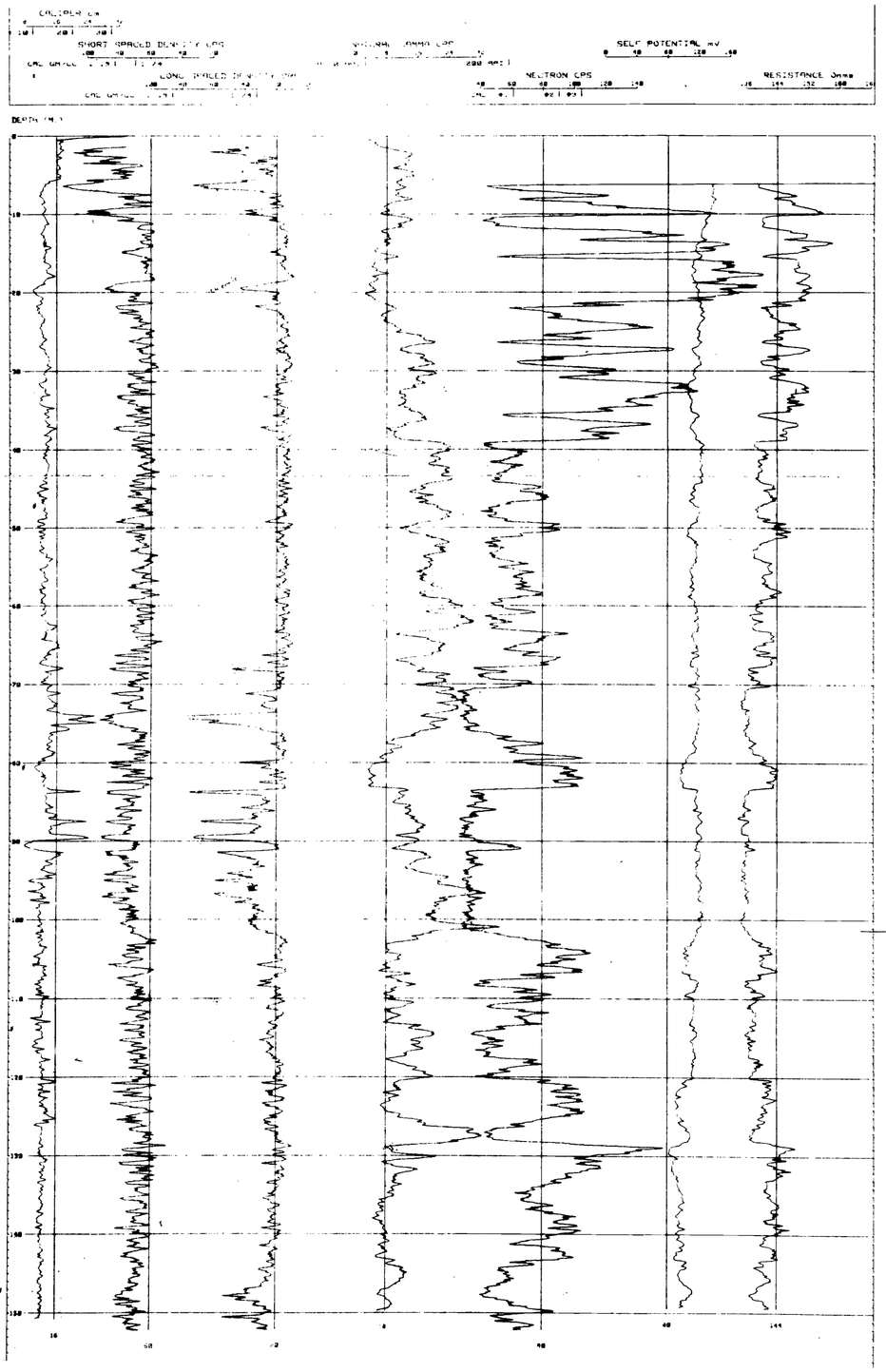


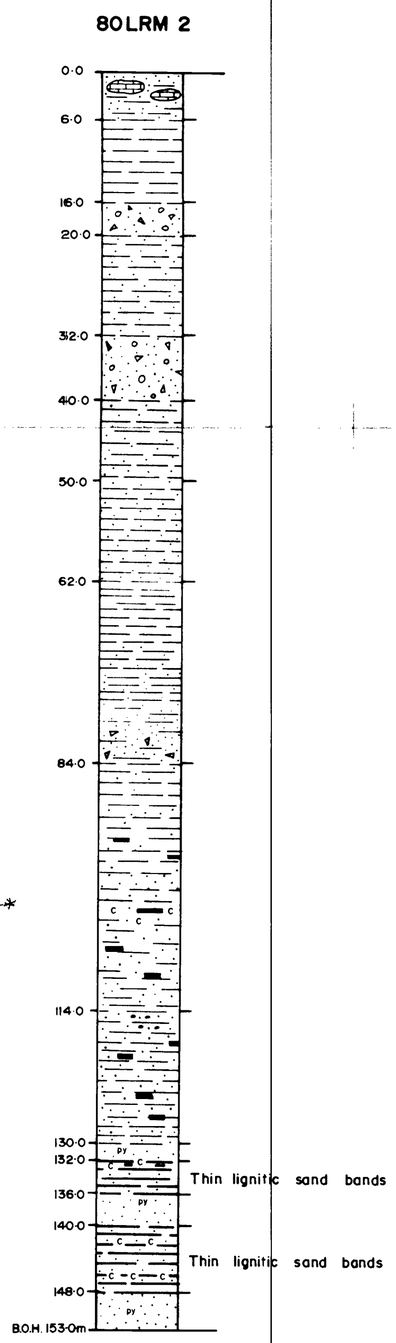


Refer to Plan N°: SAa 600 for Legend

ENV 3973-10

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN 1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 1 Sheet Ref : Kimba SI53-7		
Geol. : M.F.	Date : Oct 1980	Report N° : 10307
Drawn : A.E.Y.	Scale : 1 : 500	Plan N° : SAa601/1

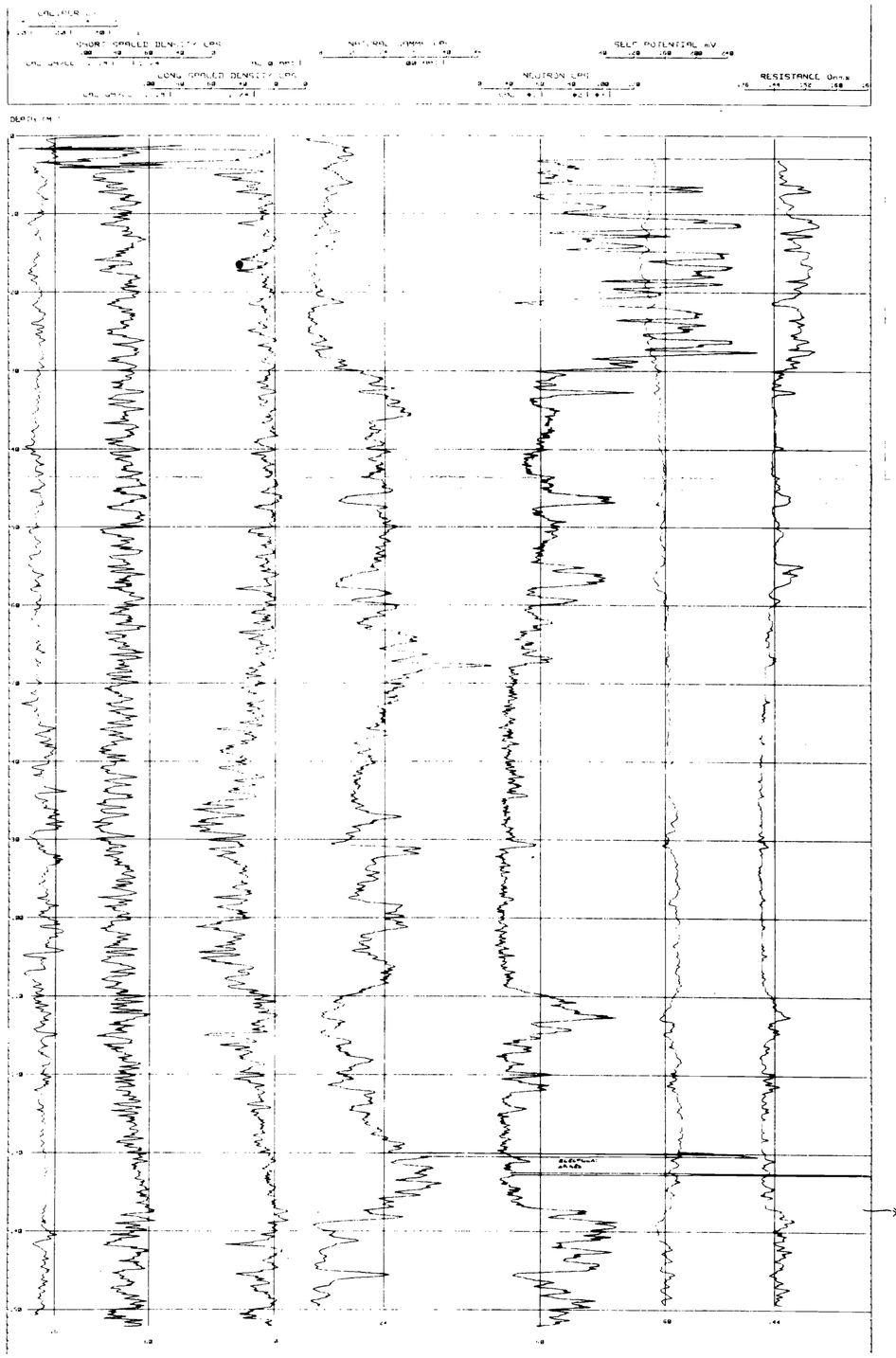


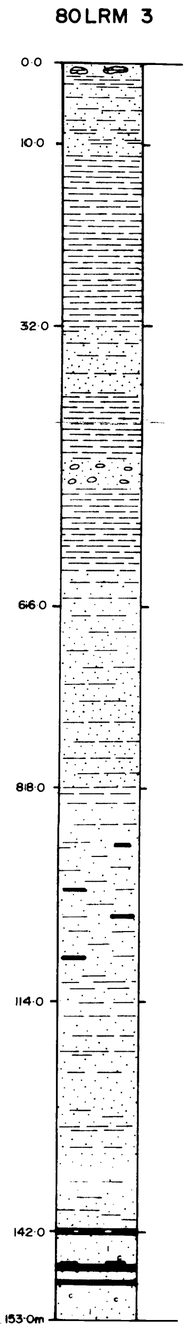


Refer to Plan N°: SAa 600 for Legend

ENV 3973-11

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION		
HOLE 80 LRM 2 Sheet Ref: Kimba S153-7		
Geol.: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/2





Refer to Plan N° SAa 600 for Legend

ENV 3973-12

C.R.A. EXPLORATION PTY. LTD.

POLDA BASIN

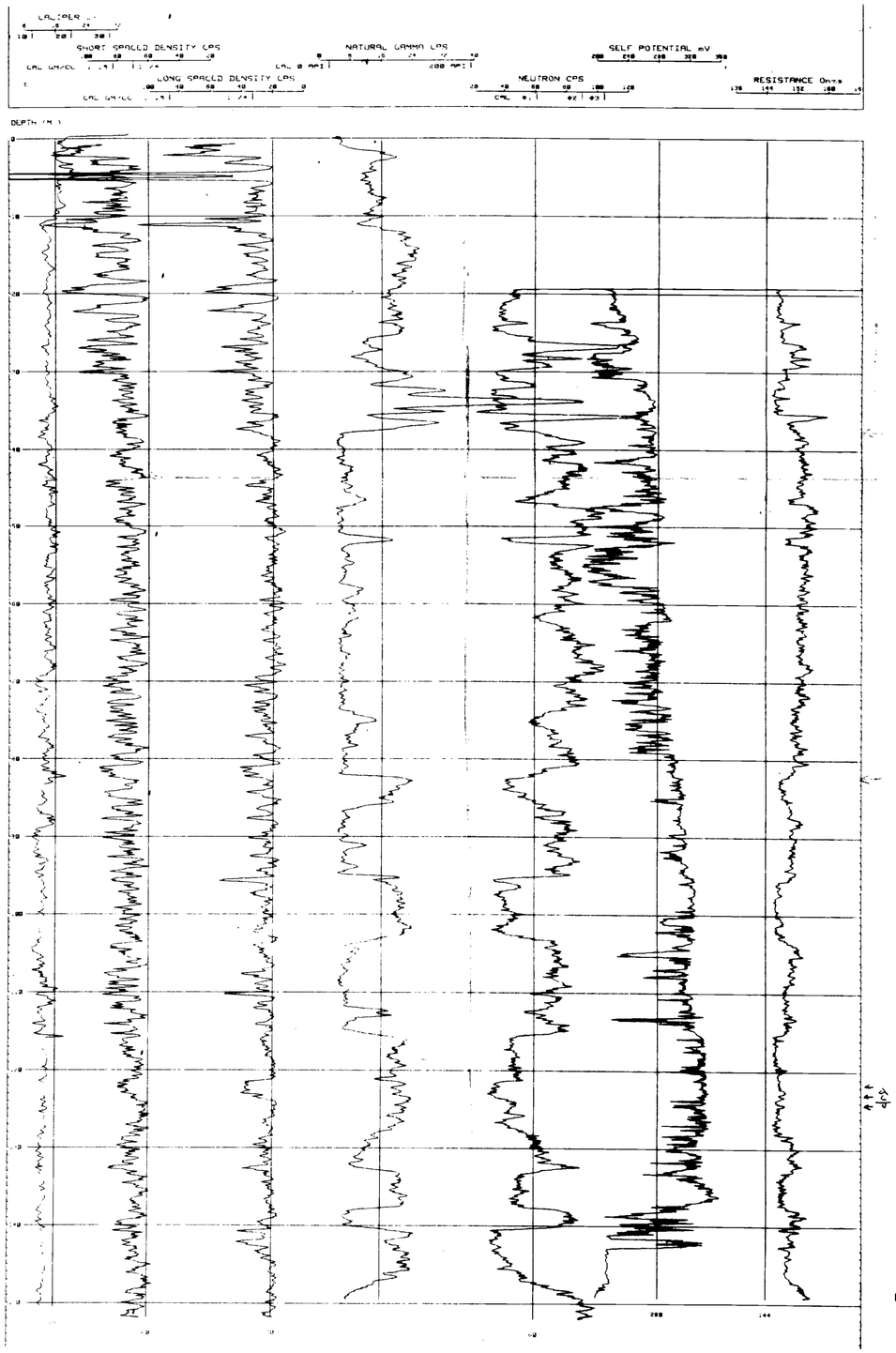
1980 DRILLING PROGRAM

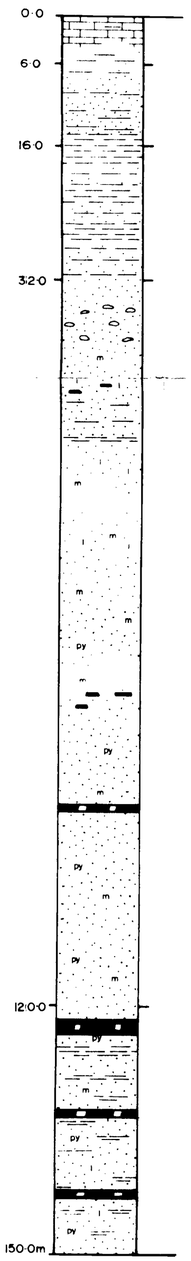
GEOLOGICAL AND GEOPHYSICAL CROSS SECTION

HOLE 80 LRM 3

SHEET REF: KIMBA SI53-7

Geol.: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa 601/3





Refer to Plan N° SAa 600 for Legend

ENV 3973-13

C.R.A. EXPLORATION PTY. LTD.

POLDA BASIN

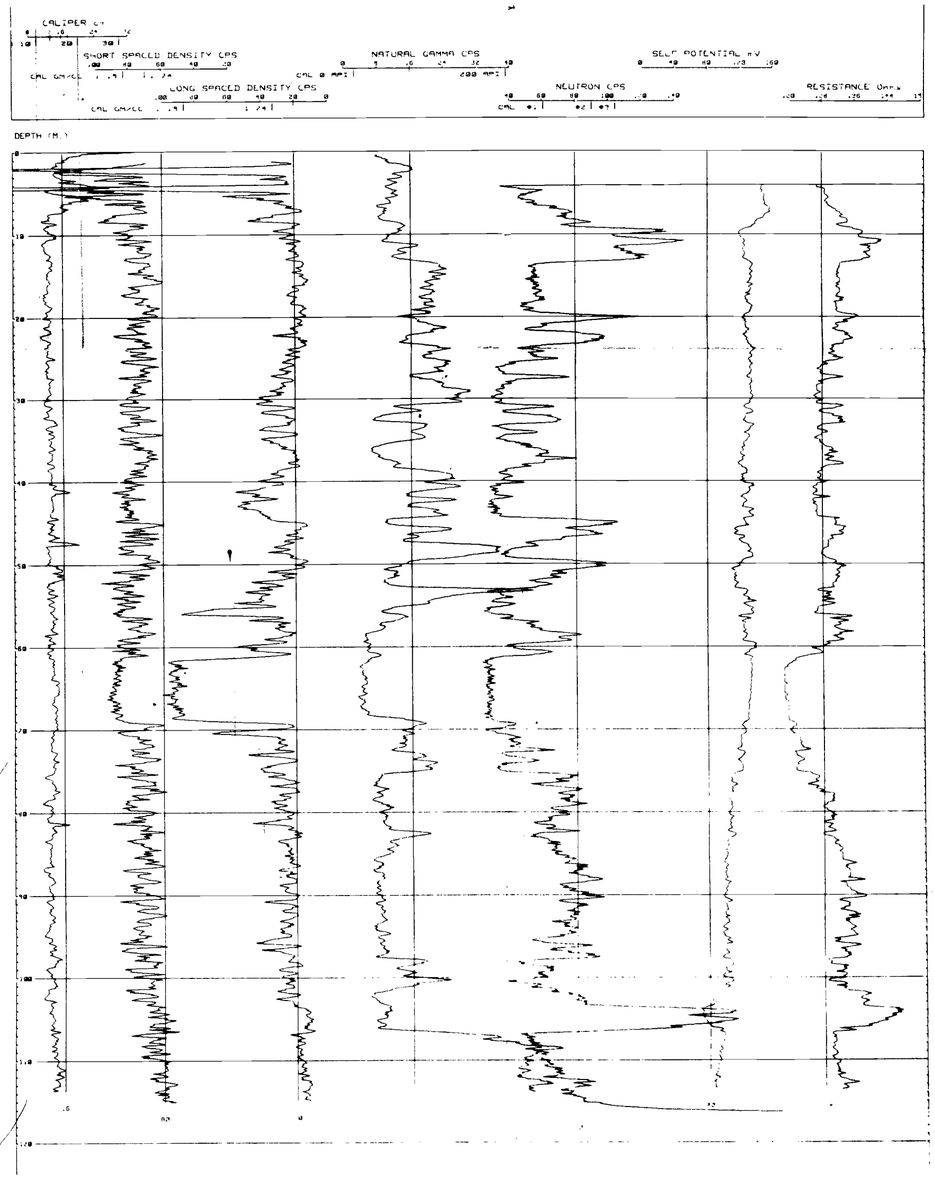
1980 DRILLING PROGRAM

GEOLOGICAL AND GEOPHYSICAL CROSS SECTION

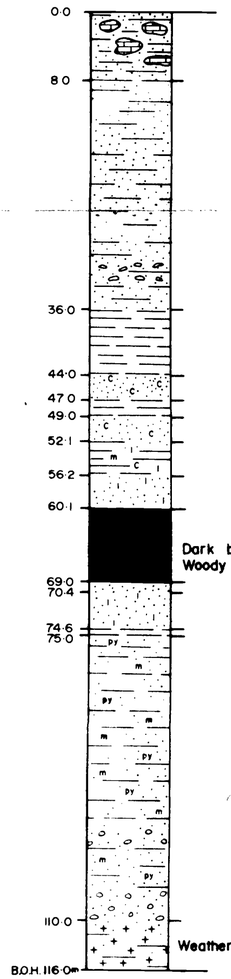
HOLE 80 LRM 4

SHEET REF: KIMBA SI53-7

Geol. : M.F.	Date : Oct 1980	Report N° : 10307
Drawn : A.E.Y.	Scale : 1 : 500	Plan N° : SAa601/4



COMPOSITE LOG OF
80 LRM 5c
AND
80 LRM 5



Refer to Plan N°: SAa 600 for Legend.

ENV 3973 -14

C.R.A. EXPLORATION PTY. LTD.

POLDA BASIN

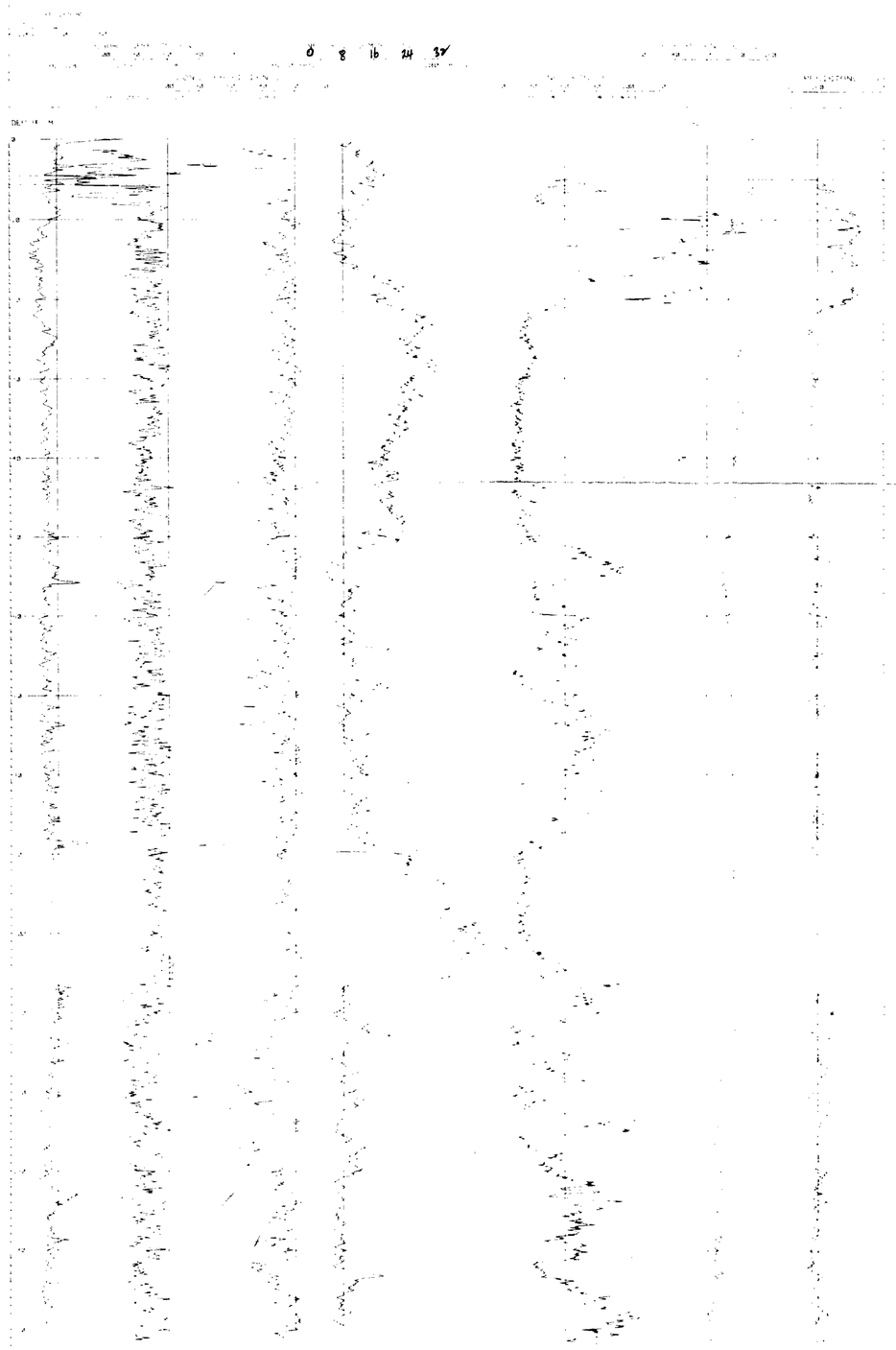
1980 DRILLING PROGRAM

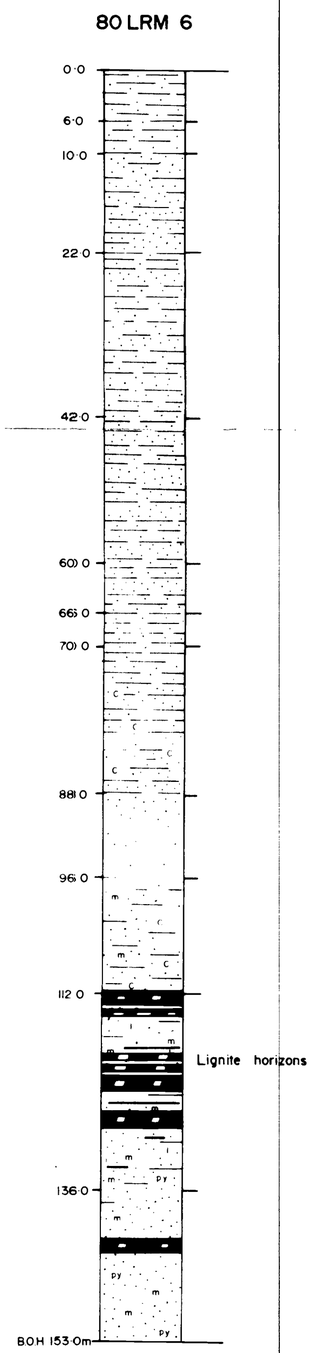
GEOLOGICAL AND GEOPHYSICAL CROSS SECTION

HOLE 80 LRM 5

Sheet Ref: Kimba SI53-7

Geol.: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N° SAa601/5

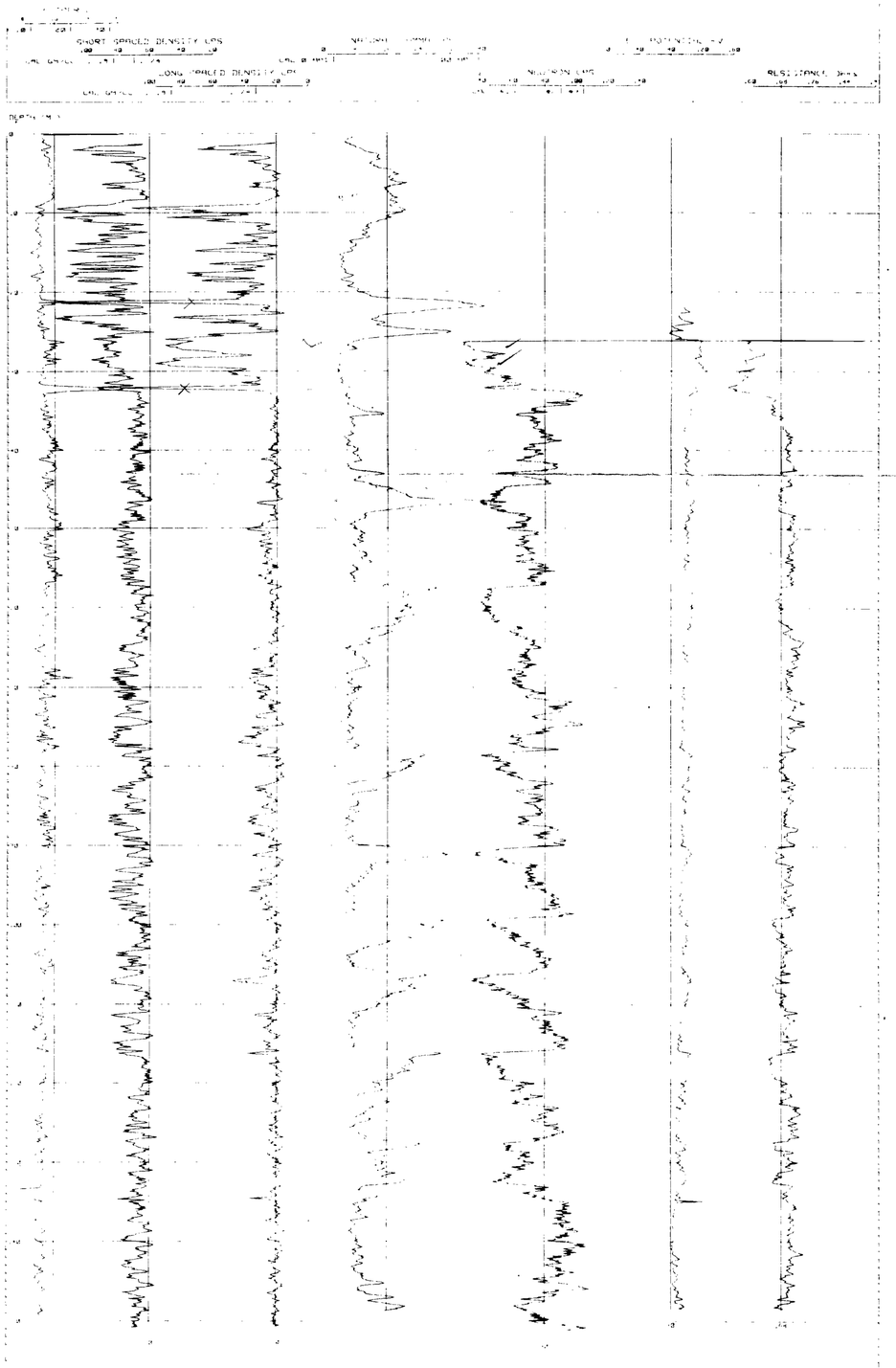


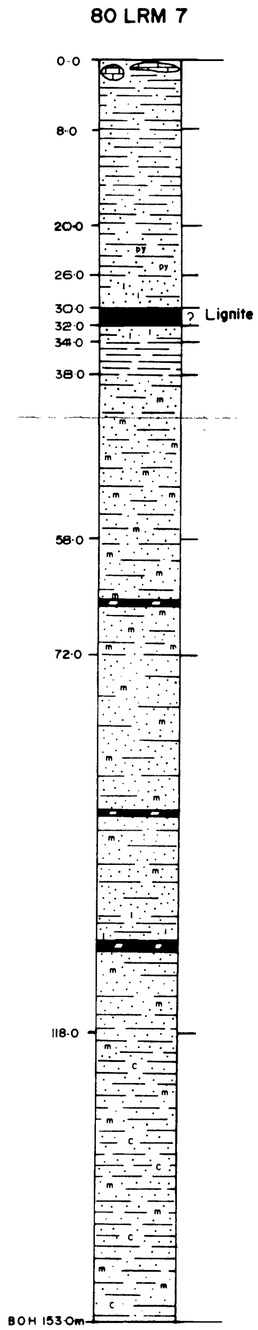


Refer to Plan N°: SAa 600 for Legend.

ENV 3973-15

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN 1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 6 Sheet Ref: Kimba SI53-7		
Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/6

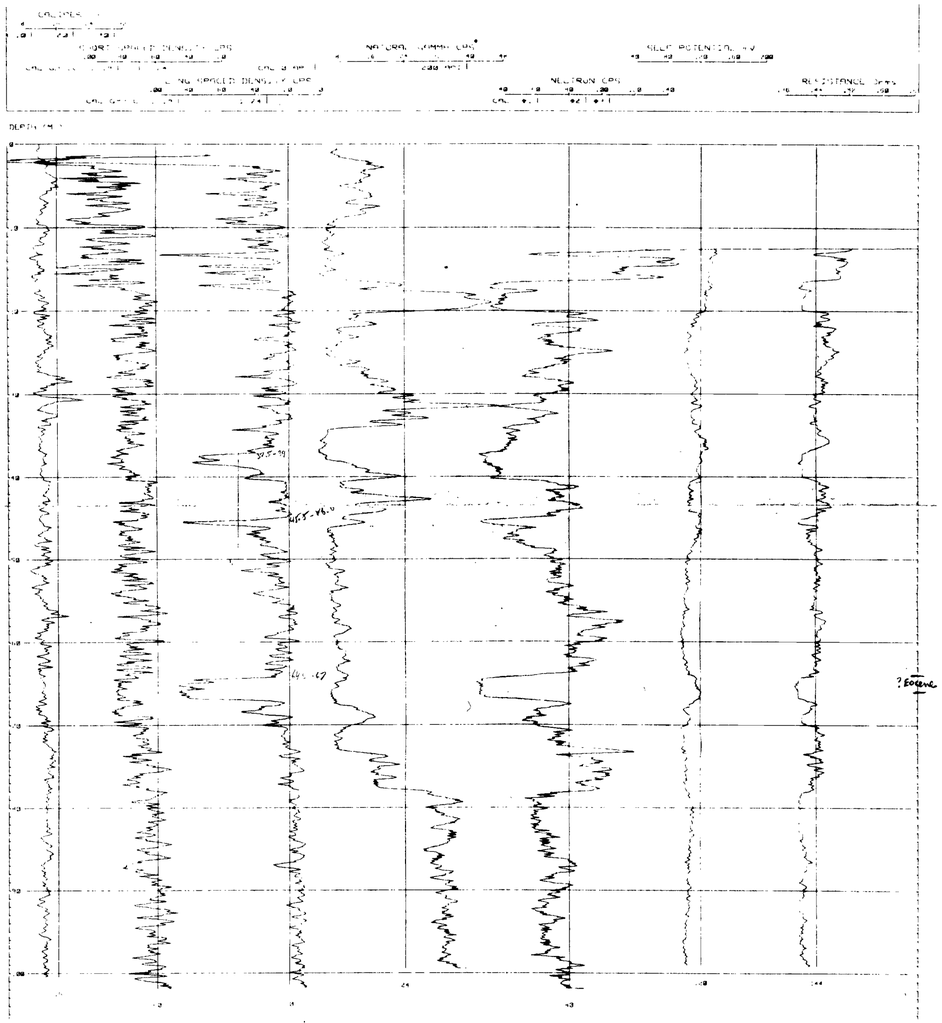




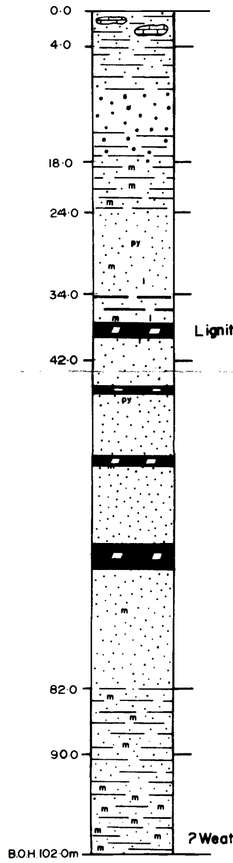
Refer to Plan N°: SAa 600 for Legend.

ENV 3973.16

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION		
HOLE 80 LRM 7		
Sheet Ref : Kimba SI53-7		
Geol.: M.F.	Date: Oct 1980	Report N°: 10307
Drawn : A.E.Y.	Scale: 1:500	Plan N°: SAa601/7



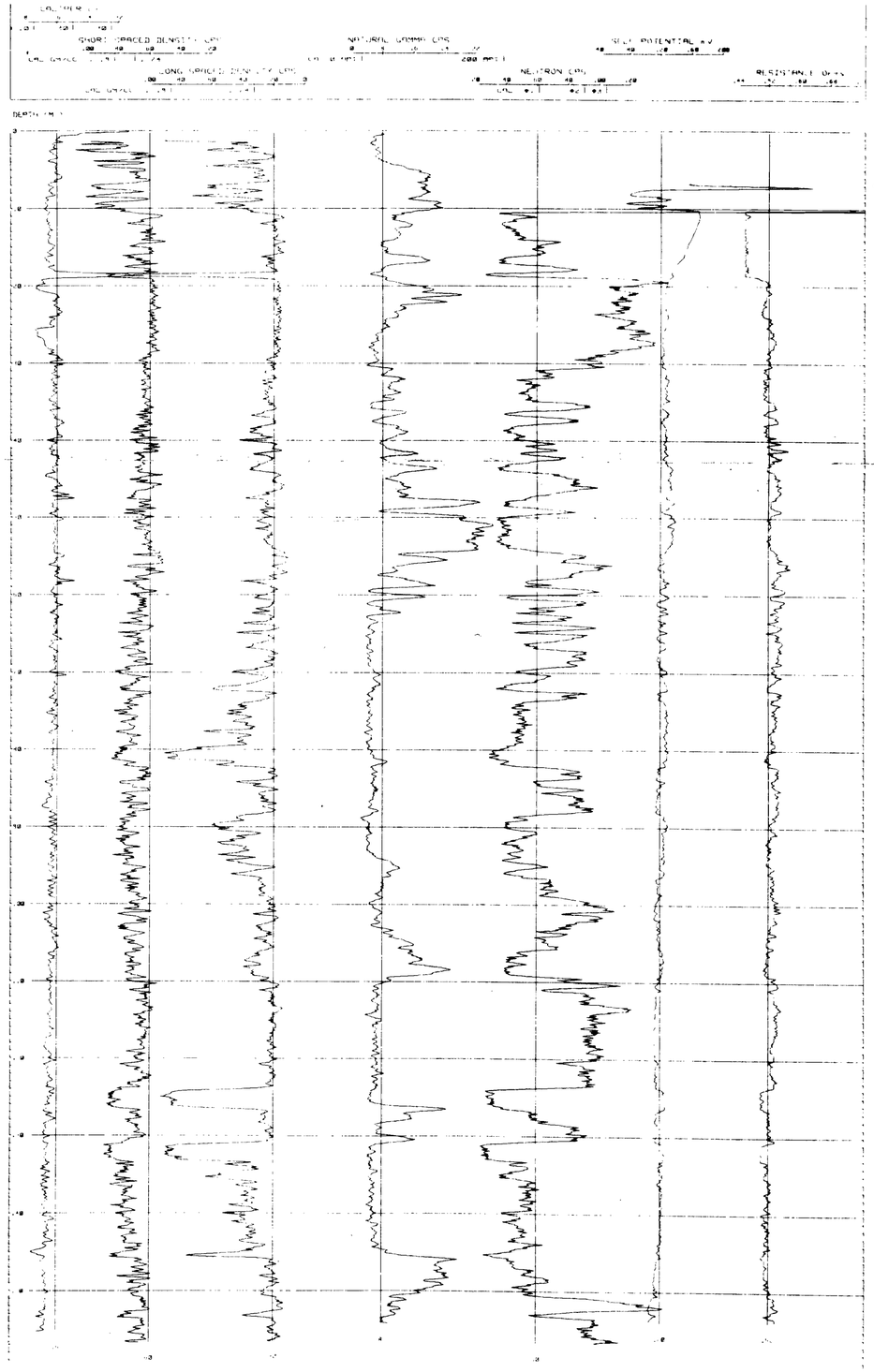
80LRM 8

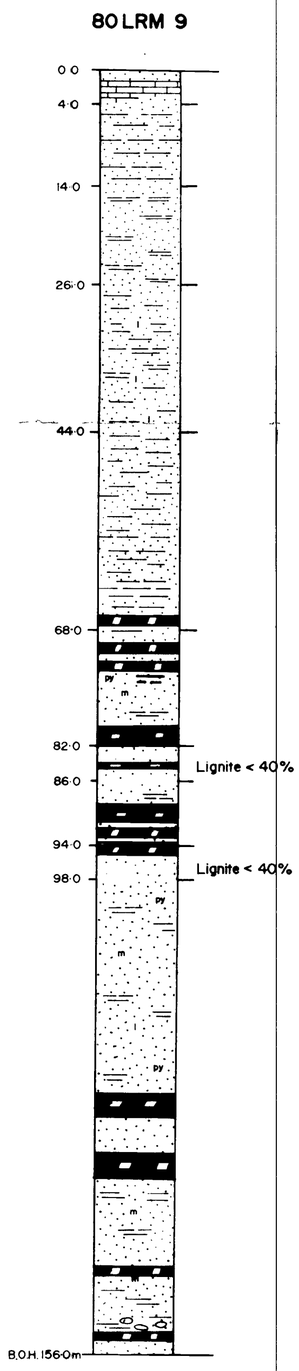


Refer to Plan N° SAa 600 for Legend

ENV 3973-17

C.R.A. EXPLORATION PTY. LTD		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 8 SHEET REF KIMBA SI53-7		
Geol.: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A E Y	Scale: 1:500	Plan N°: SAa601/8

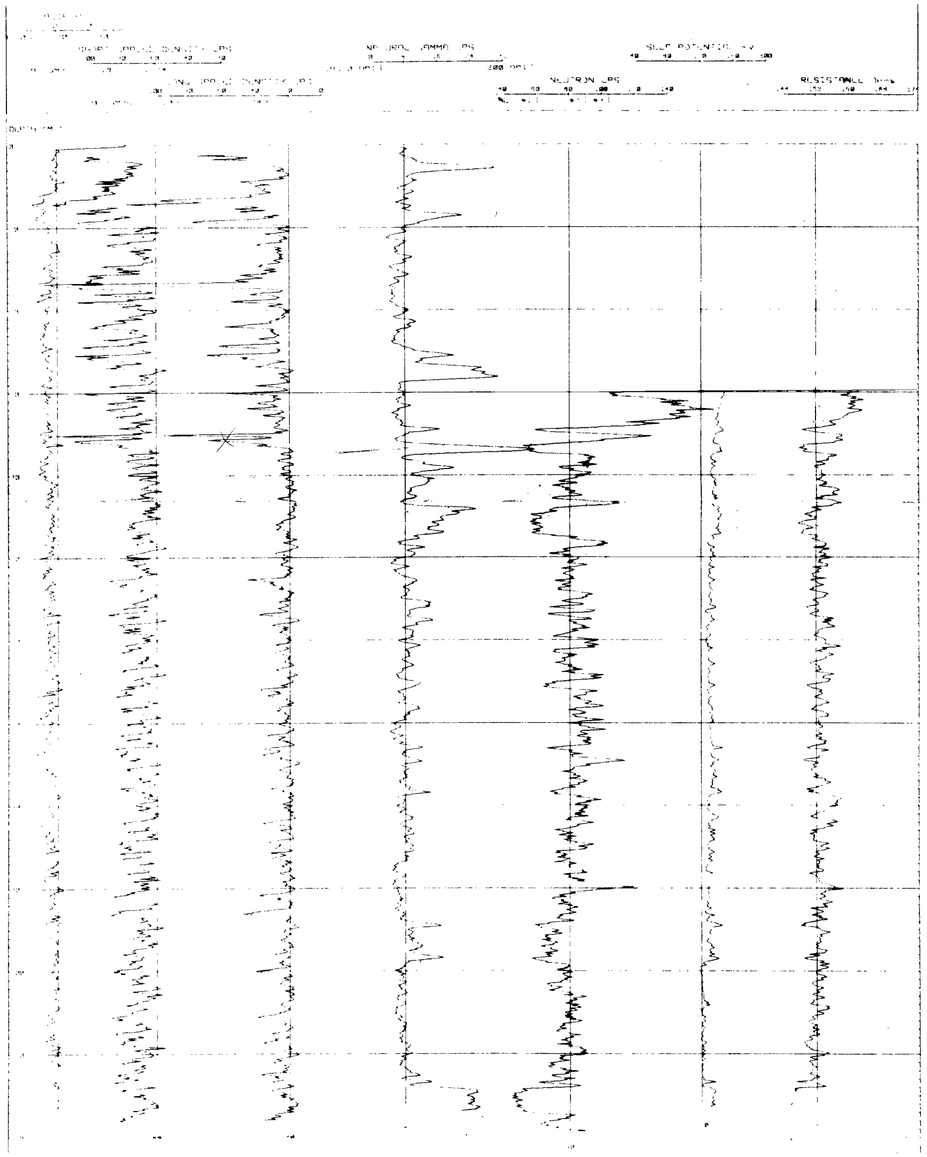


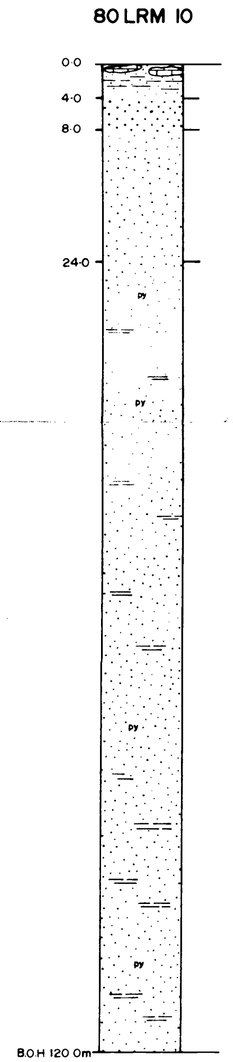


Refer to Plan N° SAa 600 for Legend

ENV 3973-18

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 9 SHEET REF: KIMBA SI53-7		
Geol: M.F.	Date: Oct 1980	Report N° 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N° SAa601/9

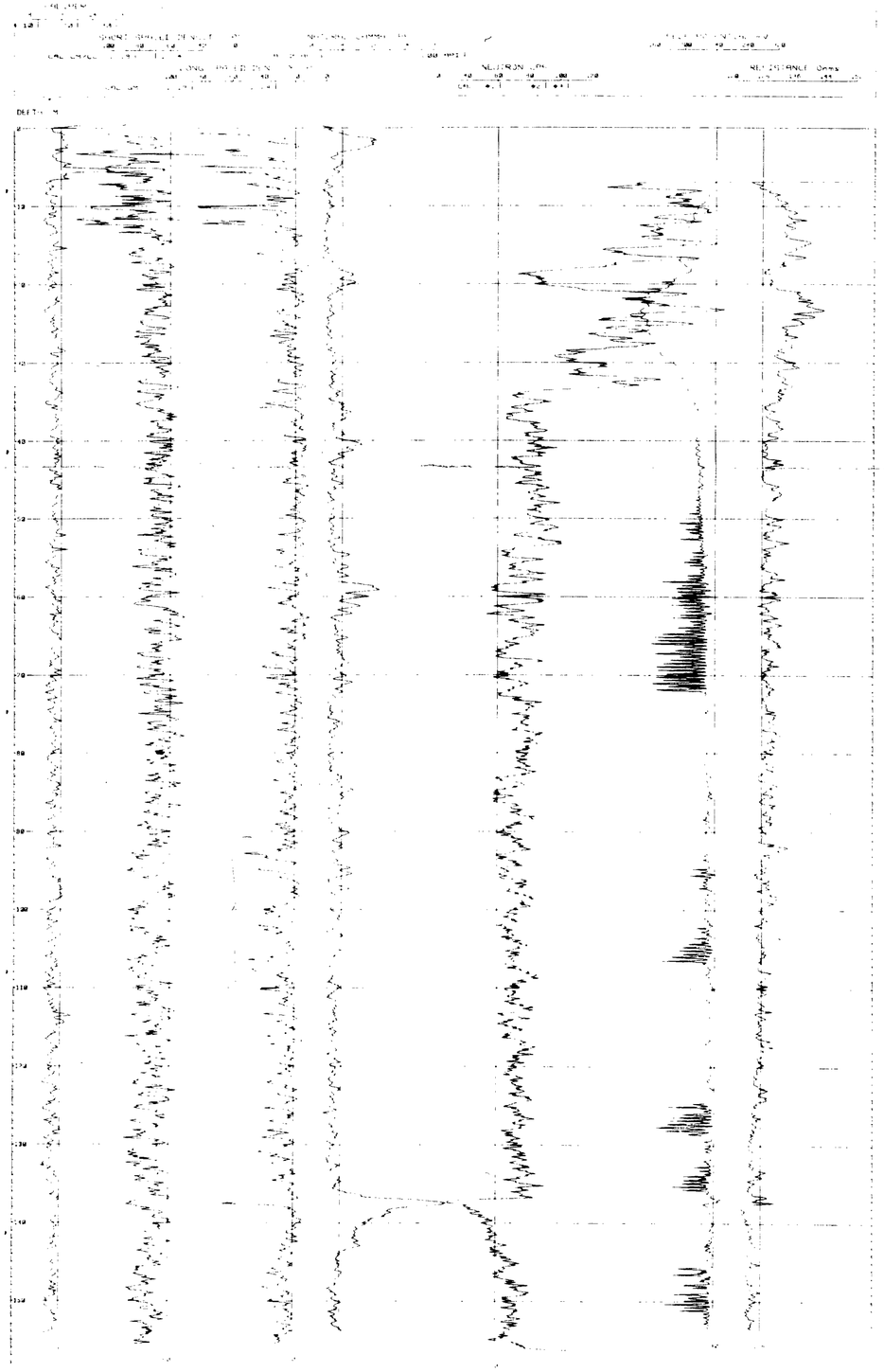


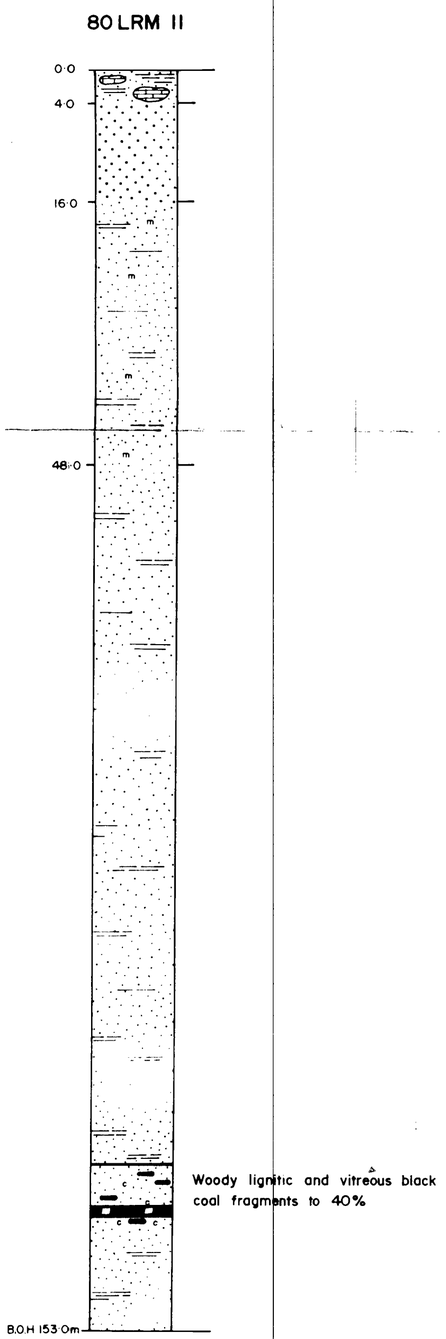


Refer to Plan N° SAa 600 for Legend.

ENV 3973-19

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 10 SHEET REF KIMBA SI53-7		
Geol: M.F.	Date: Oct 1980	Report N° 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N° SAa601/10

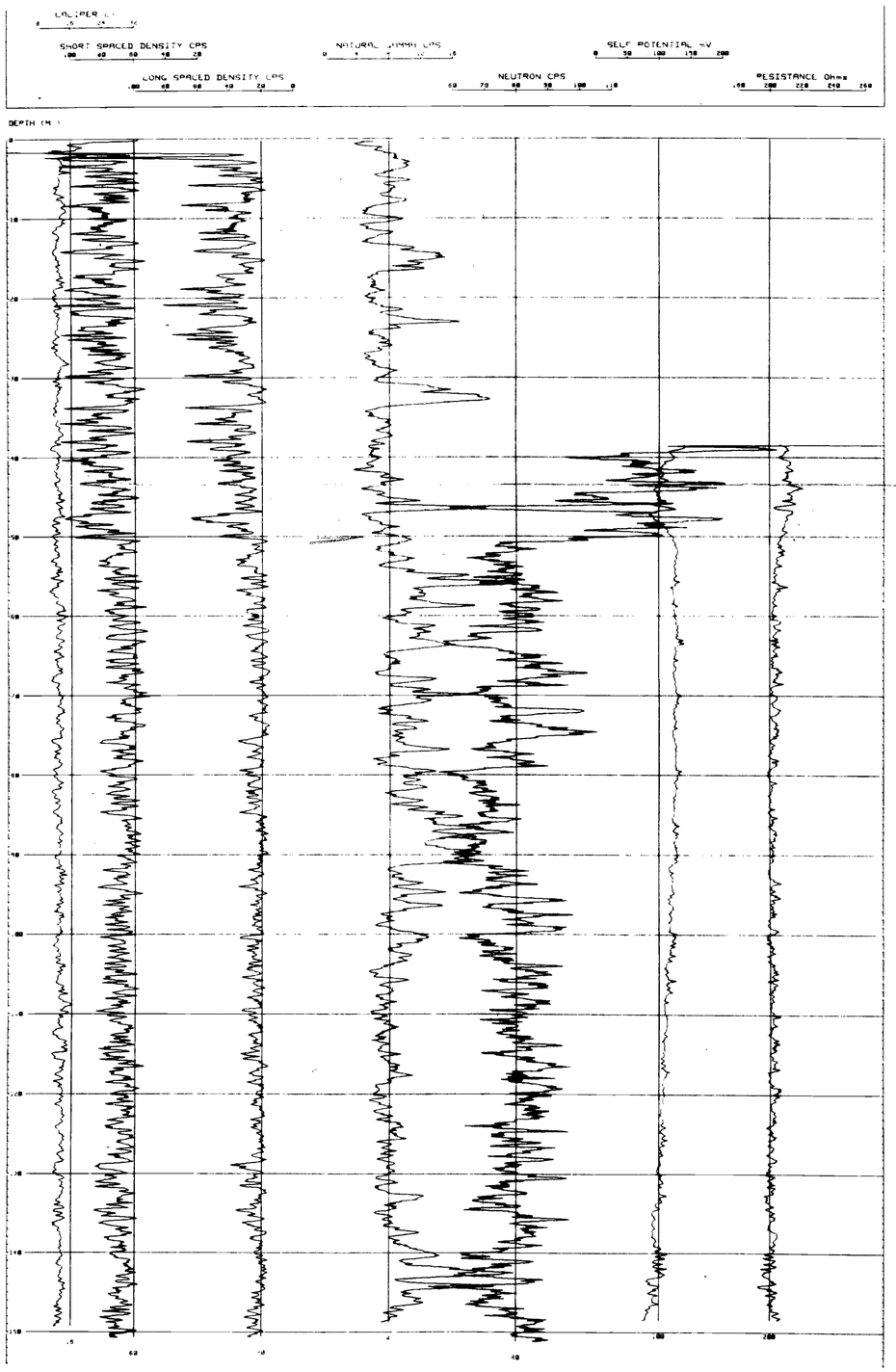


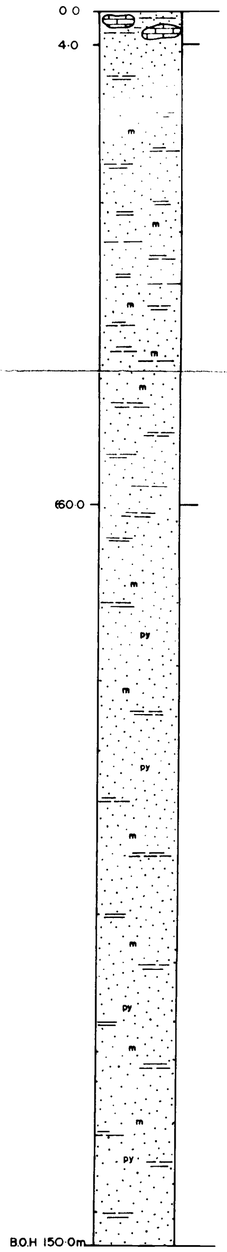


Refer to Plan N° SAa 600 for Legend

ENV 3973-20

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION		
HOLE 80 LRM 11		
SHEET REF: KIMBA SI53-7		
Geol: M.F.	Date: Oct. 1980	Report N° 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N° SAa601/11





Refer to Plan N° SAa 600 for Legend

ENV. 3973-21

C.R.A. EXPLORATION PTY. LTD.

POLDA BASIN

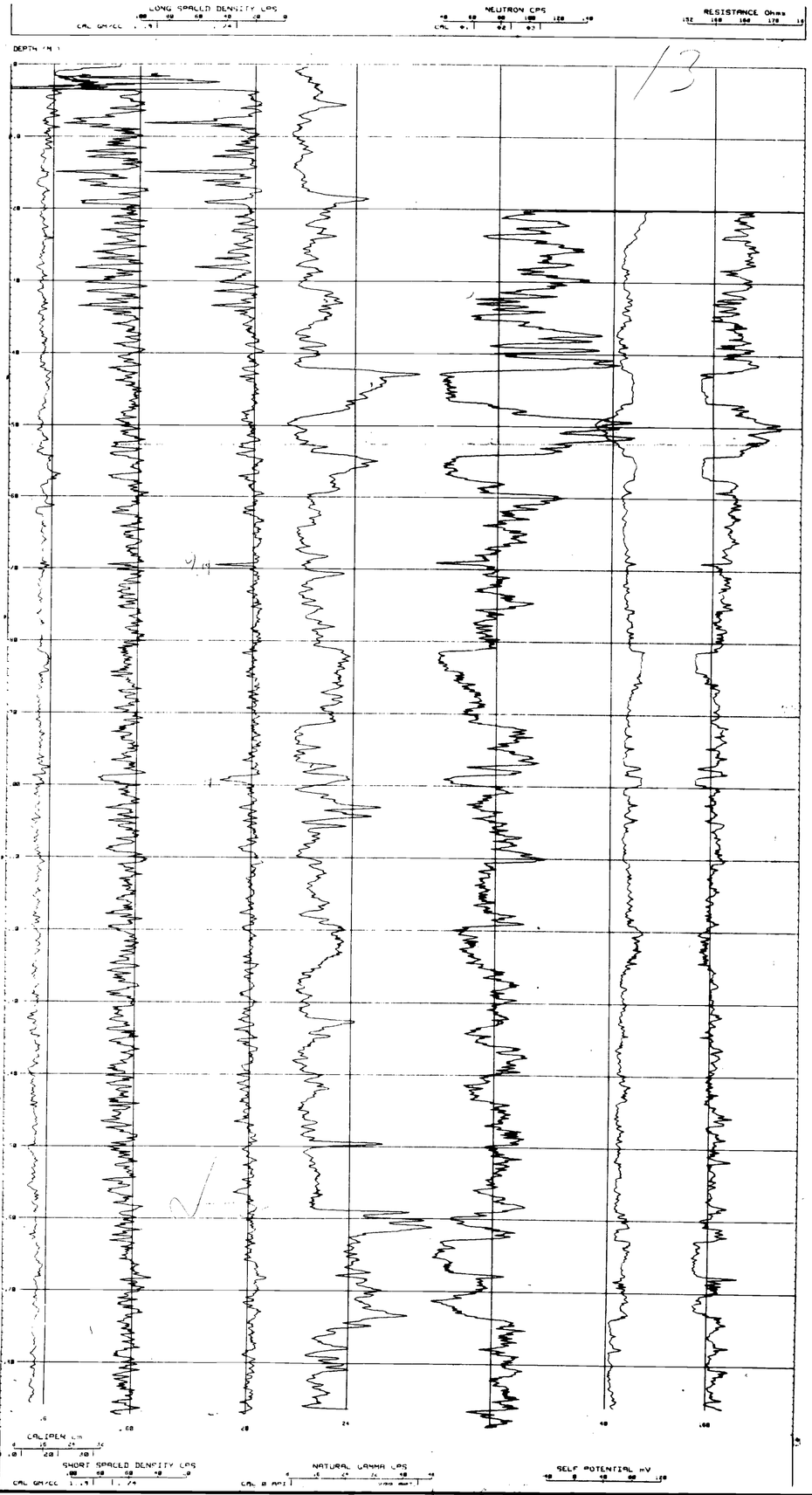
1980 DRILLING PROGRAM

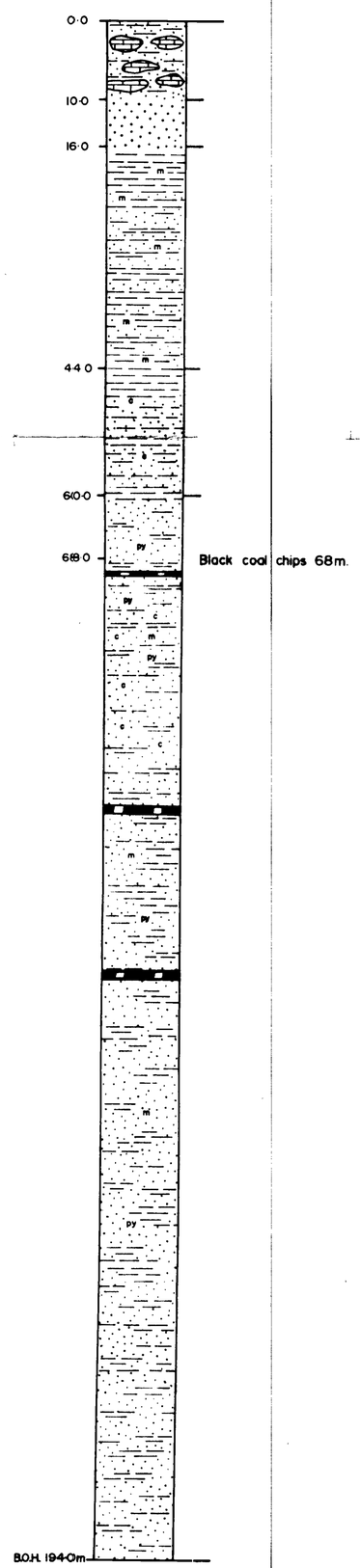
GEOLOGICAL AND GEOPHYSICAL CROSS SECTION

HOLE 80 LRM 12

SHEET REF: KIMBA SI53-7

Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N° SAa601/12

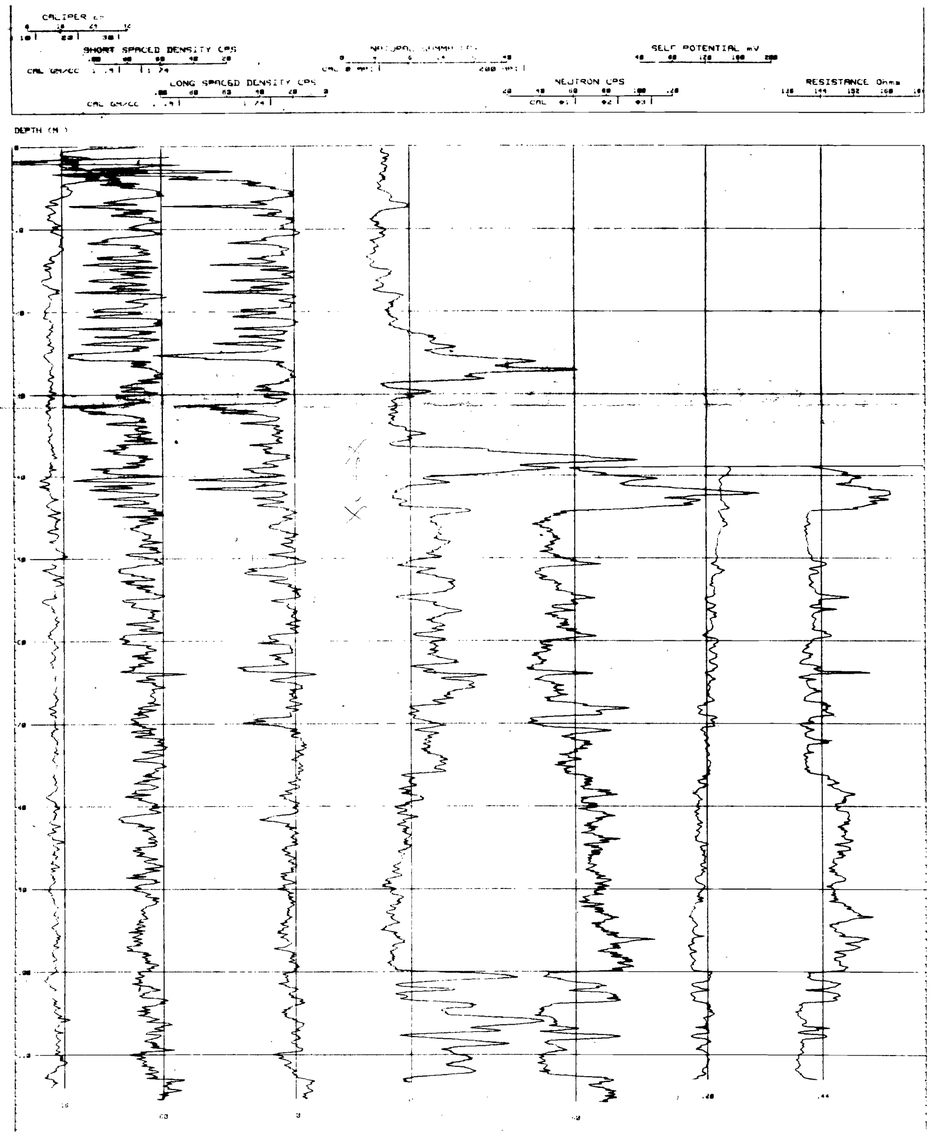


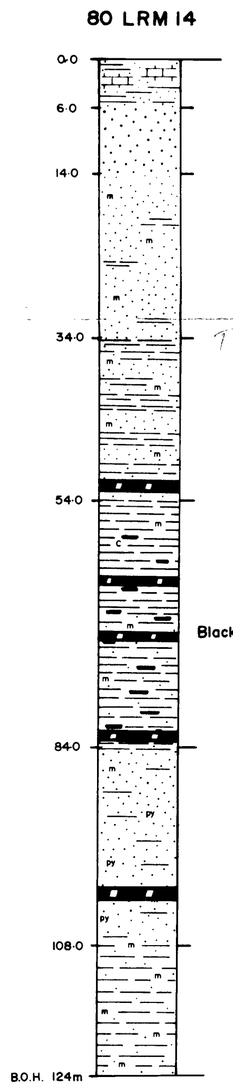


Refer to Plan N° SAa 600 for Legend

ENV. 3973-22

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 13 SHEET REF: KIMBA SI53-7		
Geol: M.F.	Date: Oct 1980	Report N° 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N° SAa601/13



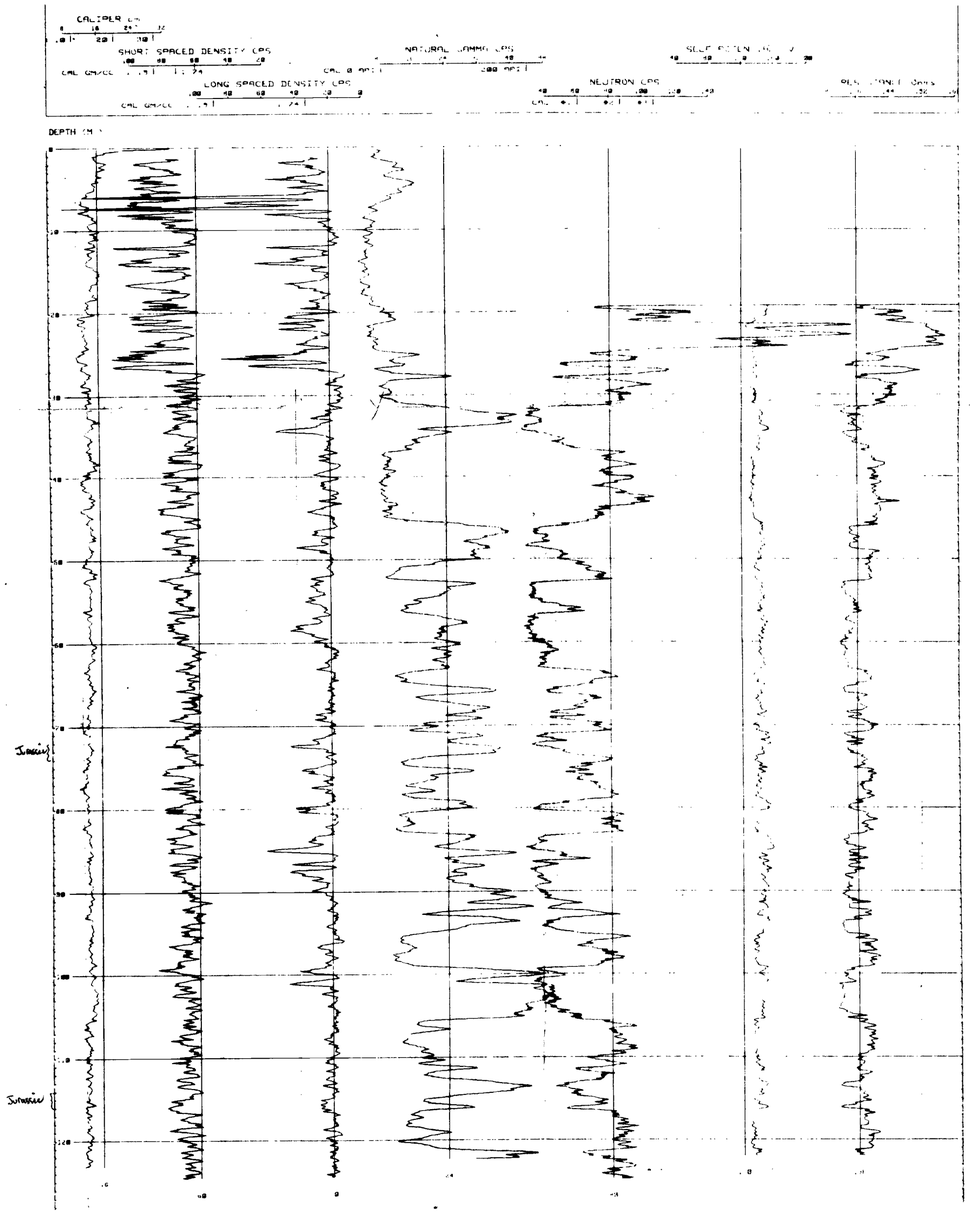


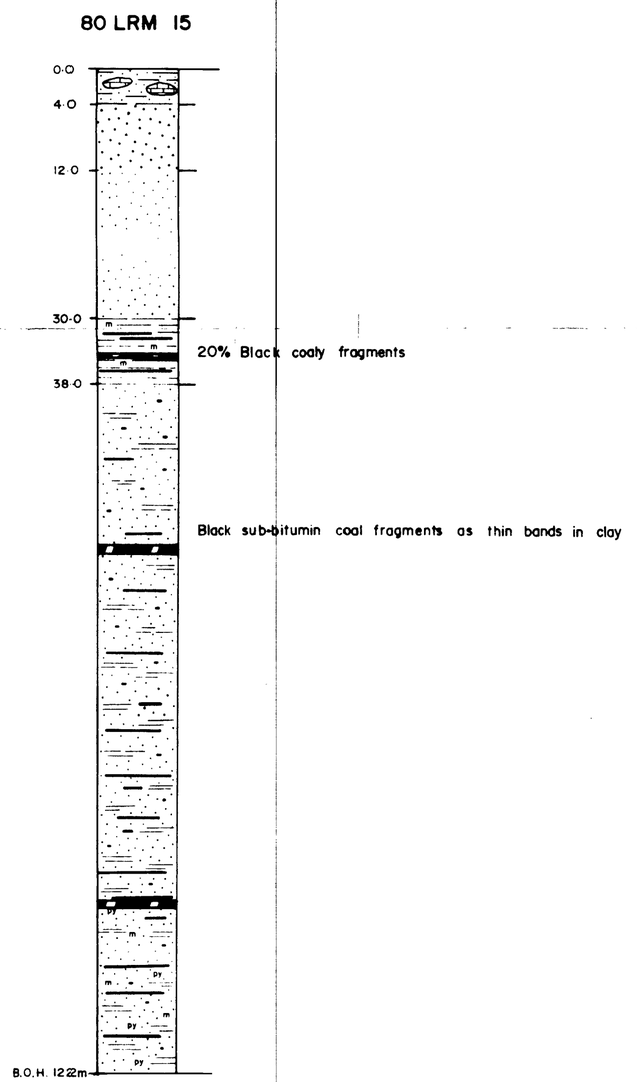
Black coal chips > 5 - 10%

Refer to Plan N°: SAa 600 for Legend.

ENV 3973-23

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM		
GEOLOGICAL AND GEOPHYSICAL CROSS SECTION		
HOLE 80LRM 14		
Sheet Ref: Kimba SI53-7		
Geol: M.F.	Date: Oct. 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/14





Refer to Plan N° SAa 600 for Legend.

ENV. 3973-24

C.R.A. EXPLORATION PTY. LTD.

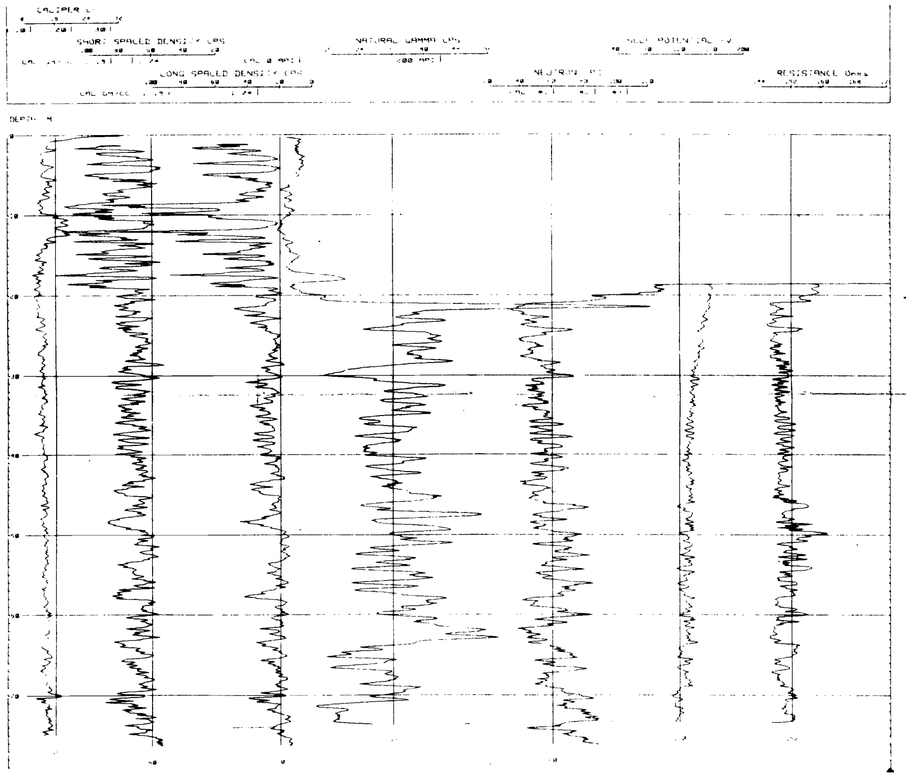
POLDA BASIN

1980 DRILLING PROGRAM
GEOLOGICAL AND GEOPHYSICAL CROSS SECTION

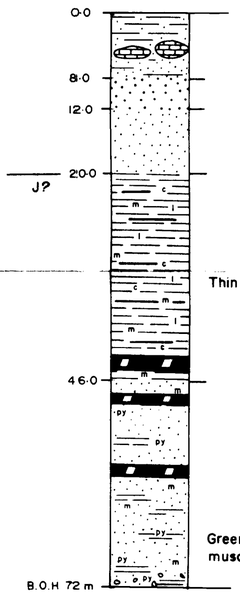
HOLE 80 LRM 15

SHEET REF: KIMBA SI53-7

Geol.: M.F.	Date: Oct·1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/15



80 LRM16



Thin black–brown sub bituminous coaly bands and partings.

Green clay lithic fragments quartz muscovite, muscovite schist and well rounded quartz pebbles.

Refer to Plan N°: SAa 600 for Legend

ENV 3973-25

C.R.A. EXPLORATION PTY. LTD.

POLDA BASIN

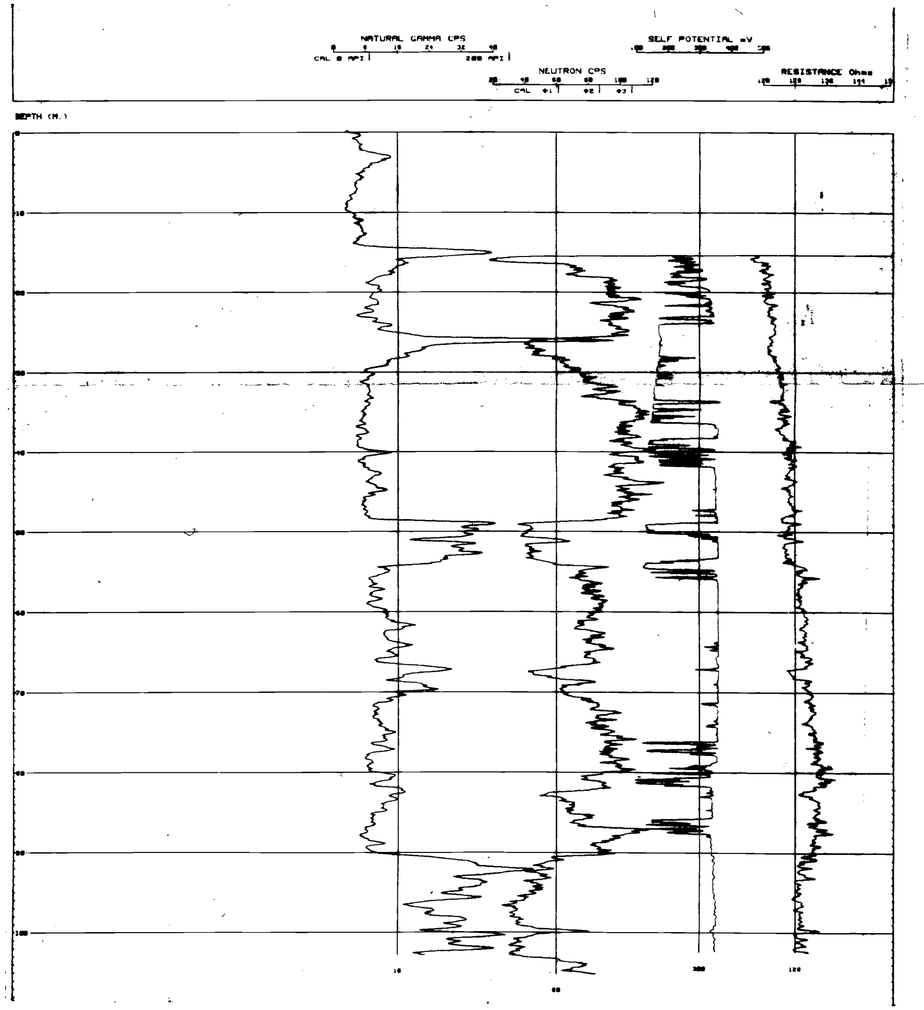
1980 DRILLING PROGRAM

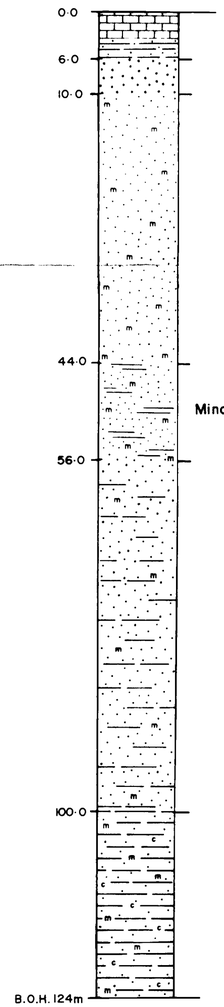
GEOLOGICAL AND GEOPHYSICAL CROSS SECTION

HOLE 80 LRM 16

Sheet Ref Kimba SI53-7

Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N° SAa601/16

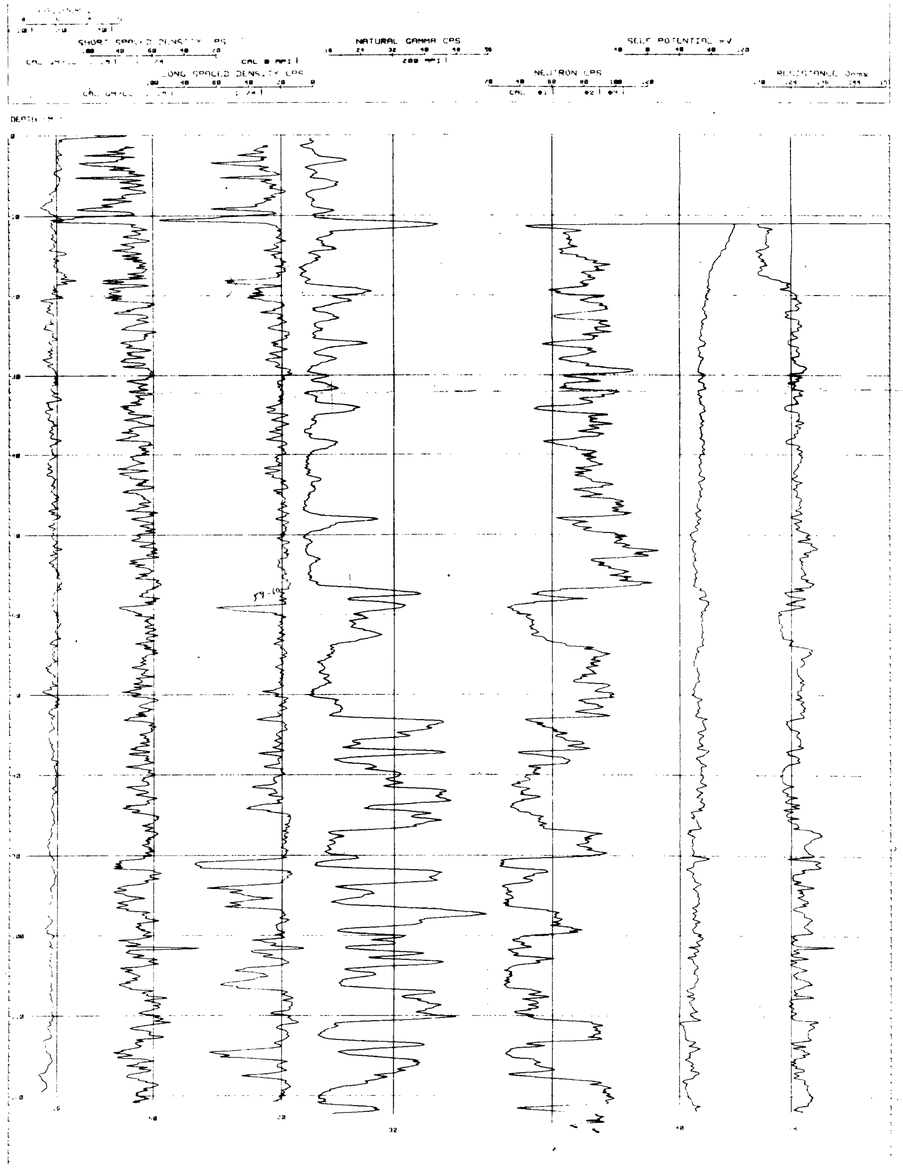


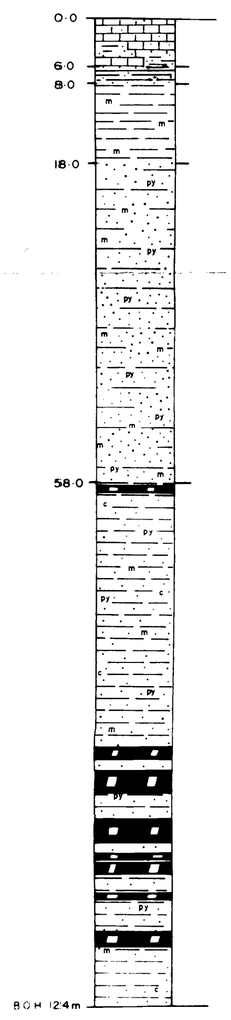


Refer to Plan N°: SAa 600 for Legend.

ENV 3973-26

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM		
GEOLOGICAL AND GEOPHYSICAL CROSS SECTION		
HOLE 80 LRM 17		
Sheet Ref: Kimba SI53-7		
Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1: 500	Plan N°: SAa601/17

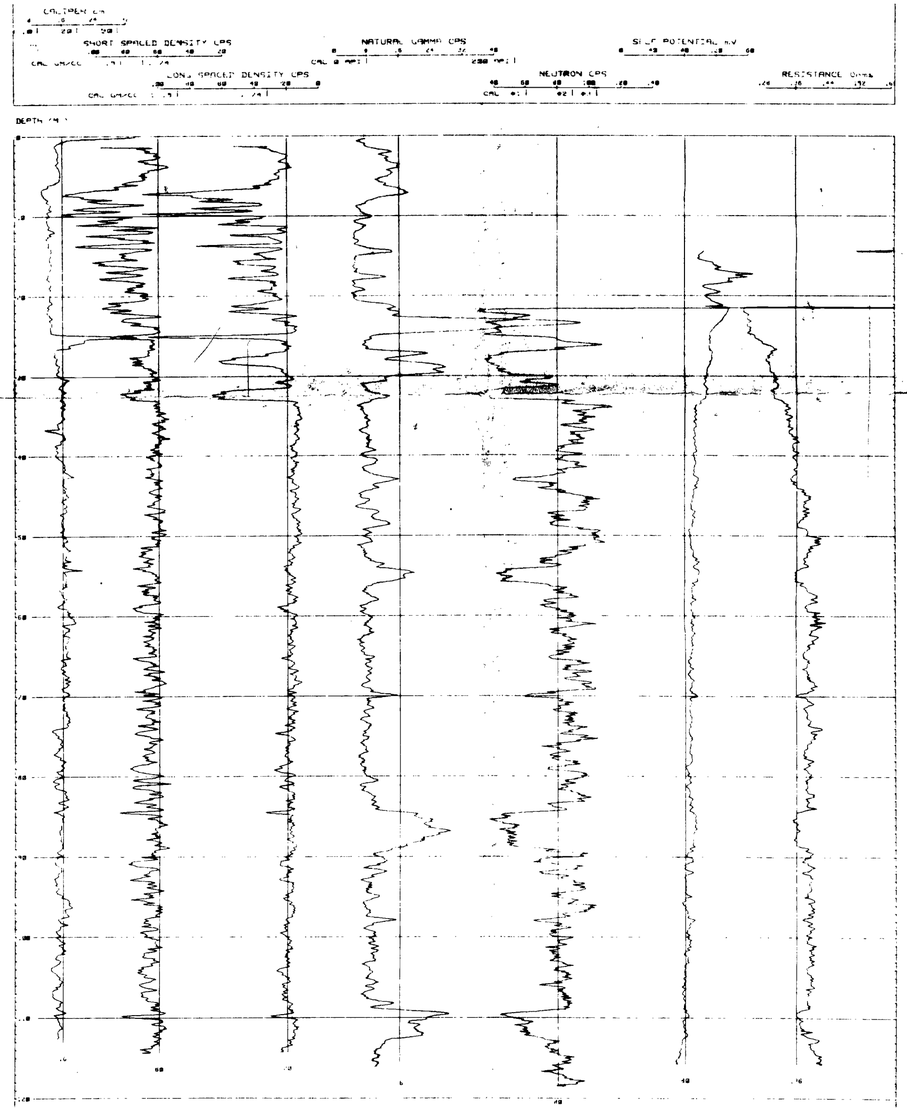


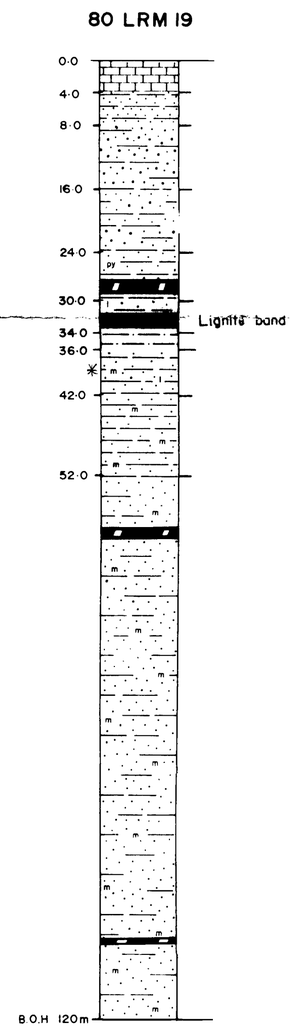


Refer to Plan N°: SAa 600 for Legend.

ENV. 3973-27

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM		
GEOLOGICAL AND GEOPHYSICAL CROSS SECTION		
HOLE 80 LRM 18		
Sheet Ref: Kimba SI53-7		
Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/18

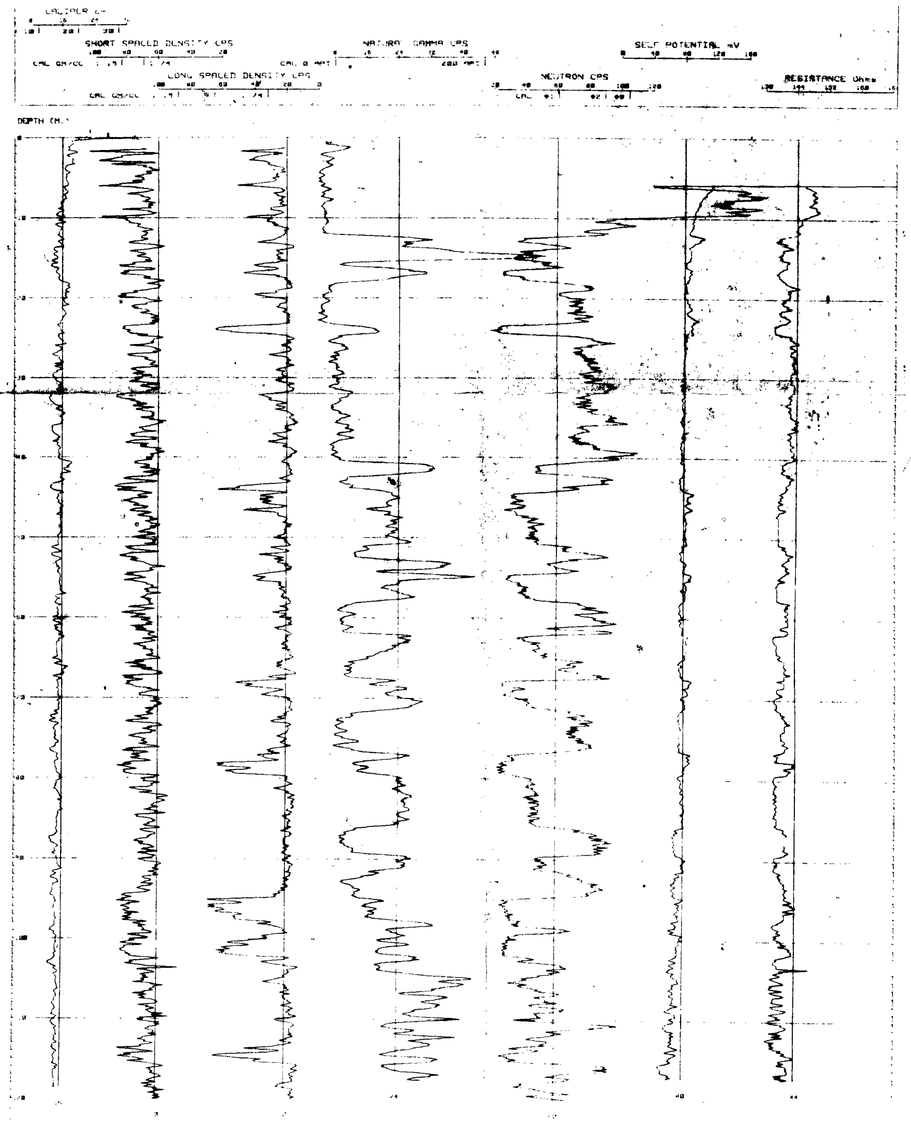


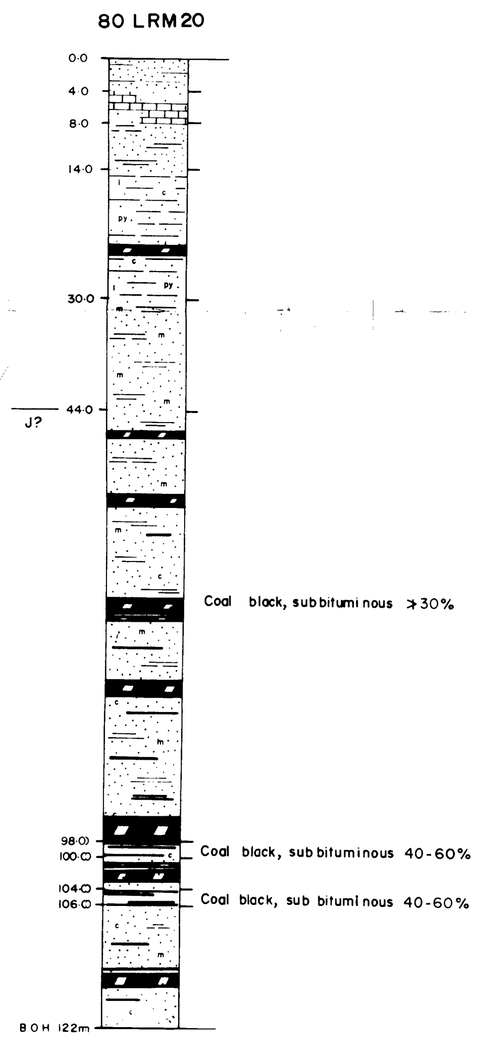


Refer to Plan N°: SA a 600 for Legend

ENV. 3973-28

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN 1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 19 Sheet Ref : Kimba SI53-7		
Geol: M.F.	Date : Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale : 1:500	Plan N°: SAa601/19

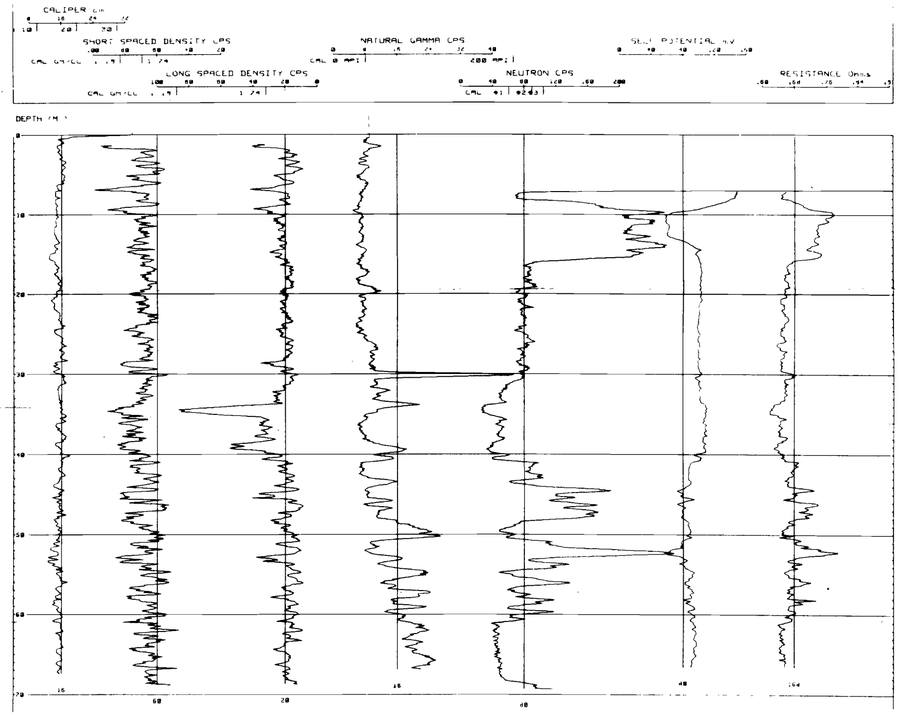




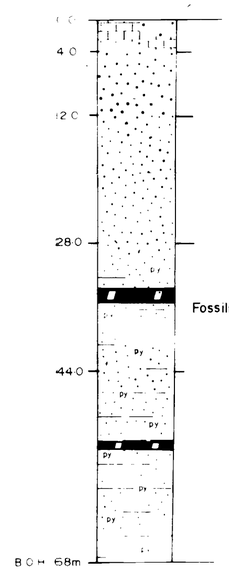
Refer to Plan N°: SAa 600 for Legend.

ENV 3973-29

C.R.A. EXPLORATION PTY. LTD		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION		
HOLE 80 LRM 20 Sheet Ref: Kimba SI53-7		
Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/20



80 LRM 21



Refer to Plan N°: SAa 600 for Legend.

ENV 3973-30

C.R.A. EXPLORATION PTY. LTD.

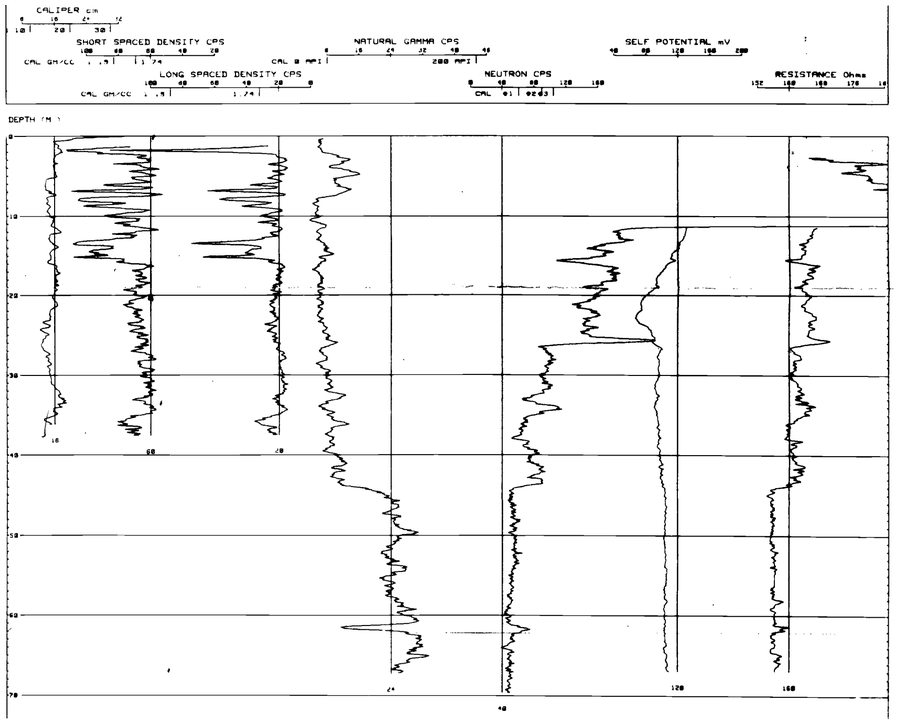
POLDA BASIN

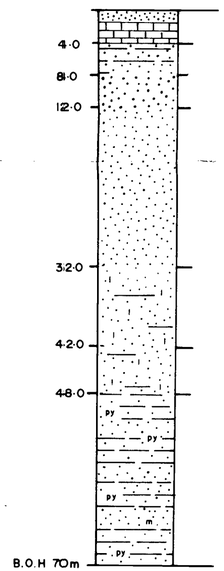
1980 DRILLING PROGRAM
GEOLOGICAL AND GEOPHYSICAL CROSS SECTION

HOLE 80 LRM 21

Sheet Ref: Kimba SI53-7

Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/21

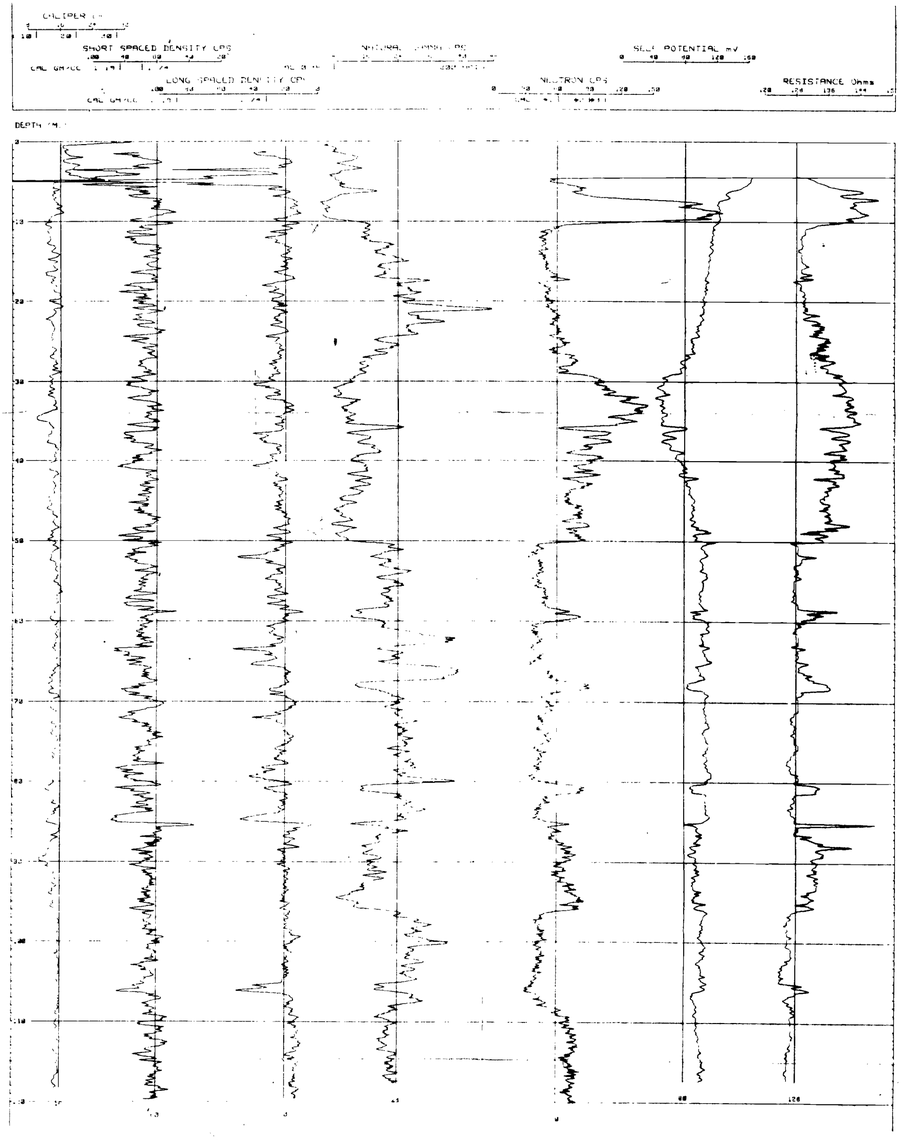


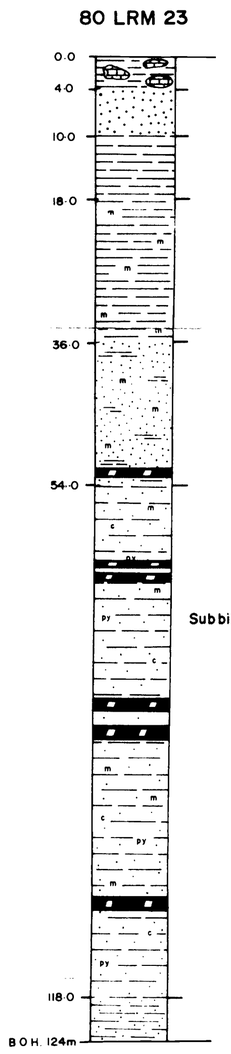


Refer to Plan N°: SAa 600 for Legend.

ENV 3973-31

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION		
HOLE 80 LRM 22		
Sheet Ref: Kimba SI53-7		
Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/22

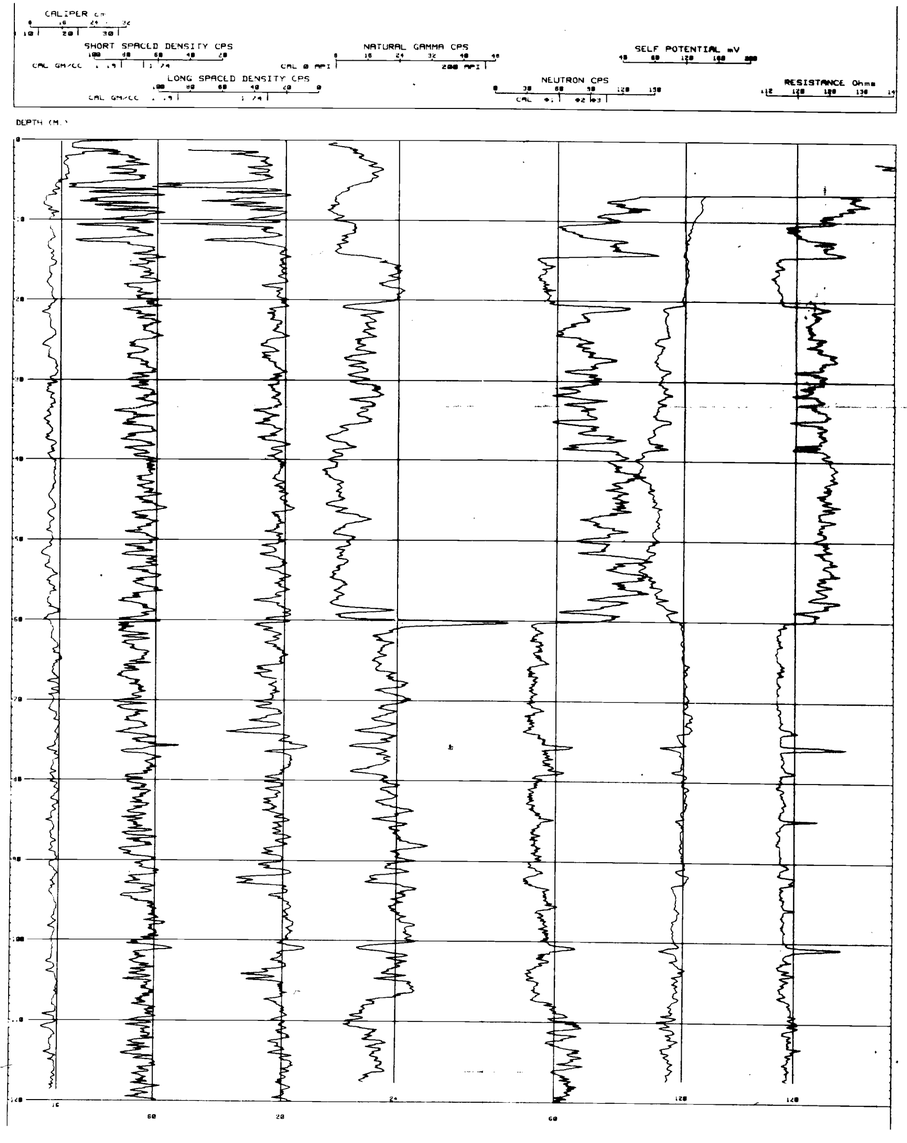


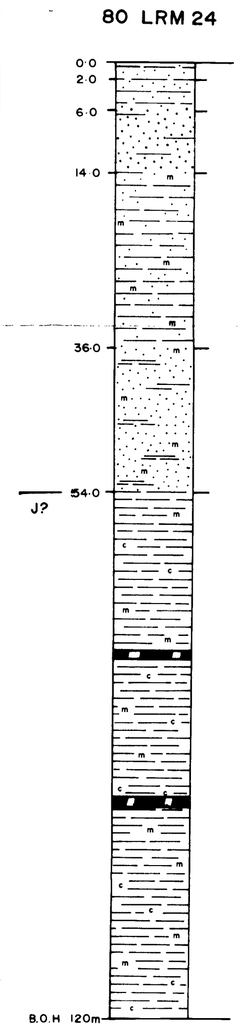


Refer to Plan N°: SAa 600 for Legend.

ENV 3973-32

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 23 Sheet Ref: Kimba SI53-7		
Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/23

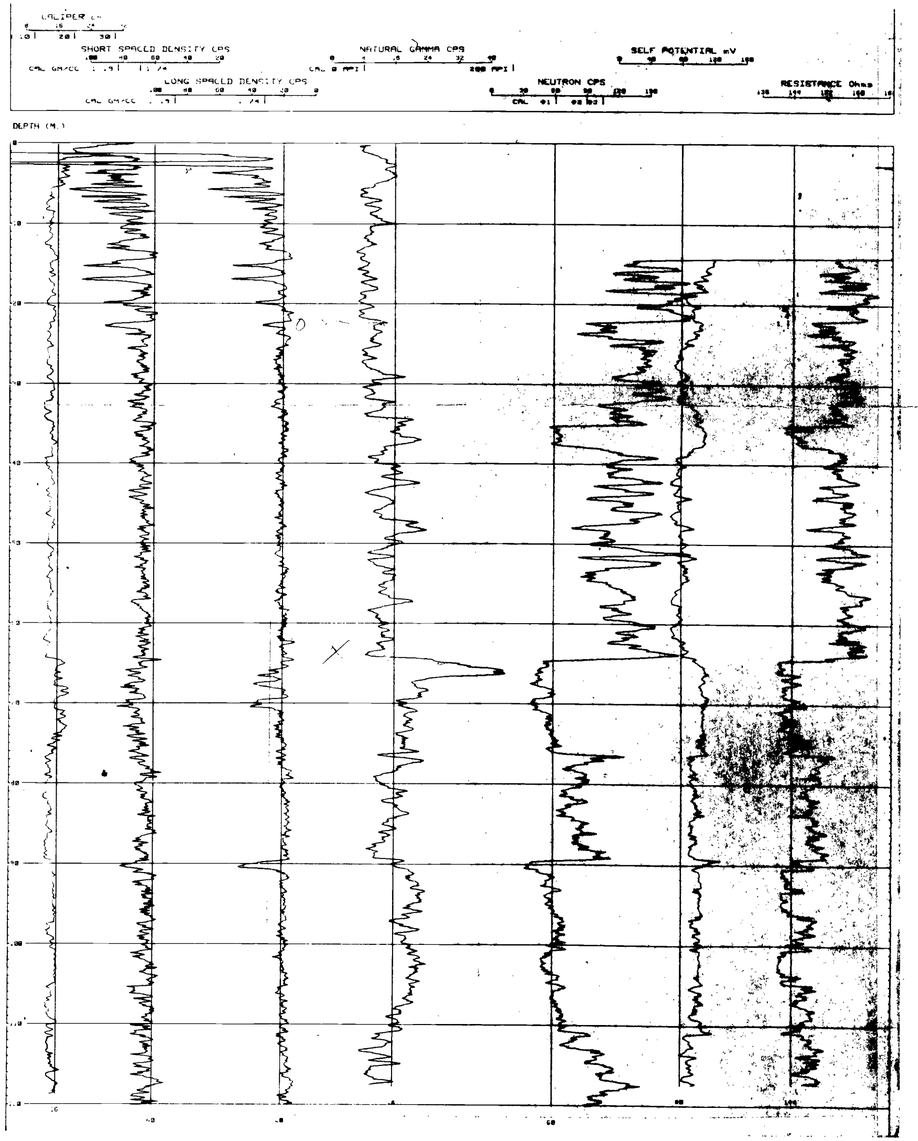


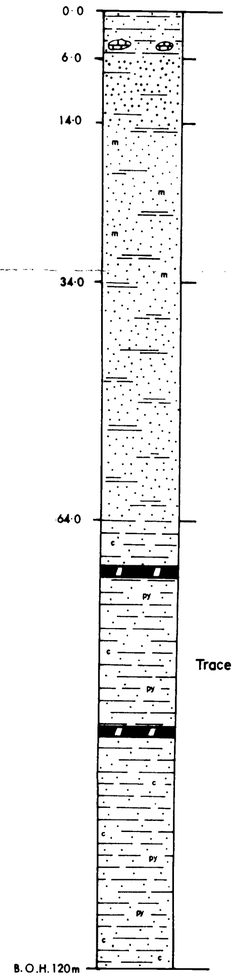


Refer to Plan N°: SAa 600 for Legend.

ENV 3973-33

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION		
HOLE 80 LRM 24		
Sheet Ref: Kimba SI53-7		
Geol.: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/24



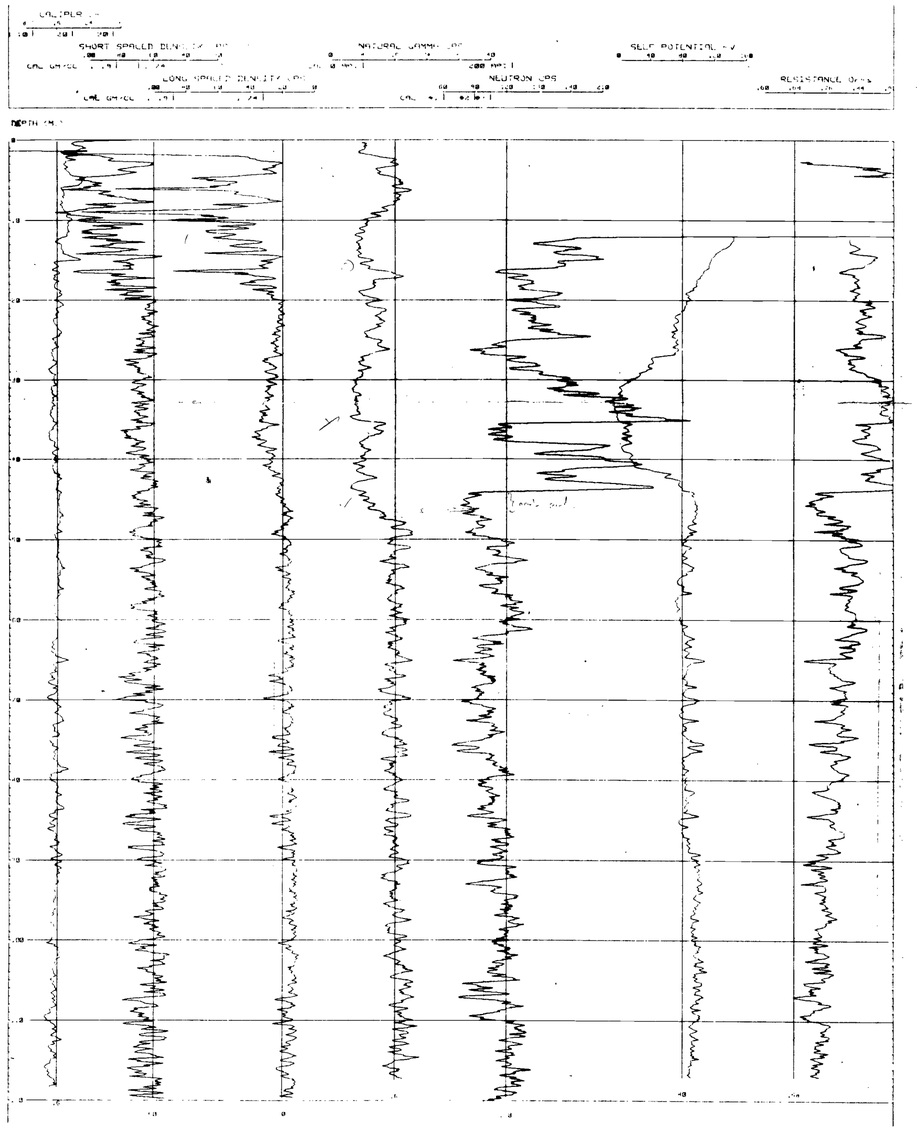


Trace black subbituminous coal

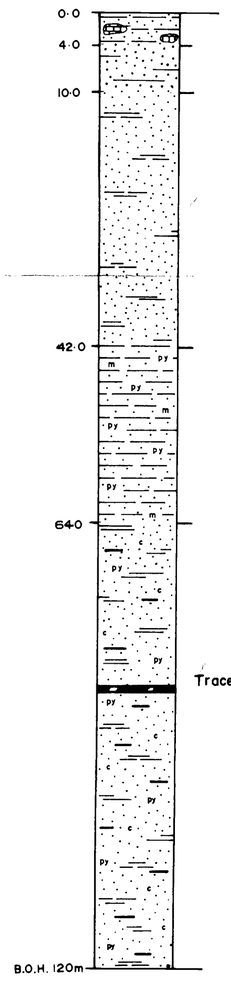
Refer to Plan N°: SAa 600 for Legend.

ENV 3973-34

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM		
GEOLOGICAL AND GEOPHYSICAL CROSS SECTION		
HOLE 80 LRM 25		
Sheet Ref: Kimba SI53-7		
Geol.: M.F	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/25



80 LRM 26

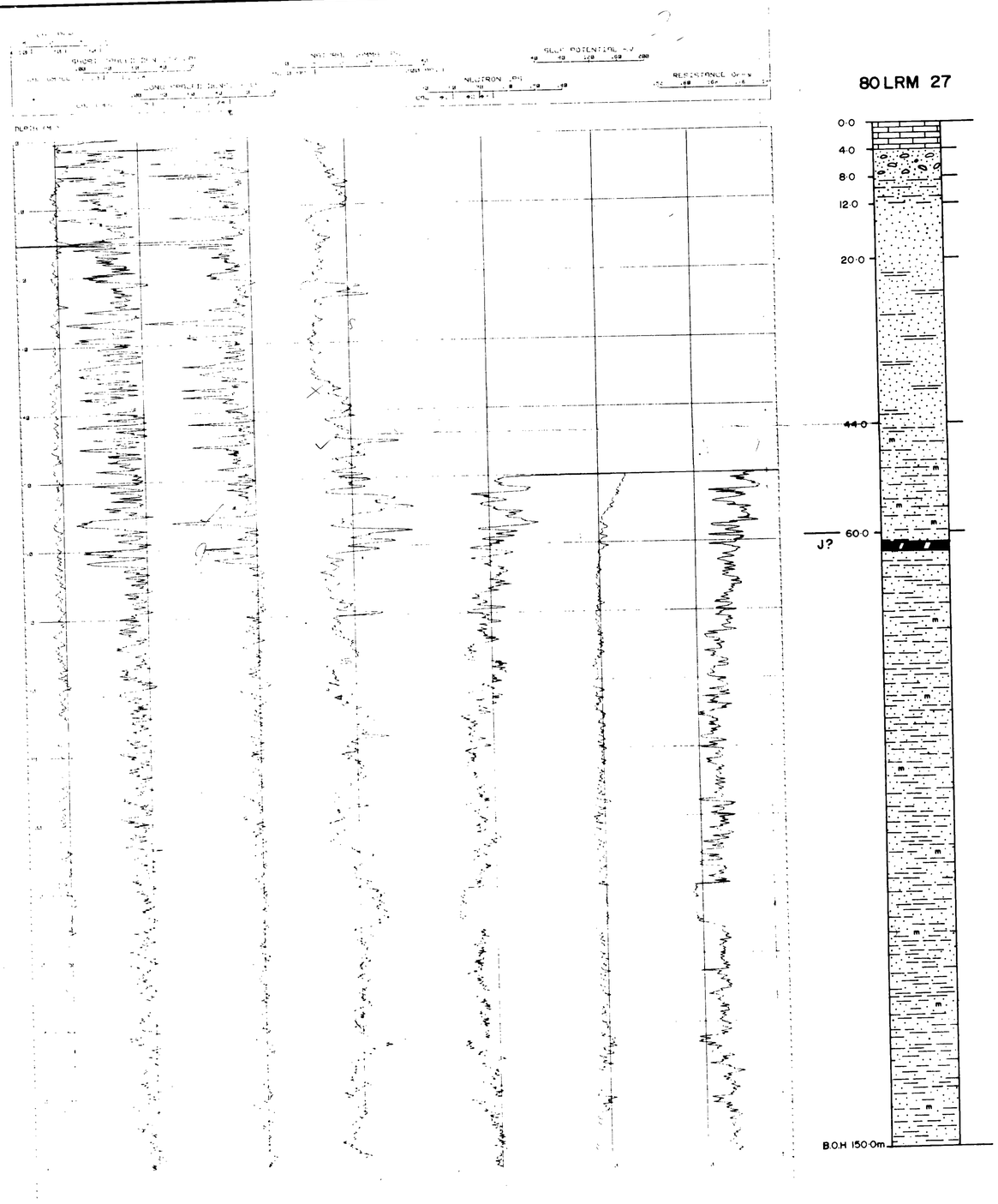


Trace black brown subbituminous coal fragments

Refer to Plan N°: SAa 600 for Legend.

ENV. 3973-35

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION		
HOLE 80 LRM 26		
Sheet Ref: Kimba SI53-7		
Geol: M.F.	Date: Oct 1980	Report N° 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N SAa 601/26



Refer to Plan N°: SA a 600 for Legend.

ENV. 3973-36.

C.R.A. EXPLORATION PTY. LTD.

POLDA BASIN

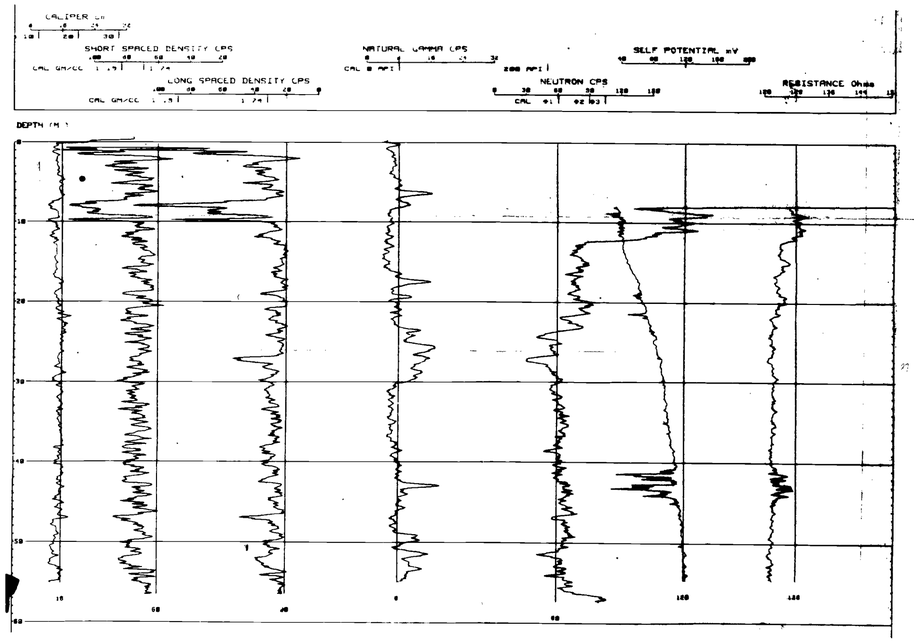
1980 DRILLING PROGRAM

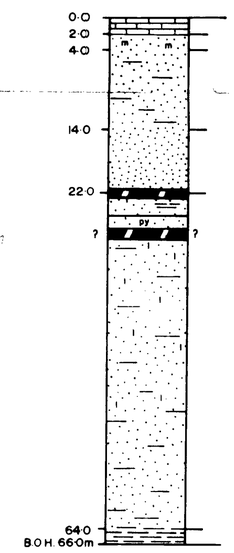
GEOLOGICAL AND GEOPHYSICAL CROSS SECTION

HOLE 80 LRM 27

Sheet Ref : Kimba SI53-7

Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/27

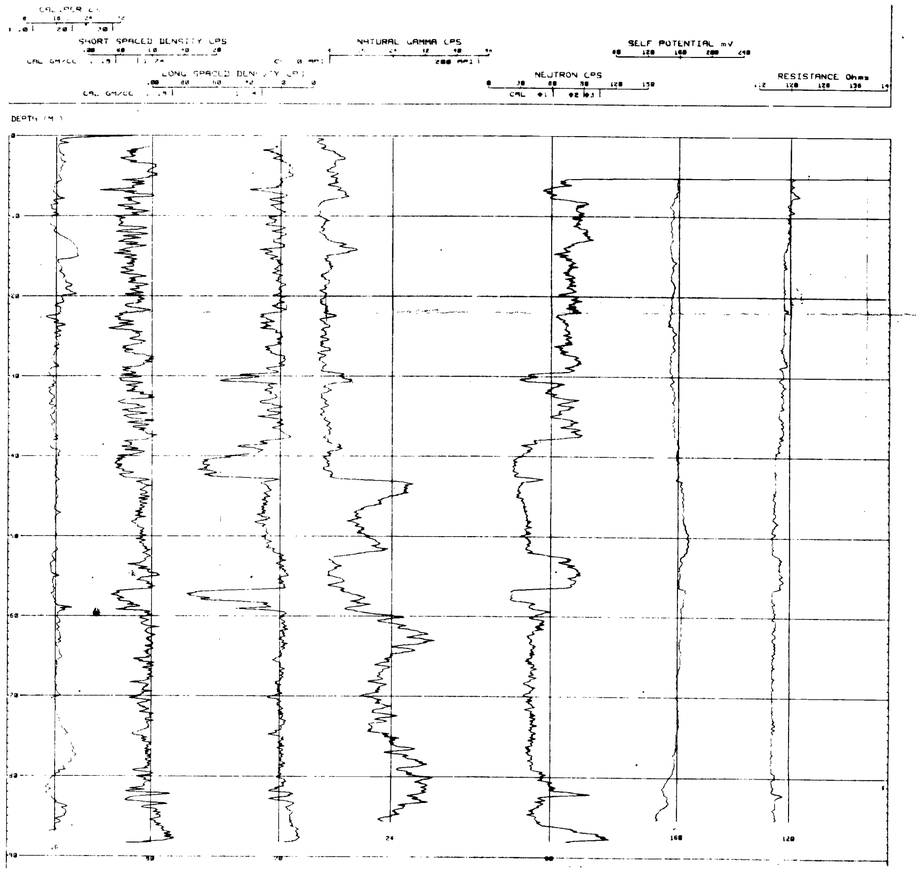


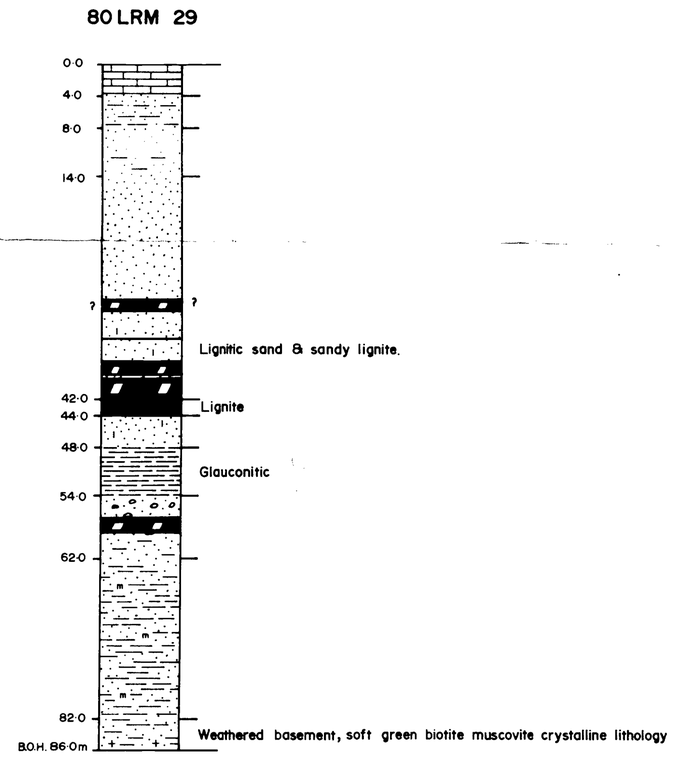


Refer to Plan N°: SAa 600 for Legend.

ENV. 3973-37.

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION		
HOLE 80 LRM 28		
Sheet Ref : Kimba SI53-7		
Geol: M.F.	Date: Oct. 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SA601/28

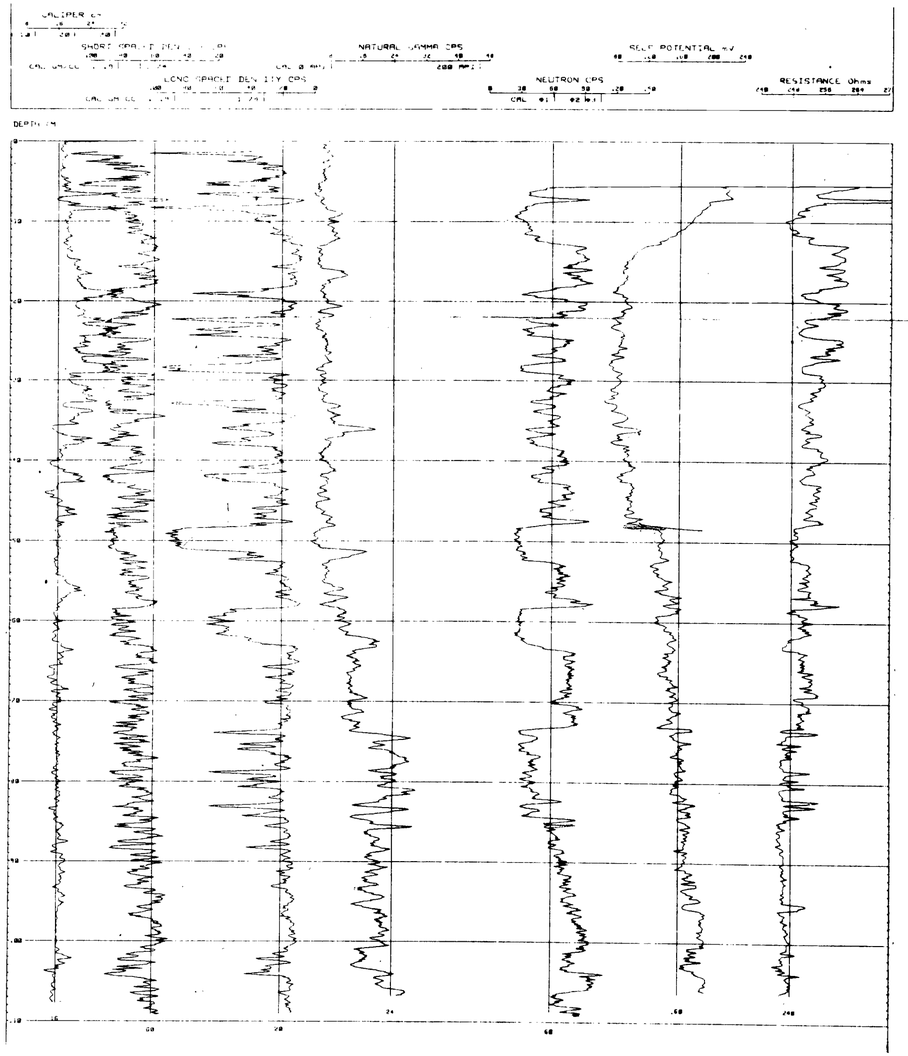




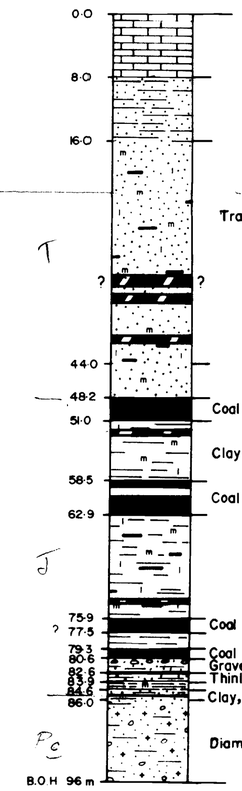
Refer to Plan N°: SAa 600 for Legend.

ENV 3973-38

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 29 Sheet Ref: Kimba SI53-7		
Geol: M.F.	Date: Oct. 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/29



COMPOSITE LOG OF
80 LRM 30c
AND
80 LRM 30



Trace lignitic sand and coal fragments.

Coal black brown subbituminous, abundant woody fragments

Clay light grey brown micaceous lignitic with thin coal partings

Coal black brown hard blocky

Coal black brown blocky ?

Coal sub bituminous crumbly

Gravel

Thinly laminated coal

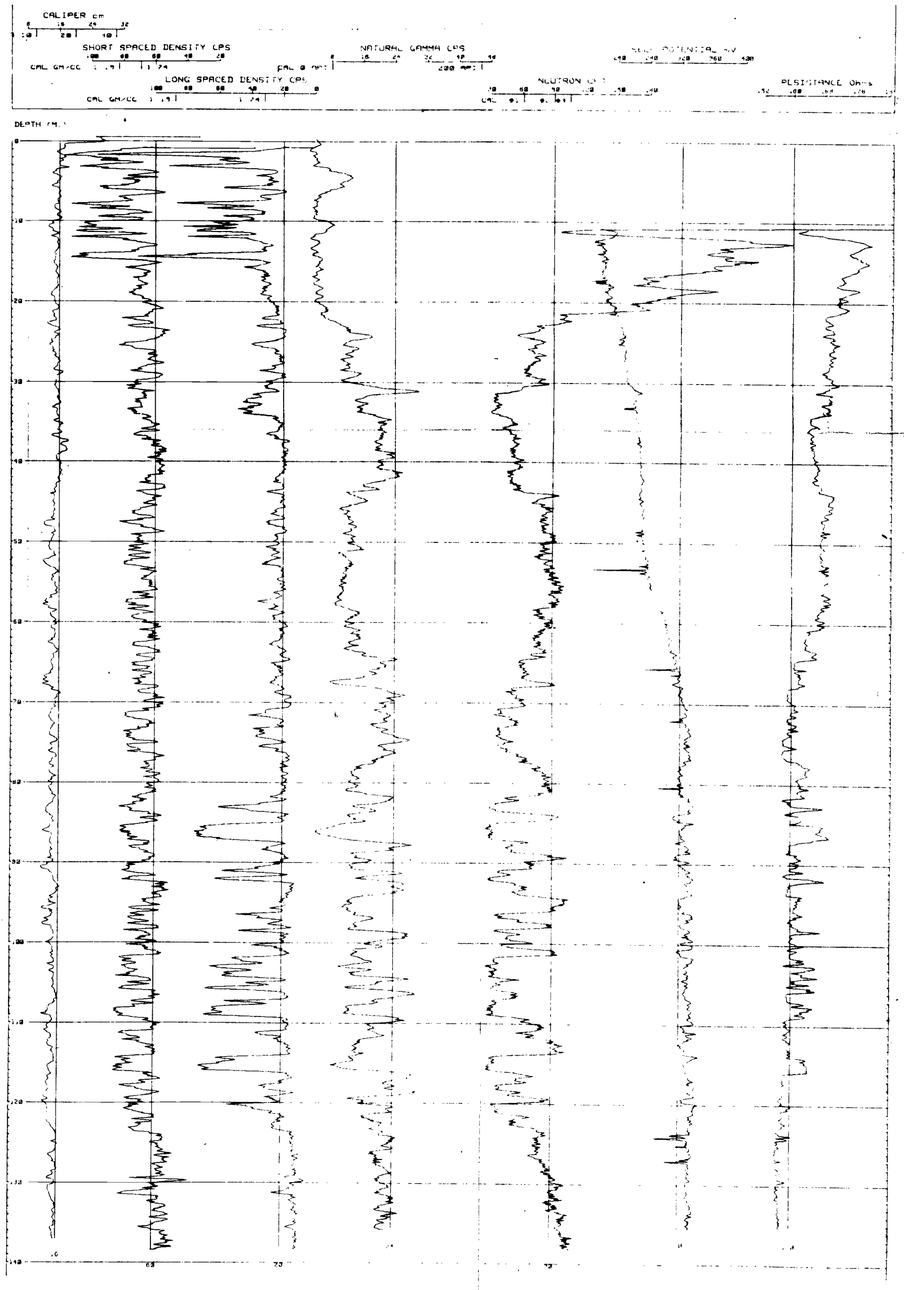
Clay, coal and sand

Diamictite, clay light green with large weathered granite fragments

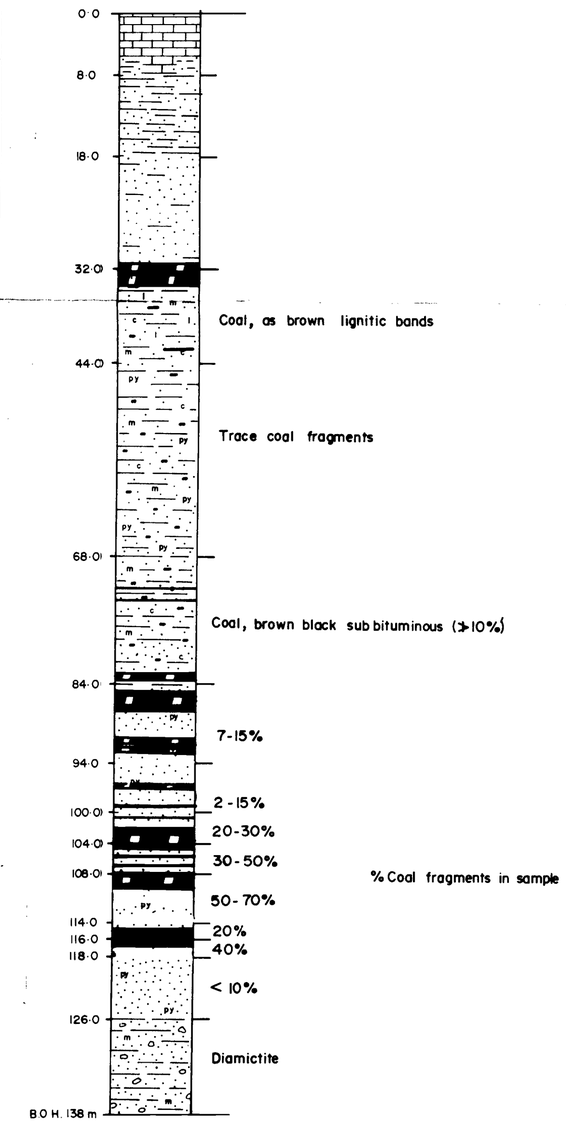
Refer to Plan N°: SAa 600 for Legend.

ENV 3973-39

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN 1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 30 Sheet Ref: Kimba SI53-7		
Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/30



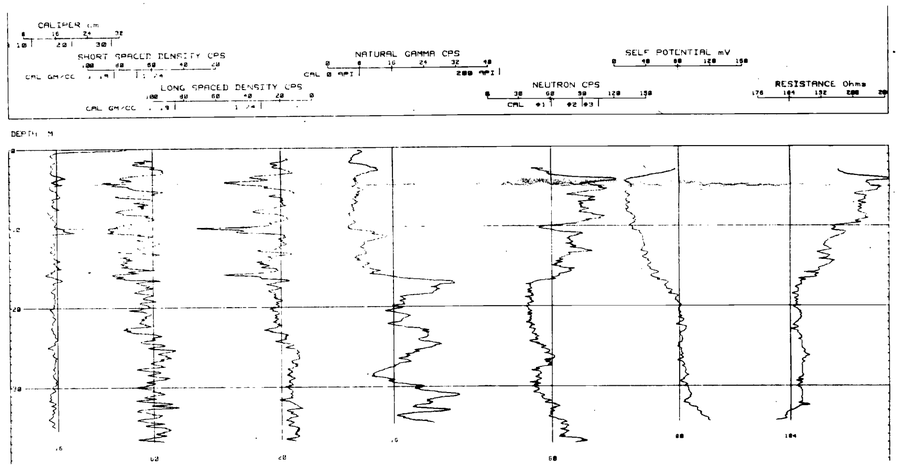
80 LRM 31

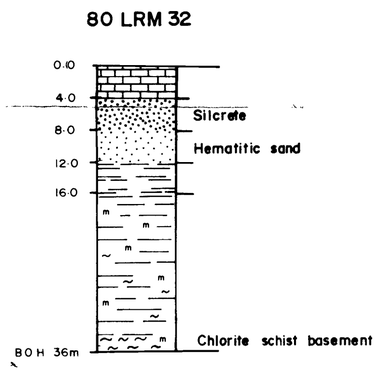


Refer to Plan N°: SAa 600 for Legend.

ENV 3973-40

C.R.A. EXPLORATION PTY. LTD		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 31 Sheet Ref: Kimba SI53-7		
Geol: M.F.	Date Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°SAa601/31

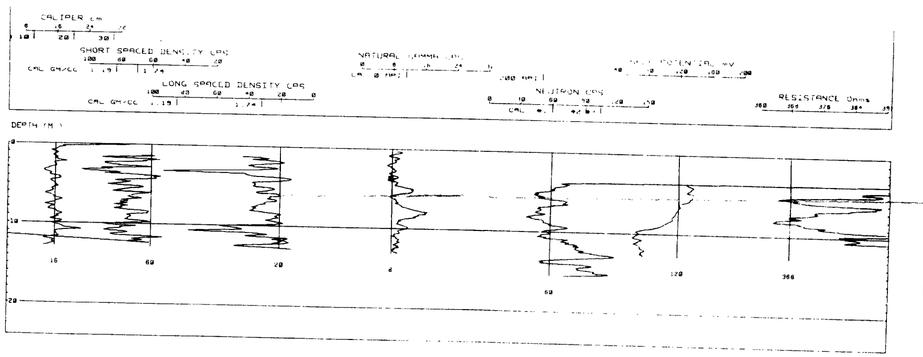




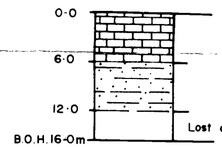
Refer to Plan N°: SA a 600 for Legend

ENV 3973-41

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 32 SHEET REF: KIMBA SI53-7		
Geol.: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/32



80 LRM 34

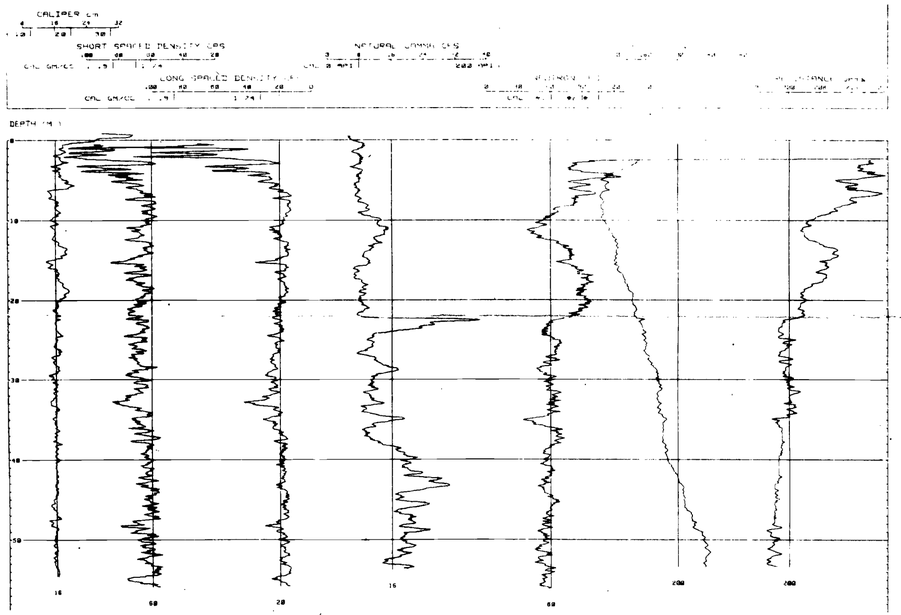


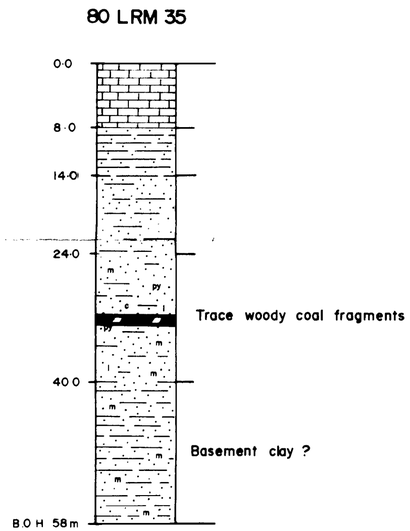
Lost circulation. No sample returned.

Refer to Plan N°: SAa 600 for Legend.

ENV 3973-42

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION		
HOLE 80 LRM 34		
SHEET REF: KIMBA SI53-7		
Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/34





Refer to Plan N°: SAa 600 for Legend.

ENV. 3973-43.

C.R.A. EXPLORATION PTY. LTD.

POLDA BASIN

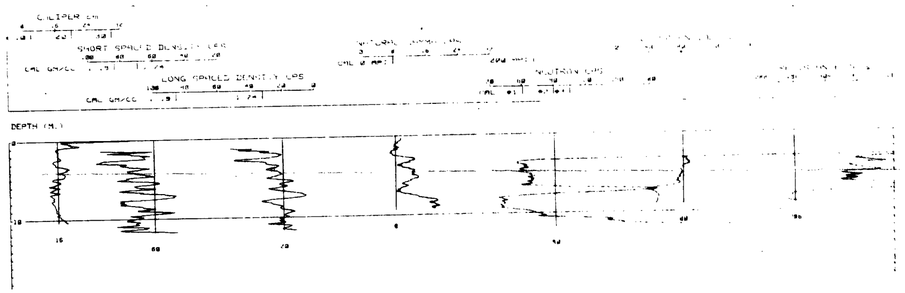
1980 DRILLING PROGRAM

GEOLOGICAL AND GEOPHYSICAL CROSS SECTION

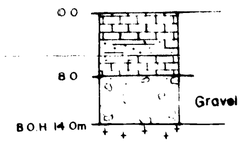
HOLE 80 LRM 35

Sheet Ref: Kimba SI53-7

Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/35



80 LRM 36

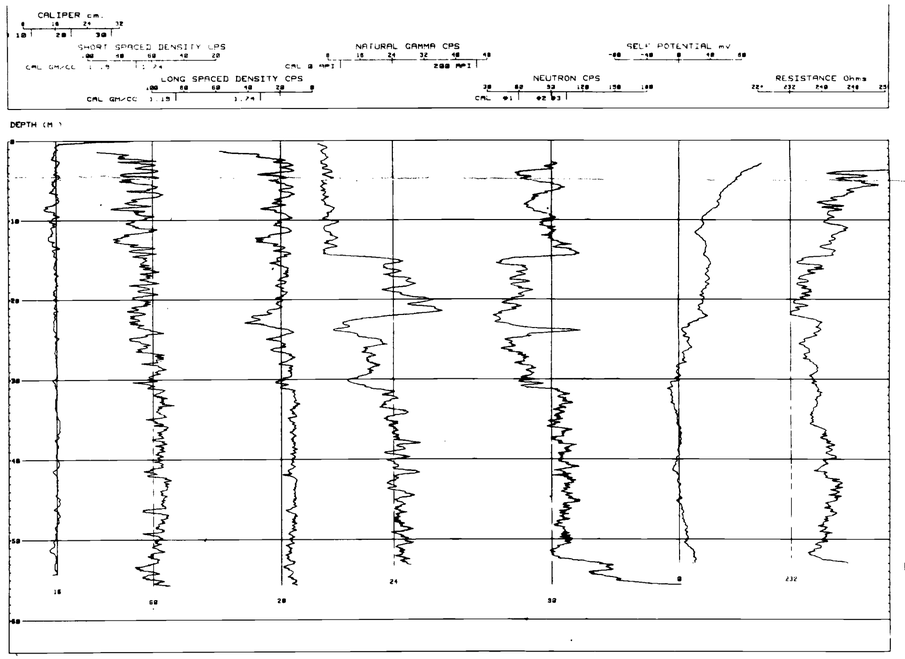


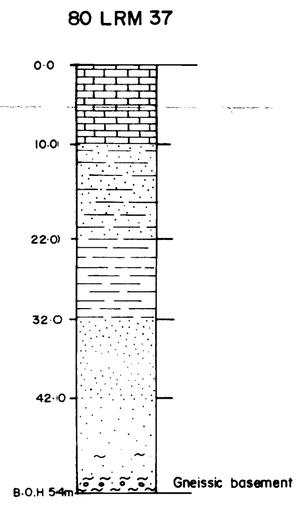
Gravel white to pink arkosic

Refer to Plan N°: SAa 600 for Legend

ENV. 3973-44.

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION		
HOLE 80 LRM 36		
SHEET REF: KIMBA S153-7		
Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/36

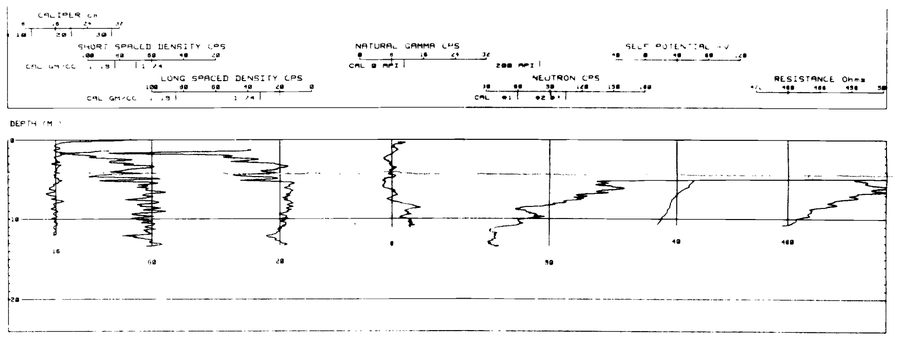




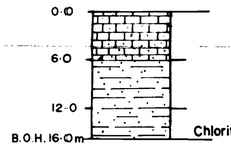
Refer to Plan N°: SAa 600 for Legend.

(ENV. 3973-45 ·

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN 1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 37 SHEET REF: KIMBA SI53-7		
Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/37



80 LRM 38

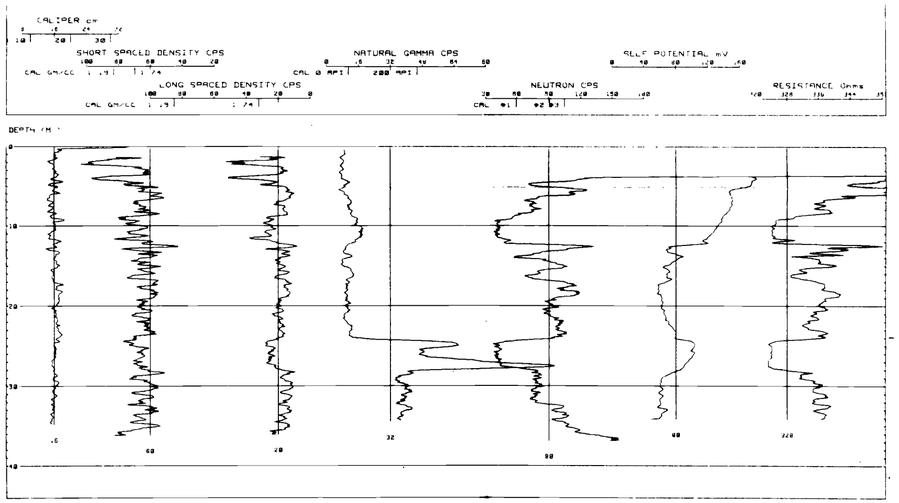


Chlorite and granular quartz feldspar fragments (basement)

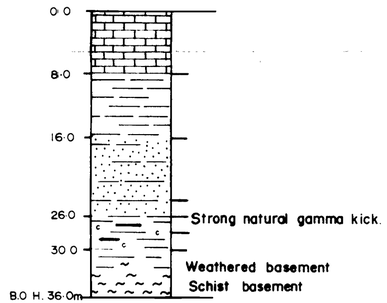
Refer to Plan N°: SAa 600 for Legend.

ENV. 3973-46.

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN 1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 38 Sheet Ref: Kimba SI53-7		
Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/38



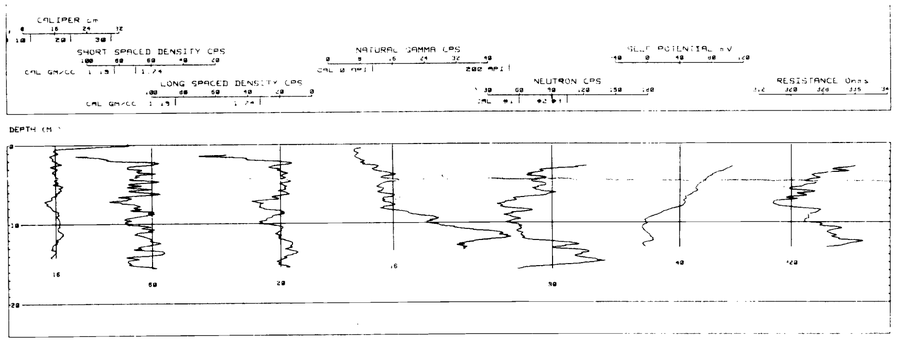
80 LRM 39



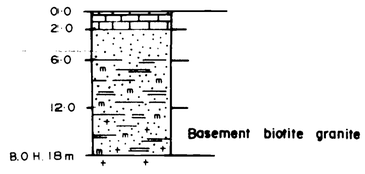
Refer to Plan N°: SAa 600 for Legend

ENV 3973-47

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 39 SHEET REF: KIMBA SI53-7		
Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn A.E.Y	Scale: 1:500	Plan N SAa601/39



80 LRM 40



Refer to Plan N°: SAa 600 for Legend.

ENV 3973-48.

C.R.A. EXPLORATION PTY. LTD.		
POLDA BASIN		
1980 DRILLING PROGRAM GEOLOGICAL AND GEOPHYSICAL CROSS SECTION HOLE 80 LRM 40 Sheet Ref: Kimba SI53-7		
Geol: M.F.	Date: Oct 1980	Report N°: 10307
Drawn: A.E.Y.	Scale: 1:500	Plan N°: SAa601/40

APPENDIX 5

HOLE NUMBER	FROM	TO	DOWNHOLE GEOPHYSICAL LOGS						GEOLOGICAL	COMMENTS
			CALIPER	DENSITY	GAMMA	NEUTRON	SELF POTENTIAL	RESISTANCE	DRILL CUTTINGS	
1	92	102			high				sand 92-102m up to 10% 130-150m	high gamma unusual for sand
2	84	102	many caves	lower background	prominent high	low	response	response	sand & clay	many long space density lows Major ones correspond with caliper peaks
	148	low		low	low	low	high	low	130-EOH lignitic sand and clay up to 20%	
3	46 142	48 148		high many lows	low lot of relief	high lot of relief			pebbly grit tr-3% lignite	prominent on logs
4	32	34							trace lignite	no evidence on geophysical logs probably thin partings unresolvable
	34			60cps kick						
	96	97		low	average	low background			<10% coal	
	121.5	123		low	NIL	low			lignite recorded on logs	1.5m seam
	141	143		low		low background			<2% lignite recorded	
5	40	45		low	low	low			lignite up 80%	thin seams
	55	57		low	low	low	high	low	50-75m	
	60.5	69	low	low	low	low	flat, average	low	lignite	good seam
6	111.5	114.5		low	high	low	high	low	lignite 5-10% 112-132m	2 seams less than 1 metre thick. Interseam clay bands
	119	122.5		low	high	low	response	low		3.5 metres thick with inter-seam clay bands
	125.5	127.5								seam 1.5 metres thick
	141.5	143							lignitic clay 5-10% 140-142m	seam 1½ metres thick
7	64	66		low	low	low			coal noted	narrow seam developed at top of graded bedding units Cyclic sediments well shown.
	106.5	107.5		low	low	low			up to 5% coal chips 106-112m 26-36m up to 50% lignite	
8	37	38.5	low	low	low	low	average	low	34-44m up to 40% lignite/lig clay	1.5 metre seam
	45	46	low	low	high	low	average	low	70-74m <4% lignite	1 metre seam
	64.5	67	low	low	low	low	high	low		25 metre thick seam

HOLE NUMBER	FROM	TO	DOWNHOLE GEOPHYSICAL LOGS						GEOLOGICAL	COMMENTS
			CALIPER	DENSITY	GAMMA	NEUTRON	SELF POTENTIAL	RESISTANCE	DRILL CUTTINGS	
9	66	67	low	low	background	low	high	high	76-86m up to 40% lignite	
	69.5	70.5		low	high	low	average	average		
	71.5	72.5		low	background	low	average	low		
	79.8	81.5		low	background	low	average	average	90-102m up to 40% lignite	
	83.5	84.5		low	background	relatively low		low		
	88.5	90.5		low	background	low	high	low		
	91.5	92.5		low	background	low	high	average		
	93	94.5		low	background	low	average	average		
	124	126.5		low	background	low	high	low		
	131	133		low	background	low	high	low		
	145	145.5		low	high	low	average	low	tr sandy lignite recorded 140-146m	
10	nothing of note									
11	137	138		prominent			suspect log		tr -20% black coal chips 132-138m	high gamma coal
12	nothing of note									
13	43	47		nil	high	low	high	low	trace lignite	? nothing on lithologs
	54.5	57		nil	high	low	high	low	coal fragments minor	as above
	68.7	69.3		low peak	low	low	high	low		
	81	84		nil	high	low	high	low	coal specks	as above
	98.5	99.5		low	high	low	high	low	coal specks	?coal as above with density
	119	124		nil						coal noted in logs, all geophysical logs except density show normal response
	163	168		nil	relatively low				black vitreous coal chips up to 5%	
14	24.5	26		low	low					above water table
	31.5	32.5		low	low					above water table
	25	28			80cps peak					
	37	40			50cps peak					
	44	50		average	average	low	high	low	10% black coal chips 44-50m	
	51	52		low	low	relatively low	high	average	52-70m up to 10% black subbitum	
	63	63.5		low	relatively low	low	average	average	coal chips	
	69	70.5		low	relatively high	low	high	low		
	81	82		low	low	high	average	high		
	100	102		nil	high	low	high	low	102-104m trace coal	
	103.5	105.5		nil	high	low	high	low		

HOLE NUMBER	FROM	TO	DOWNHOLE GEOPHYSICAL LOGS					GEOLOGICAL	COMMENTS
			CALIPER	DENSITY	GAMMA	NEUTRON	SELF POTENTIAL	RESISTANCE	DRILL CUTTINGS	
15	34	34.5		low	low	low	high	average	10-20% coal chips at 36-38m	Trace coal chips 64-74m & 88-92m no geophysical response probably thin partings
	58	59		low	average	low	average	average	5-10% coal chips	
	100.5	101.5		low	low	low	high	high		
16	21	22			70 cps peak					
	43	45	low	low	low	low	average	slight high		
	48	49.5	low	low	low	low	low	low	coal recognised in logs	no easily recognisable responses on geophysical logs
	57	58.5	low	low	high	low	low	low		
17	25.5	26.5		PROBE	STUCK 70cps peak				trace -2% coal chips 102-114m	density probe stuck so no density logs obtained
18	58.5	59.5		low	high	low	high			
	68	80		small lows	highs	highs	lows			thin seams?
	81	81.5		low	low	low	?	?		
	84	84.5		low	low	low	?	?		
	90.5	91.7		prominent low	low	low	average	average	92-104m up to 30% coal chips	
	93.5	95		low	low	low	?	?		
	95.3	96		low	low	low	?	?		
	100.5	101.5		low	low	low	average	average	104-EOH Trace to 5% coal	nothing on geophysical logs
	102	103		low	high	low	average	average		
	104	105.0		low	low	low	average	low		
	105.5	107.0		low	low	low	average	low		
	109	110		low	low	low	average	average		
	114	115.5		low	low	low	average	average		
	108	112							coal in samples	nothing on geophysical logs
19	27.5	28.5		low	low	low	nil	nil	lignitic clay in logs	
	31.5	33		low	small	low	high	low		
	54	55.5		nil	low	low	high	low		clay
	36	38							20-30% coal	nothing on geophysical logs
	40	42							20-30% coal	nothing on geophysical logs
	48	50							20-30% coal	nothing on geophysical logs
	58	59.5		low	low	low	nil	low	no coal in samples	
	84.5	88.5		nil	high	low	high	low		probably clay
	109.5	110		low	high	low	high	low		
	23	24.5			60cps. peak					
20	23	24.5		low	high	low	high	low	26-28m 30-40% lignite	
	46	46.5		low	low	low	high	high	44-48m vitreous coal chips	
	54.5	55.5		low	high	low	high	low	50-64m trace to 5% coal 20% in one	
	68	70		low	average	low	high	average		

HOLE NUMBER	FROM	TO	DOWNHOLE GEOPHYSICAL LOGS						GEOLOGICAL	COMMENTS
			CALIPER	DENSITY	GAMMA	NEUTRON	SELF POTENTIAL	RESISTANCE	DRILL CUTTINGS	
	78	79.5		low	low	low	high	high	72-90m 2% chips 20% 82-84m	
	95	98		low	low	low	average	average	94-98m up to 2%	
	100	102		low	low	low	average	average	98-110m up to 60% black coal chips	
	114	116		low	low	low	average	average		
21	30				peak					redox interface between hematitic sand & lignitic reduced sand
	34	35.5		low	average	low	high	low	34-44m lignite up to 50% in part	
22	nothing of note		NB no caliper or density from 37m down.						trace lignite 42m	
23	51.5	52		low	low	low	high	high	52-70m black coal chips up to 2%	
	63	63.5		low	low	low	high			
	64	64.5		low	low	low	?	?		electric logs strange response
	84	85		low	average	low	average	average	trace coal chips	
	105.5	106.5		low	low	low	average	high	110-112m 2% coal chips	
24	92	93.5		low	low	low	high	high		
				nil	nil	nil	nil	nil	up to 5-7% coal chips	coal in samples but no indication in logs, thin coal partings
25	67	68		low	low	low	high	relatively high	68-70m trace coal	
	69.5	71		low	low	low	high	high	72-74m trace coal	
	89.5	91		low	low	low	high	average	78-80m trace coal 84-86m trace coal 92-108m up to 5% coal chips	
26	84	85		low	high	low	high	low	trace coal	
27	110	116		nil	high	low	high	low	trace coal 100-102m 106-108m 110-112m	similar feature as in hole 13
	61.5	62.3	low	low	high	low	low			
28	36.5	37.5		low	high	low	average	average	22-36m up to 30% lignite	
	41	45					unusual low spikes	high	40-42m trace lignite	
29	29.5	31	1.5	low	high	low	?	?	30-48m up to 70% lignite	
	38.5	39	.5	low	high	low	nil	nil		
	39.5	42.5	3	prominent low	background	low	average	average		

HOLE NUMBER	FROM	TO	DOWNHOLE GEOPHYSICAL LOGS						GEOLOGICAL	COMMENTS
			CALIPER	DENSITY	GAMMA	NEUTRON	SELF POTENTIAL	RESISTANCE	DRILL CUTTINGS	
	56.5	58	1.5	prominent	average	low	high	low		
30	18	43	Numerous thin prominent L.S.D. lows, usually in association with neutron lows and caliper highs. May represent cavings or coal							
	18.5	19.5	high	low	background	low	background	low	30-32m 2% coal chips	
	21.2	21.5	back-ground	low	low	low	background	low		
	22	23	high	low	background	low	background	background		
	23.2	24.8	high	low	background	low	background	background		
	26.8	27.1	high	low	background	low	high	background		
	27.8	29	high	low	background	low	background	background		
	32.5	33.5	low	low	background	background	background	low		
	35.5	36.5	low	low	high	background	high	low	36-38m 2-5% coal	
	37	38.2	high	low	background	background	low	low	40-50m trace -2% black coal	
	40.5	41	low	low	background	background	high	low		
	41.5	42.2	high	low	background	background	background	low		
	48.5	51.2		low	low	low	background	low		
	52	52.5		low	background	low	background	low	50-100m 2%-90% coal chips	
	58.5	63		low	background	low	background	background		
	73.5	74		low	low	low	background	high		
	75	75.5		low	background	low	background	background		
	75.6	76.1		low	background	low	background	background		
	78.5	79		low	background	background	low	background	100-106m 5-7% black coal chips	
	82.7	83.3		low	low	low	background	high		
	84	84.4		low	low	low	high	high		
	88	88.4		low	background	background	low	background		
30C	24.5	25	high	low	background	low	background	low	58.49-59.8m coal	
	29	29.0	high	low	background	low	background	low	60.12-62.02m	
	31.8	32.2	high	low	background	low	background	low	60.05-62.84m	
	35.8	37		low	high	low	high	low	74.41-74.67m 75.89-76.61m	
	41	41.8		low	background	low	background	low	76.82-77.49m 79.32-80.61m	
	48.5	51.2	low	low	background	low	high	low	83.26-83.40m	
	52	52.5	high	low	background	low	high	low	83.53-83.47m	
	59	63.5	low	low	background	low	high	low	84.98-85.02m 85.29-86.33m	
			Remainder of hole to 90m as per LRM30							
31	82	124		low	variable usually low	low	background variable	high	62-80m trace black coal. 80-100m up to 15% 100-126m 10-70% coal	numerous (approx. 20) seams from 0.5m to 2m thick
	31.5	34								
	82.5	83.5								
	85	87.3								
	90.5	92.0		low	low	low	high	high		2 seams less than 1m each

HOLE NUMBER	FROM	TO	DOWNHOLE GEOPHYSICAL LOGS: CALIPER	DENSITY	GAMMA	NEUTRON	GEOLOGICAL: SELF POTENTIAL	RESISTANCE	DRILL CUTTINGS	COMMENTS
	96.5	97								
	98.5	99								
	101.7	104.5								
	105	106								
	107	109.3								
	114	116		low	low	low	average	high		
32	10	11		low	low	low	background	low		
34	10	11		low	background	low	background	low		
35	Nothing of note									
36	Nothing of note									
37	Nothing of note									
38	Nothing of note									
39	24	28		background	peak 118cps	low	high	low		
40	Nothing of note									

APPENDIX 6

Calculation of Radiometric Borehole Anomaly

Hole 80LRM39

a. K-factor

$$K = \frac{GT}{A} = \frac{\text{Grade x Thickness}}{\text{Area under anomaly}}$$

G = .0515% eU_3O_8 (An average of .0475 as quoted by A.M.D.E.L. and .0554 as calculated by Geoex)

T = Thickness = 1.4 metres

A = Area = $w \sum_{i=1}^{n} cps_i$ where w = sampling interval
n = no. of samples

= .2 (2 + 28 + 318 + 566 + 582 + 570 + 600 + 590 + 564 + 395)

= .2 x 4215 = 843

$$\therefore \quad K = \frac{GT}{A} = \frac{.0515 \times 1.4}{843} = .000086$$

b. Gamma anomaly

$$G = \frac{KA}{T}$$

K = 0.000086

T = 28 - 24.4 = 3.6 metres

A = .2 (3.6 + 24 + 41.6 + 48.4 + 49.6 + 46.8 + 38.4 + 28.2 + 28.2 + 27.6 + 25.6 + 27.6 + 32 + 40.8 + 49.6 + 56.4 + 72.4 + 85.6 + .82 + 62.4 + 22 + 10.4 + 11.2 + 7.2 + 4 + .8)

= .2 x 926.4 = 185.28

$$\therefore \quad G = \frac{KA}{T} = \frac{0.000086 \times 185.28}{3.6}$$

= 0.0044 %eU_3O_8

APPENDIX 7

APPENDIX 7

CONTENTS

7.1 Gravity Field Data Sheets 0176

7.2 Latitudes (decimal x 100)

7.3 Elevations (metres A.H.D.)

7.4 Drift corrected gravity readings

7.5 Bouguer gravity for density 2.00

7.6 Bouguer gravity for density 2.67

7.7 Polda Basin Gravity Traverse #2: Basin Model - 11/8/80

7.8 Polda Basin Gravity Traverse #2: Sub-Basin Model - 14/8/80

7.1

GRAVITY SURVEY SHEET

0177

Area: POLDA BASIN	Prospect:	Survey N°: 1	
Title: TUCKEY E.L.	Sheet: KIMBA	Date: 14/7/80	Oper: G JB

Meter: LACOSTE #544	Scale Factor: 1.02201	Trav.: 1

Station.	Time.	Reading DIAL UNITS.	MGALS.	Corr.	Obs. Gravity.	Comments.
BM705=00N	1221	310984		0	310984	
50N	1223	310984				
500N	1230	310843		+1	310844	
1000N	1235	310645		+1	310646	
1500N	1242	310409		+1	310410	
2000N	1247	310265		+2	~~310267~~	
00N	1255	310982		+2		
2000N	1408	310262		+4	310266	
2000N	1410	310262				
2500N	1416	310088		+4	310092	
3000N	1420	309934		+3	309937	
3500N	1424	309791		+3	309794	
4000N	1429	309707		+3	309710	
4500N	1436	309607		+2	309609	
5000N	1444	309520		+2	309522	
5500N	1448	309481		+1	309482	
6000N	1452	309380		+1	309381	
6500N	1457	309284		+1	309285	
7000N	1501	309175		0	309175	
7500N	1506	309046		0	309046	
8000N	1510	308967		0	308967	
8500N	1514	308894		0	308894	
9000N	1520	308851		-1	308850	
9500N	1525	308784		-1	308783	
10000N	1530	308695		-1	308694	
10500N	1536	308459		-2	308457	
11000N	1541	308371		-2	308369	
2000N	1553	310269		-3	~~310266~~	
11000N	1611	308373		-4		
11000N	1613	308374		-5		
11500N	1616	308296		-5	308291	
12000N	1621	308192		-5	308187	
12500N	1626	308147		-5	308142	
13000N	1630	308049		-5	308044	
13500N	1634	307944		-5	307939	
14000N	1639	307773		-5	307768	
14500N	1646	307570		-6	307564	
15000N	1650	307399		-6	307393	
15500N	1653	307241		-6	307235	
16000N	1657	307130		-6	307124	
16500N	1702	307135		-6	307129	
17000N	1710	307192		-6	307186	
17500N	1716	307208		-7	307201	
18000N	1721	307114		-7	307107	
18500N	1726	307145		-7	307138	
19000N	1731	307230		-7	307223	

GRAVITY SURVEY SHEET

0178

Area: POLDA BASIN	Prospect:	Survey N°: 1	
Title: TUCKEY E.L.	Sheet: XIMEA	Date: 14/7/80	Oper: G.T.F.
Meter: LACOSTE # 544	Scale Factor:	Trav.: 1	

Station.	Time.	Reading DIAL UNITS	M GALS	Corr.	Obs. Gravity	Comments.
19500N	1737	307298		-7	307291	
20000N	1742	307298		-7	307291	
11000N	1802	308377		-8	308369	
						Date: 15/7/80
20000N	10[illegible]	307302		-11	307291	
20000N	1043	307302		-11	~~30~~	
20500N	10[illegible]	307391		-11	307380	
21000N	10[illegible]	307643		-11	307632	
21500N	1059	307784		-11	307773	
22000N	1104	307893		-10	307883	
22500N	1109	307801		-10	307791	
23000N	1111	307757		-10	307747	
23500N	1116	307625		-10	307615	
24000N	1121	307583		-10	307573	
24500N	1126	307824		-10	307814	
25000N	1130	307959		-10	307949	
25500N	1135	307911		-9	307902	
26000N	1139	307867		-9	307858	
26500N	1144	307824		-9	307815	
27000N	1149	307765		-9	307756	
27500N	1156	307674		-9	307665	
28000N	1226	307299		-8		

GRAVITY SURVEY SHEET 0179

Area: POLDA BASIN	Prospect:	Survey N°:	
Title: TUCKEY E.L.	Sheet:	Date: 15/7/80	Oper:
Meter:	Scale Factor:	Trav.: 2	

Station.	Time.	Reading DIAL UNITS.	M GALS.	Corr.	Obs. Gravity.	Comments.
28000N	1612	308926		-12	308914	
28000N	1615	308925		-12	~~308~~	
27500N	1620	308963		-12	8951	
27000N	1624	308920		-12	8908	
26500N	1628	308877		-13	8864	
26000N	1633	308894		↑	8881	
25500N	1637	308908			8895	
25000N	1641	308804			8791	
24500N	1644	308791		↓	8778	
24000N	1647	308696			8683	
23500N	1651	308315		-13	8302	
23000N	1654	308150		-14	8136	
	1658	308059		↑	8045	
22000N	1702	307957			7943	
	1713	307691		↓	7677	
21000N	1718	307430		-14	7416	
	1722	307354		-15	7339	
20000N	1726	307235		↑	7220	
	1730	307158			7143	
19000N	1734	307115			7100	
	1738	307157		↓	7142	
18000N	1743	307294		-15	7279	
17500N	1757	308930		-16	308914	
17000N (1)	1806	307682		-17	307665	
16000N	1816	308932				
9000N	0919	308444		-28	308416	
9000N	0920	308443		↑		
	0926	308301				
10000N	0931	308175				
	0935	308062				
11000N	0939	307917				
	0942	307814				
12000N	0948	307752				
	0952	307795				
13000N	0956	307567				
	1000	307608				
14000N	1005	307608				
	1009	307566				
15000N	1013	307533				
	1016	307520				
16000N	1021	307452				
	1025	307468		↓		
17000N	1029	307414		-28		

GRAVITY SURVEY SHEET

0180

Area: POLDA BASIN	Prospect:	Survey N°:	
Title: TUCKEY E.L.	Sheet:	Date: 16/7/80	Oper:

Meter:	Scale Factor:	Trav.: 2

Station.	Time.	Reading DIAL UNITS.	M GALS.	Corr.	Obs. Gravity.	Comments.
17500N	1033	307294		-28		
18000N	1038	307307		-28	307279	
9000N	1052	308443		-28	~~8~~	
	1057	308458		-27	8431	
8000N	1102	308544		↑	8517	
	1106	308770			8743	
7000N	1109	308694			8667	
	1113	308782		↓	8755	
6000N	1117	308953		-27	8926	
	1122	309027		-26	9001	
5000N	1126	309192		↑	9166	
	1130	309409			9383	
4000N	1134	309559			9533	
	1138	309656			9630	
3000N	1142	309813		↓	9787	
	1145	309902		-26	9876	
2000N	1149	309975		-25	309950	
	1152	310016		↑	309991	
1000N	1156	310067			310042	
	1200	310128		↓	310103	
00N	1213	310466		-25	310441	
9000N	1225	308440		-24		
9000N	1228	308440		-24		

7.2

0181

POLDA BASIN GRAVITY TRAVERSE #1 : LATITUDES (Decimal x 100)

Number of stations = 56 File No. : 20

No.	---X---	---Y---			
1	0.00	3372.59	51	25000.00	3353.71
2	500.00	3372.27	52	25500.00	3353.28
3	1000.00	3371.84	53	26000.00	3352.84
4	1500.00	3371.49	54	26500.00	3352.39
5	2000.00	3371.03	55	27000.00	3351.95
6	2500.00	3370.78	56	27500.00	3351.52
7	3000.00	3370.43			
8	3500.00	3370.09			
9	4000.00	3369.83			
10	4500.00	3369.63			
11	5000.00	3369.37			
12	5500.00	3369.14			
13	6000.00	3368.94			
14	6500.00	3368.88			
15	7000.00	3368.56			
16	7500.00	3368.25			
17	8000.00	3367.79			
18	8500.00	3367.36			
19	9000.00	3366.90			
20	9500.00	3366.58			
21	10000.00	3366.15			
22	10500.00	3365.72			
23	11000.00	3365.20			
24	11500.00	3364.77			
25	12000.00	3364.34			
26	12500.00	3363.88			
27	13000.00	3363.36			
28	13500.00	3362.99			
29	14000.00	3362.56			
30	14500.00	3362.21			
31	15000.00	3361.81			
32	15500.00	3361.41			
33	16000.00	3360.95			
34	16500.00	3360.57			
35	17000.00	3360.14			
36	17500.00	3359.66			
37	18000.00	3359.37			
38	18500.00	3358.97			
39	19000.00	3358.51			
40	19500.00	3358.13			
41	20000.00	3357.76			
42	20500.00	3357.39			
43	21000.00	3357.13			
44	21500.00	3356.72			
45	22000.00	3356.35			
46	22500.00	3355.86			
47	23000.00	3355.52			
48	23500.00	3355.11			
49	24000.00	3354.63			
50	24500.00	3354.14			

POLDA BASIN GRAVITY TRAVERSE #2 : LATITUDES (Decimal x 100)

Number of stations = 57 File No. : 26

No.	---X---	---Y---
1	0.00	3376.24
2	500.00	3375.83
3	1000.00	3375.37
4	1500.00	3374.89
5	2000.00	3374.37
6	2500.00	3373.94
7	3000.00	3373.45
8	3500.00	3372.99
9	4000.00	3372.61
10	4500.00	3372.21
11	5000.00	3371.72
12	5500.00	3371.24
13	6000.00	3370.83
14	6500.00	3370.32
15	7000.00	3369.83
16	7500.00	3369.43
17	8000.00	3369.02
18	8500.00	3368.51
19	9000.00	3368.16
20	9500.00	3367.76
21	10000.00	3367.33
22	10500.00	3366.90
23	11000.00	3366.44
24	11500.00	3366.01
25	12000.00	3365.57
26	12500.00	3365.17
27	13000.00	3364.66
28	13500.00	3364.25
29	14000.00	3363.79
30	14500.00	3363.33
31	15000.00	3362.87
32	15500.00	3362.47
33	16000.00	3361.98
34	16500.00	3361.47
35	17000.00	3361.09
36	17500.00	3360.69
37	18000.00	3360.14
38	18500.00	3359.77
39	19000.00	3359.28
40	19500.00	3358.82
41	20000.00	3358.39
42	20500.00	3357.93
43	21000.00	3357.47
44	21500.00	3357.01
45	22000.00	3356.55
46	22500.00	3356.21
47	23000.00	3355.83
48	23500.00	3355.46
49	24000.00	3355.09
50	24500.00	3354.60
51	25000.00	3354.22
52	25500.00	3353.79
53	26000.00	3353.36
54	26500.00	3352.96
55	27000.00	3352.47
56	27500.00	3351.93
57	28000.00	3351.44

POLIA BASIN GRAVITY TRAVERSE #1 : ELEVATIONS (Metres A.H.D.)

Number of stations = 56 File No. : 21

No.	---X---	---Y---	No.	---X---	---Y---
1	0.00	80.99	51	25000.00	138.82
2	500.00	82.71	52	25500.00	140.04
3	1000.00	86.67	53	26000.00	140.98
4	1500.00	94.80	54	26500.00	141.77
5	2000.00	98.02	55	27000.00	142.95
6	2500.00	102.28	56	27500.00	145.06
7	3000.00	104.64			
8	3500.00	105.63			
9	4000.00	104.38			
10	4500.00	104.16			
11	5000.00	102.27			
12	5500.00	99.17			
13	6000.00	100.91			
14	6500.00	101.64			
15	7000.00	103.16			
16	7500.00	106.06			
17	8000.00	107.85			
18	8500.00	109.63			
19	9000.00	108.90			
20	9500.00	109.48			
21	10000.00	111.23			
22	10500.00	119.44			
23	11000.00	119.62			
24	11500.00	120.95			
25	12000.00	124.67			
26	12500.00	124.66			
27	13000.00	127.13			
28	13500.00	128.32			
29	14000.00	128.66			
30	14500.00	124.65			
31	15000.00	122.78			
32	15500.00	123.89			
33	16000.00	125.82			
34	16500.00	126.18			
35	17000.00	127.07			
36	17500.00	128.34			
37	18000.00	133.03			
38	18500.00	133.81			
39	19000.00	134.68			
40	19500.00	136.14			
41	20000.00	137.80			
42	20500.00	138.98			
43	21000.00	139.33			
44	21500.00	139.39			
45	22000.00	138.19			
46	22500.00	140.87			
47	23000.00	138.98			
48	23500.00	139.97			
49	24000.00	139.92			
50	24500.00	140.11			

POLDA BASIN GRAVITY TRAVERSE #2 : ELEVATIONS (Metres A.H.D.)

Number of stations = 57 File No. : 27

No.	---X---	---Y---
1	0.00	88.08
2	500.00	96.93
3	1000.00	93.32
4	1500.00	90.49
5	2000.00	87.76
6	2500.00	89.11
7	3000.00	90.50
8	3500.00	92.73
9	4000.00	94.82
10	4500.00	98.74
11	5000.00	101.21
12	5500.00	101.65
13	6000.00	101.07
14	6500.00	105.71
15	7000.00	106.04
16	7500.00	97.57
17	8000.00	102.85
18	8500.00	103.10
19	9000.00	100.21
20	9500.00	103.24
21	10000.00	104.57
22	10500.00	105.19
23	11000.00	107.84
24	11500.00	108.47
25	12000.00	109.11
26	12500.00	110.39
27	13000.00	114.84
28	13500.00	112.51
29	14000.00	113.05
30	14500.00	115.54
31	15000.00	117.27
32	15500.00	117.75
33	16000.00	121.23
34	16500.00	120.12
35	17000.00	121.45
36	17500.00	124.38
37	18000.00	115.62
38	18500.00	115.78
39	19000.00	116.44
40	19500.00	116.34
41	20000.00	117.47
42	20500.00	117.17
43	21000.00	121.17
44	21500.00	120.70
45	22000.00	120.83
46	22500.00	121.78
47	23000.00	121.77
48	23500.00	123.60
49	24000.00	124.34
50	24500.00	122.99
51	25000.00	125.02
52	25500.00	122.40
53	26000.00	123.87
54	26500.00	124.96
55	27000.00	123.67
56	27500.00	123.01
57	28000.00	124.92

POLDA BASIN GRAVITY TRAVERSE #1 : RAW (Drift-corrected) DATA

Number of stations = 56 File No. : 22

No.	---X---	---Y---	No.	---X---	---Y---
1	0.00	3109.84	51	25000.00	3079.49
2	500.00	3108.44	52	25500.00	3079.02
3	1000.00	3106.46	53	26000.00	3078.58
4	1500.00	3104.10	54	26500.00	3078.15
5	2000.00	3102.66	55	27000.00	3077.56
6	2500.00	3100.92	56	27500.00	3076.65
7	3000.00	3099.37			
8	3500.00	3097.94			
9	4000.00	3097.10			
10	4500.00	3096.09			
11	5000.00	3095.22			
12	5500.00	3094.82			
13	6000.00	3093.81			
14	6500.00	3092.85			
15	7000.00	3091.75			
16	7500.00	3090.46			
17	8000.00	3089.67			
18	8500.00	3088.94			
19	9000.00	3088.50			
20	9500.00	3087.83			
21	10000.00	3086.94			
22	10500.00	3084.57			
23	11000.00	3083.69			
24	11500.00	3082.91			
25	12000.00	3081.87			
26	12500.00	3081.42			
27	13000.00	3080.44			
28	13500.00	3079.39			
29	14000.00	3077.68			
30	14500.00	3075.64			
31	15000.00	3073.93			
32	15500.00	3072.35			
33	16000.00	3071.24			
34	16500.00	3071.29			
35	17000.00	3071.86			
36	17500.00	3072.01			
37	18000.00	3071.07			
38	18500.00	3071.38			
39	19000.00	3072.23			
40	19500.00	3072.91			
41	20000.00	3072.91			
42	20500.00	3073.80			
43	21000.00	3076.32			
44	21500.00	3077.73			
45	22000.00	3078.83			
46	22500.00	3077.91			
47	23000.00	3077.47			
48	23500.00	3076.15			
49	24000.00	3075.73			
50	24500.00	3078.14			

POLDA BASIN GRAVITY TRAVERSE #2 : RAW (Drift-corrected) DATA

Number of stations = 57 File No. : 28

No.	---X---	---Y---	No.	---X---	---Y---
1	0.00	3104.41	51	25000.00	3087.91
2	500.00	3101.03	52	25500.00	3088.95
3	1000.00	3100.42	53	26000.00	3088.81
4	1500.00	3099.91	54	26500.00	3088.64
5	2000.00	3099.50	55	27000.00	3089.08
6	2500.00	3098.76	56	27500.00	3089.51
7	3000.00	3097.87	57	28000.00	3089.14
8	3500.00	3098.30			
9	4000.00	3095.33			
10	4500.00	3093.83			
11	5000.00	3091.66			
12	5500.00	3090.01			
13	6000.00	3089.26			
14	6500.00	3087.55			
15	7000.00	3086.67			
16	7500.00	3087.43			
17	8000.00	3085.17			
18	8500.00	3084.31			
19	9000.00	3084.16			
20	9500.00	3082.73			
21	10000.00	3081.47			
22	10500.00	3080.34			
23	11000.00	3078.89			
24	11500.00	3077.86			
25	12000.00	3077.24			
26	12500.00	3077.67			
27	13000.00	3075.39			
28	13500.00	3075.80			
29	14000.00	3075.80			
30	14500.00	3075.38			
31	15000.00	3075.05			
32	15500.00	3074.92			
33	16000.00	3074.24			
34	16500.00	3074.40			
35	17000.00	3073.86			
36	17500.00	3072.66			
37	18000.00	3072.79			
38	18500.00	3071.42			
39	19000.00	3071.00			
40	19500.00	3071.43			
41	20000.00	3072.20			
42	20500.00	3073.39			
43	21000.00	3074.16			
44	21500.00	3076.77			
45	22000.00	3079.43			
46	22500.00	3080.45			
47	23000.00	3081.36			
48	23500.00	3083.02			
49	24000.00	3086.83			
50	24500.00	3087.78			

POLOA BASIN TRAVERSE #1 : BOUGUER GRAVITY. B.D.=2.00; SM705 = 30mgs

Number of stations = 56 File No. : 23

No.	---X---	---Y---	No.	---X---	---Y---
1	0.00	30.00	51	25000.00	27.68
2	500.00	29.22	52	25500.00	27.83
3	1000.00	28.45	53	26000.00	27.95
4	1500.00	28.15	54	26500.00	28.07
5	2000.00	27.78	55	27000.00	28.09
6	2500.00	27.18	56	27500.00	27.99
7	3000.00	26.41			
8	3500.00	25.46			
9	4000.00	24.54			
10	4500.00	23.62			
11	5000.00	22.52			
12	5500.00	21.61			
13	6000.00	21.13			
14	6500.00	20.36			
15	7000.00	19.85			
16	7500.00	19.44			
17	8000.00	19.42			
18	8500.00	19.43			
19	9000.00	19.20			
20	9500.00	18.91			
21	10000.00	18.75			
22	10500.00	18.53			
23	11000.00	18.10			
24	11500.00	17.97			
25	12000.00	18.10			
26	12500.00	18.02			
27	13000.00	18.00			
28	13500.00	17.51			
29	14000.00	16.19			
30	14500.00	13.49			
31	15000.00	11.66			
32	15500.00	10.63			
33	16000.00	10.31			
34	16500.00	10.75			
35	17000.00	11.89			
36	17500.00	12.74			
37	18000.00	13.07			
38	18500.00	13.90			
39	19000.00	15.34			
40	19500.00	16.68			
41	20000.00	17.36			
42	20500.00	18.85			
43	21000.00	21.71			
44	21500.00	23.50			
45	22000.00	24.67			
46	22500.00	24.74			
47	23000.00	24.15			
48	23500.00	23.35			
49	24000.00	23.32			
50	24500.00	26.23			

POLDA BASIN TRAVERSE #2 : BOUGUER GRAVITY. B.D.=2.00; BM705 = 30Mgs

Number of stations = 57 File No. : 29

No.	---X---	---Y---
1	0.00	23.01
2	500.00	21.88
3	1000.00	20.83
4	1500.00	20.07
5	2000.00	19.47
6	2500.00	19.38
7	3000.00	19.19
8	3500.00	20.51
9	4000.00	18.26
10	4500.00	17.94
11	5000.00	16.69
12	5500.00	15.50
13	6000.00	14.94
14	6500.00	14.67
15	7000.00	14.25
16	7500.00	13.46
17	8000.00	12.67
18	8500.00	12.28
19	9000.00	11.76
20	9500.00	11.31
21	10000.00	10.68
22	10500.00	10.03
23	11000.00	9.52
24	11500.00	8.97
25	12000.00	8.84
26	12500.00	9.90
27	13000.00	9.00
28	13500.00	9.23
29	14000.00	9.73
30	14500.00	10.25
31	15000.00	10.68
32	15500.00	10.99
33	16000.00	11.49
34	16500.00	11.83
35	17000.00	11.88
36	17500.00	11.65
37	18000.00	10.27
38	18500.00	9.22
39	19000.00	9.34
40	19500.00	10.14
41	20000.00	11.54
42	20500.00	13.07
43	21000.00	15.14
44	21500.00	18.08
45	22000.00	21.21
46	22500.00	22.75
47	23000.00	23.99
48	23500.00	26.41
49	24000.00	30.78
50	24500.00	31.85
51	25000.00	32.75
52	25500.00	33.58
53	26000.00	34.13
54	26500.00	34.53
55	27000.00	35.10
56	27500.00	35.84
57	28000.00	36.30

POLDA BASIN TRAVERSE #1 : BOUGUER GRAVITY. B.D.=2.67; BM705 = 30mGal

Number of stations = 56 File No. : 24

No.	---X---	---Y---			
1	0.00	30.00	51	25000.00	26.06
2	500.00	29.17	52	25500.00	26.17
3	1000.00	28.29	53	26000.00	26.27
4	1500.00	27.76	54	26500.00	26.37
5	2000.00	27.31	55	27000.00	26.35
6	2500.00	26.58	56	27500.00	26.19
7	3000.00	25.75			
8	3500.00	24.77			
9	4000.00	23.88			
10	4500.00	22.97			
11	5000.00	21.93			
12	5500.00	21.10			
13	6000.00	20.57			
14	6500.00	19.78			
15	7000.00	19.22			
16	7500.00	18.74			
17	8000.00	18.67			
18	8500.00	18.63			
19	9000.00	18.42			
20	9500.00	18.11			
21	10000.00	17.90			
22	10500.00	17.45			
23	11000.00	17.02			
24	11500.00	16.84			
25	12000.00	16.87			
26	12500.00	16.79			
27	13000.00	16.71			
28	13500.00	16.18			
29	14000.00	14.86			
30	14500.00	12.27			
31	15000.00	10.49			
32	15500.00	9.43			
33	16000.00	9.05			
34	16500.00	9.48			
35	17000.00	10.60			
36	17500.00	11.41			
37	18000.00	11.61			
38	18500.00	12.42			
39	19000.00	13.84			
40	19500.00	15.13			
41	20000.00	15.77			
42	20500.00	17.22			
43	21000.00	20.08			
44	21500.00	21.86			
45	22000.00	23.06			
46	22500.00	23.06			
47	23000.00	22.52			
48	23500.00	21.70			
49	24000.00	21.67			
50	24500.00	24.57			

POLDA BASIN TRAVERSE #2 : BOUGUER GRAVITY. B.D.=2.67; BM705 = 30Mgs

Number of stations = 57 File No. : 30

No.	---X---	---Y---
1	0.00	22.81
2	500.00	21.43
3	1000.00	20.48
4	1500.00	19.81
5	2000.00	19.28
6	2500.00	19.15
7	3000.00	18.92
8	3500.00	20.18
9	4000.00	17.87
10	4500.00	17.44
11	5000.00	16.12
12	5500.00	14.92
13	6000.00	14.38
14	6500.00	13.98
15	7000.00	13.55
16	7500.00	12.99
17	8000.00	12.05
18	8500.00	11.66
19	9000.00	11.22
20	9500.00	10.69
21	10000.00	10.02
22	10500.00	9.35
23	11000.00	8.77
24	11500.00	8.20
25	12000.00	8.05
26	12500.00	9.08
27	13000.00	8.05
28	13500.00	8.35
29	14000.00	8.83
30	14500.00	9.28
31	15000.00	9.66
32	15500.00	9.96
33	16000.00	10.36
34	16500.00	10.73
35	17000.00	10.75
36	17500.00	10.44
37	18000.00	9.30
38	18500.00	8.24
39	19000.00	8.35
40	19500.00	9.15
41	20000.00	10.52
42	20500.00	12.05
43	21000.00	14.01
44	21500.00	16.97
45	22000.00	20.09
46	22500.00	21.61
47	23000.00	22.85
48	23500.00	25.21
49	24000.00	29.56
50	24500.00	30.67
51	25000.00	31.52
52	25500.00	32.42
53	26000.00	32.93
54	26500.00	33.30
55	27000.00	33.90
56	27500.00	34.66
57	28000.00	35.07

7-7.

POLDA BASIN GRAVITY TRAVERSE #2 :BASIN MODEL - 11/8/80

PROFILE DIRECTION = 0°T

0191

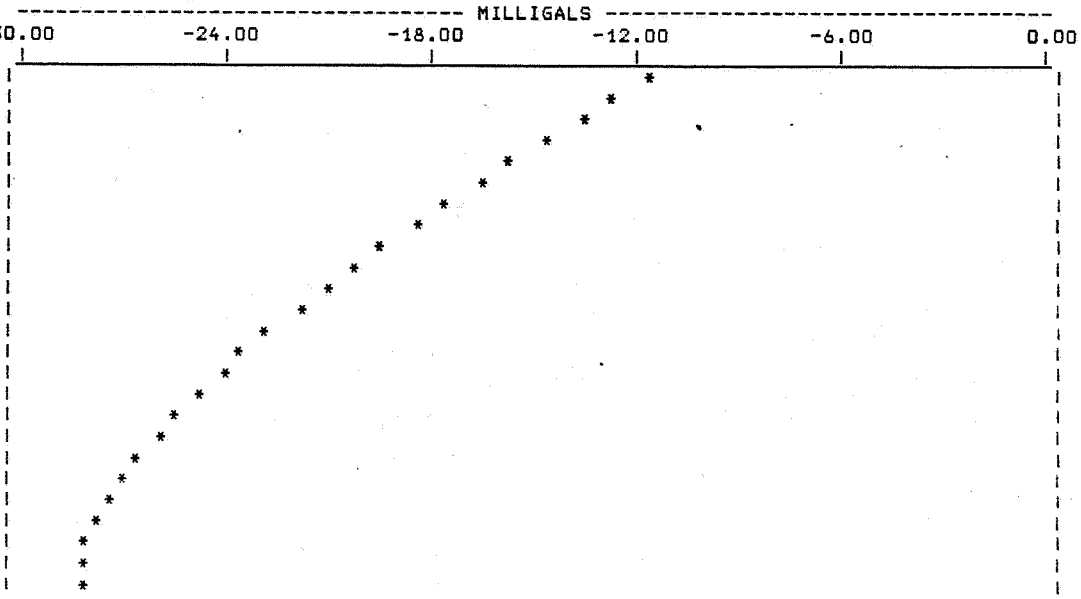
MODEL COORDINATES

X	Z
-4000	600
22500	700
21500	3400
11000	4200

Ap = -0.25 gm/cc

SCALE OF PLOT - HORIZONTAL : 10 CM = APPROX. 11764 UNITS
VERTICAL : 10 CM = APPROX. 15 MILLIGALS

NO.	STATION	MODEL #1	TOTAL
1	0.0	-11.66	-11.66
2	500.0	-12.68	-12.68
3	1000.0	-13.69	-13.69
4	1500.0	-14.68	-14.68
5	2000.0	-15.65	-15.65
6	2500.0	-16.61	-16.61
7	3000.0	-17.54	-17.54
8	3500.0	-18.45	-18.45
9	4000.0	-19.33	-19.33
10	4500.0	-20.19	-20.19
11	5000.0	-21.03	-21.03
12	5500.0	-21.83	-21.83
13	6000.0	-22.61	-22.61
14	6500.0	-23.34	-23.34
15	7000.0	-24.04	-24.04
16	7500.0	-24.70	-24.70
17	8000.0	-25.31	-25.31
18	8500.0	-25.88	-25.88
19	9000.0	-26.39	-26.39
20	9500.0	-26.84	-26.84
21	10000.0	-27.22	-27.22
22	10500.0	-27.55	-27.55
23	11000.0	-27.80	-27.80
24	11500.0	-27.99	-27.99
25	12000.0	-28.11	-28.11



7/8

POLDA BASIN TRAVERSE #2 : SUB-BASIN MODEL : 14/8/80

0192

PROFILE DIRECTION = 0°T

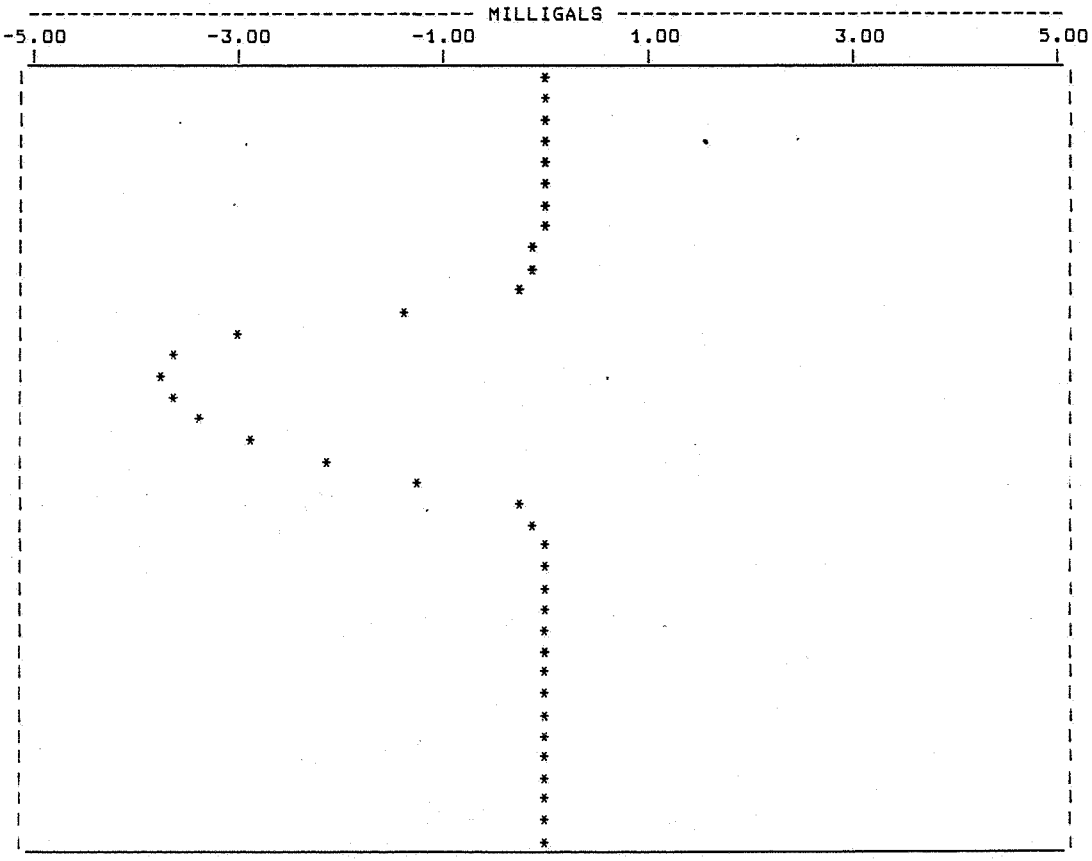
MODEL COORDINATES

X	Z
17300	10
22000	10
20200	300
18200	350

Δp = -0.3 gm/cc

SCALE OF PLOT - HORIZONTAL : 10 CM = APPROX. 11764 UNITS
VERTICAL : 10 CM = APPROX. 5 MILLIGALS

NO.	STATION	MODEL #1	TOTAL
1	12000.0	-0.01	-0.01
2	12500.0	-0.01	-0.01
3	13000.0	-0.02	-0.02
4	13500.0	-0.02	-0.02
5	14000.0	-0.02	-0.02
6	14500.0	-0.03	-0.03
7	15000.0	-0.04	-0.04
8	15500.0	-0.05	-0.05
9	16000.0	-0.07	-0.07
10	16500.0	-0.11	-0.11
11	17000.0	-0.21	-0.21
12	17500.0	-1.37	-1.37
13	18000.0	-3.01	-3.01
14	18500.0	-3.64	-3.64
15	19000.0	-3.69	-3.69
16	19500.0	-3.59	-3.59
17	20000.0	-3.38	-3.38
18	20500.0	-2.89	-2.89
19	21000.0	-2.10	-2.10
20	21500.0	-1.19	-1.19
21	22000.0	-0.19	-0.19
22	22500.0	-0.08	-0.08
23	23000.0	-0.06	-0.06
24	23500.0	-0.04	-0.04
25	24000.0	-0.03	-0.03
26	24500.0	-0.02	-0.02
27	25000.0	-0.02	-0.02
28	25500.0	-0.02	-0.02
29	26000.0	-0.01	-0.01
30	26500.0	-0.01	-0.01
31	27000.0	-0.01	-0.01
32	27500.0	-0.01	-0.01
33	28000.0	-0.01	-0.01
34	28500.0	-0.01	-0.01
35	29000.0	-0.01	-0.01
36	29500.0	-0.01	-0.01
37	30000.0	-0.01	-0.01



(MORE NORTHERLY ETC)

0193

C.R.A. EXPLORATION PTY. LIMITED

SECOND QUARTERLY REPORT ON POLDA BASIN SOUTH AUSTRALIA McLACHLAN E.L. 670 FOR THE PERIOD ENDING JANUARY 7, 1981 TUCKEY E.L. 637 AND SHERINGA E.L. 688 FOR THE PERIOD ENDING FEBRUARY 11, 1981.

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AUTHOR: M.J.N. FLITCROFT

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DATE: FEBRUARY 5, 1981

SUBMITTED BY: R Williams for M J.N. Flitcroft.

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10307

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0194

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1. SUMMARY

Low ash (12.29 - 17.26% - moisture free), Eocene coal of the Lignite B group on the A.S.T.M. Coal Classification was cored in holes 80L5C and 80L5C and 80L30C. Relatively high ash (34.86 - 45.20% - moisture free), Jurassic coal(Lignite A to Sub-bituminous C) was also intersected in the lower parts of hole 80L30C.

The Eocene-Jurassic boundary has been established at R.L.+1m (51 metre hole depth) in 80L30C.

2. INTRODUCTION

The Polda Basin tenements, covering 4,168 square kilometres, comprise three E.L.'s - McLachlan E.L. 670, Tuckey E.L. 687 and Sheringa E.L. 688. (See Plan No. SAa 472, 381, 382). These three exploration licences extend from Sheringa on the west coast of Eyre Peninsula, through Lock to Rudall in the east.

This report describes the work carried out by C.R.A. Exploration Pty. Limited during the second quarter to February 11, 1981.

3. WORK DONE

3.1 Palynology

0196

Suitable samples from 13 holes were sent to Wayne Harris, consulting palynologist for age determination in an attempt to resolve the complexities of the environment of deposition.

Results for samples from holes 80L5C and 80L30C are presented in Table 3.1.1. Lignite in hole 80L5C is of Eocene age (see Plan Nos. SAa 601/5, 490). Both Eocene and Jurassic coal were intersected in hole 80L30C where the Eocene-Jurassic boundary is established at between 50.05 and 52.0 metres hole depth (see Plan No. SAa 601/30). The remaining results are awaited.

3.2 Geochemical Analyses

3.2.1 Coal Proximate Analyses

Proximate analyses for the coal in drill holes 80L5C and 80L30C are presented in Appendix I.

The moisture free results are summarised in Table 3.2.1.

The Eocene coal in hole 80L5C has a very low ash content of between 12.29 and 17.46% (moisture free). Specific energy values are not yet available, however, recalculated on a mineral-matter-free basis (Table 3.2.2), this coal belongs to the Lignite B group of the ASTM Coal Classification. (Berkowitz, 1979).

Both Eocene and Jurassic coals were intersected in hole 80L30C. Eocene coal above 51 metres also belongs to the Lignite B group on the ASTM Coal Classification (Berkowitz, 1979) (Table 3.2.2). The Jurassic coal is high in ash (34.86% to 45.20% - moisture free) and lies between the Lignite A and Sub-bituminous C groups (Table 3.2.2).

Ultimate analyses of these samples and proximate analyses of coal chip samples from other rotary mud holes are awaited.

3.2.2 Pyrite Geochemistry

Pyrite was found in the (?) Permian diamictite clay as well as replacing woody fragments in coal at various levels in hole 80L30C. Three samples were analysed for Gold, Cobalt, Copper, Lead and Zinc. No significant values were returned. Geochemical analyses are presented in Appendix II.

3.3 Geophysics

0197

3.3.1 Electrical and EM Survey

Test soundings using EM and resistivity were carried out in this quarter. One sirotem sounding using 100 metre loops and two perpendicular resistivity soundings using a Schlumberger array were obtained at drill sites 80L5C, 80LRM8, 80L30C and 80LRM31 by Geoex Pty. Limited. This data is currently being analysed.

Table 3.1.1 Palynology Results Polda Holes 80L5C and 80L30C

Hole No.	Depth (m)	Age
80L5C	60.28	Eocene
80L5C	65.32	Eocene
80L5C	69.30	Eocene
80L30C	46.93	Eocene
80L30C	50.05	Eocene
80L30C	52.0	Jurassic
80L30C	58.50	Jurassic
80L30C	62.40	Jurassic
80L30C	62.80	Jurassic

Table 3.2.1 Moisture Free Proximate Analyses.

Polda Holes 80L5C and 80L30C.

Sample No.	Hole No.	Hole Depth From	To	Volatile Matter (%)	Fixed Carbon (%)	Ash (%)
889301	80L30C	48.16	51.02	45.84	39.91	14.25
889302	80L30C	58.49	59.80	36.19	18.61	45.20
889303	80L30C	60.12	62.84	43.03	22.11	34.86
889304	80L 5C	60.28	63.08	48.97	38.74	12.29
889305	80L 5C	63.08	65.82	47.76	39.64	12.60
889306	80L 5C	65.82	69.04	42.79	39.75	17.46

Table 3.2.2 Proximate Analyses Recalculated on a Mineral-Matter-Free Basis.

Sample No.	Hole No.	Hole Depth (m) From	To	Age	Moisture (%)	Volatile Matter (%)	Fixed Carbon (%)
889301	80L30C	48.16	51.02	Eoc.	55.26	23.91	20.82
889302	80L30C	58.49	59.80	Jur.	39.59	39.90	20.51
889303	80L30C	60.12	62.84	Jur.	36.14	42.19	21.67
889304	80L 5C	60.28	63.08	Eoc.	58.78	23.02	18.20
889305	80L 5C	63.08	65.82	Eoc.	56.79	23.61	19.60
889306	80L 5C	65.82	69.04	Eoc.	58.04	21.76	20.21

Note: Original analyses presented in Appendix I

Abbreviations used: Eoc. - Eocene
Jur. - Jurassic

3.3.2 Gravity Survey

0201

Geoterrex was contracted to carry out a combined gravity and optical levelling survey. Several gravity traverses were planned to define the topography of the concealed Precambrian basement along the northern basement margin.

R Williams.
for

M.J.N. FLITCROFT

REFERENCES

0202

Berkowitz, N. 1979; Introduction to Coal Technology, Academic Press

KEYWORDS

Coal-sub-bituminous, coal-lignite, Eocene, Jurassic, geophys-grav, geophys-EM, pyrite, palynology

LOCATION

Kimba SI 53-7

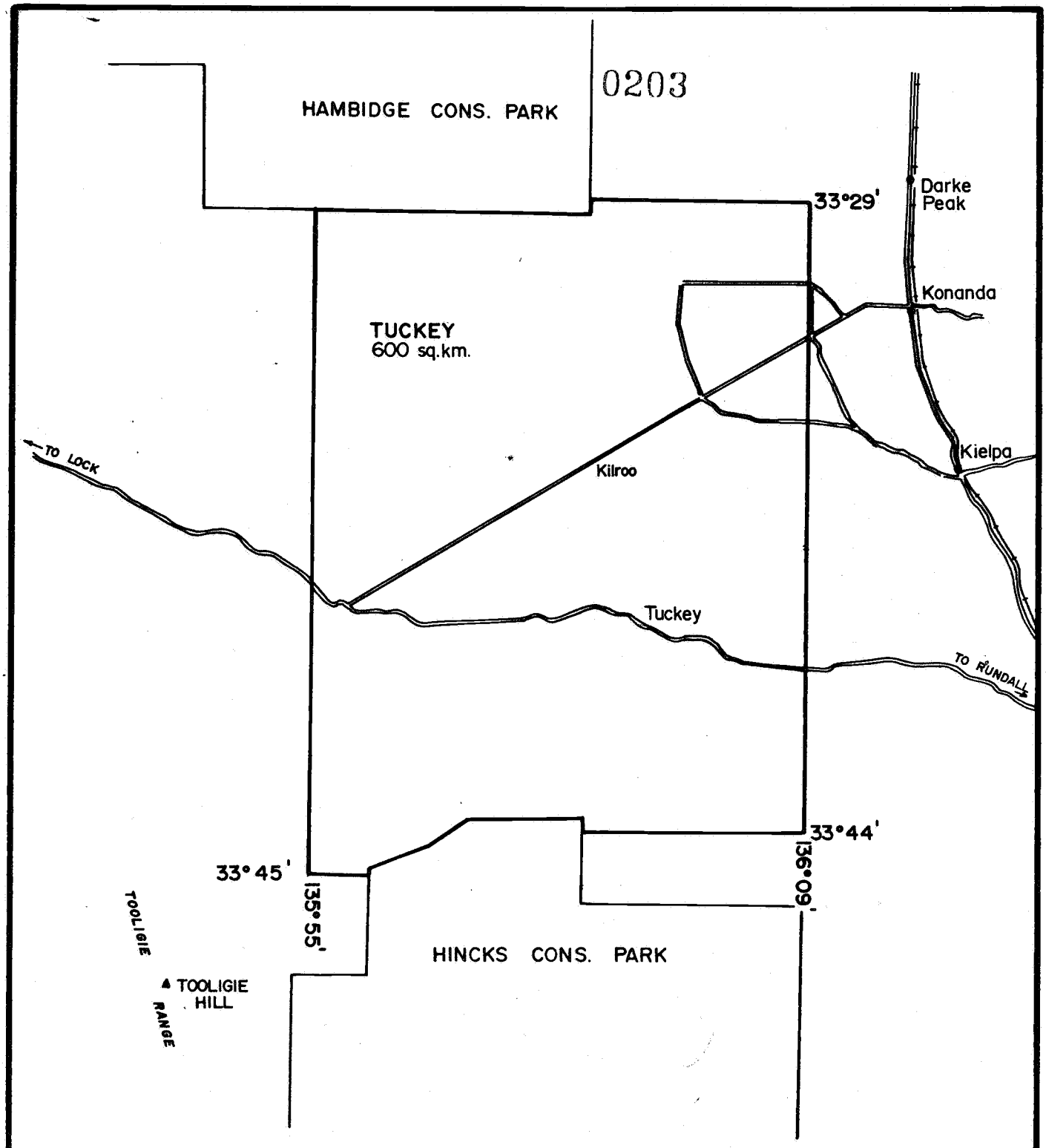
LIST OF PLANS

Plan No.	Name	Scale
SAa 381	Location Map Tuckey E.L.	1:250 000
SAa 382	Location Map Sheringa E.L.	1:500 000
SAa 472	Location Map McLachlan E.L.	1:500 000
SAa 490	CRAE 1980 Drill Hole Location Plan	1:250 000
SAa 601/5	Composite Log of Hole 80LRM5	1: 500
SAa 601/30	Composite Log of Hole 80LRM30	1: 500

LIST OF APPENDICES

Appendix I Proximate Analyses - Samples from Holes 80L5C and 80L30C

Appendix II Geochemical Ledger Sheets
Pyrite from Hole 80L30C



C.R.A. EXPLORATION PTY. LIMITED.

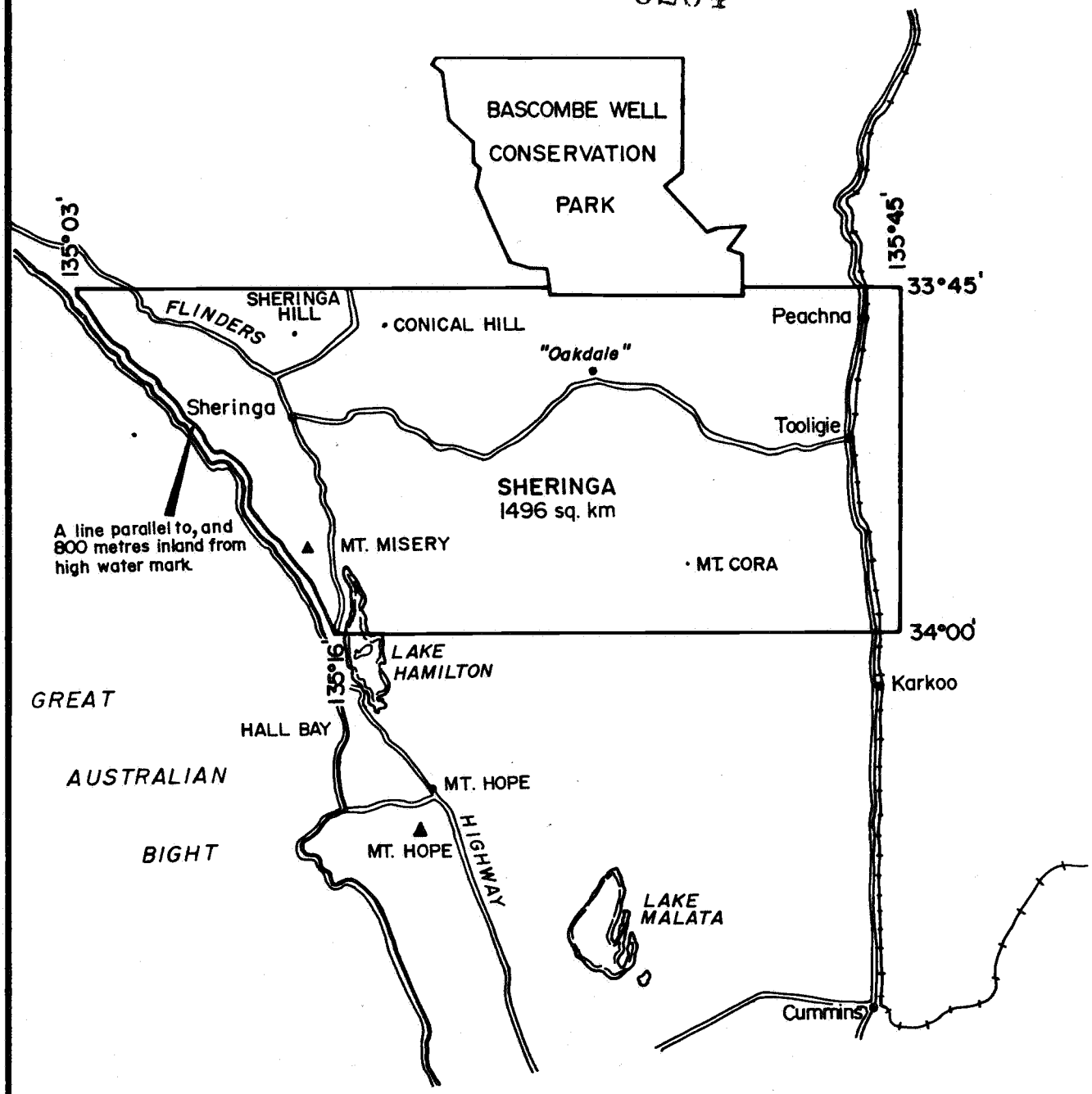
TUCKEY DM123/80

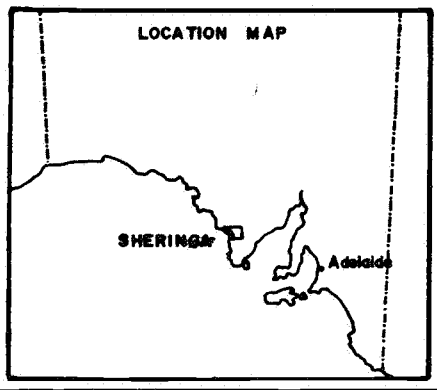
LOCATION MAP

SHEET REF: KIMBA SI53-7

Geol.	Scale: 1:250,000	Report N°: 10307
Drawn: J.C.R.	Date: June 1980	Plan N°: SAa381

0204





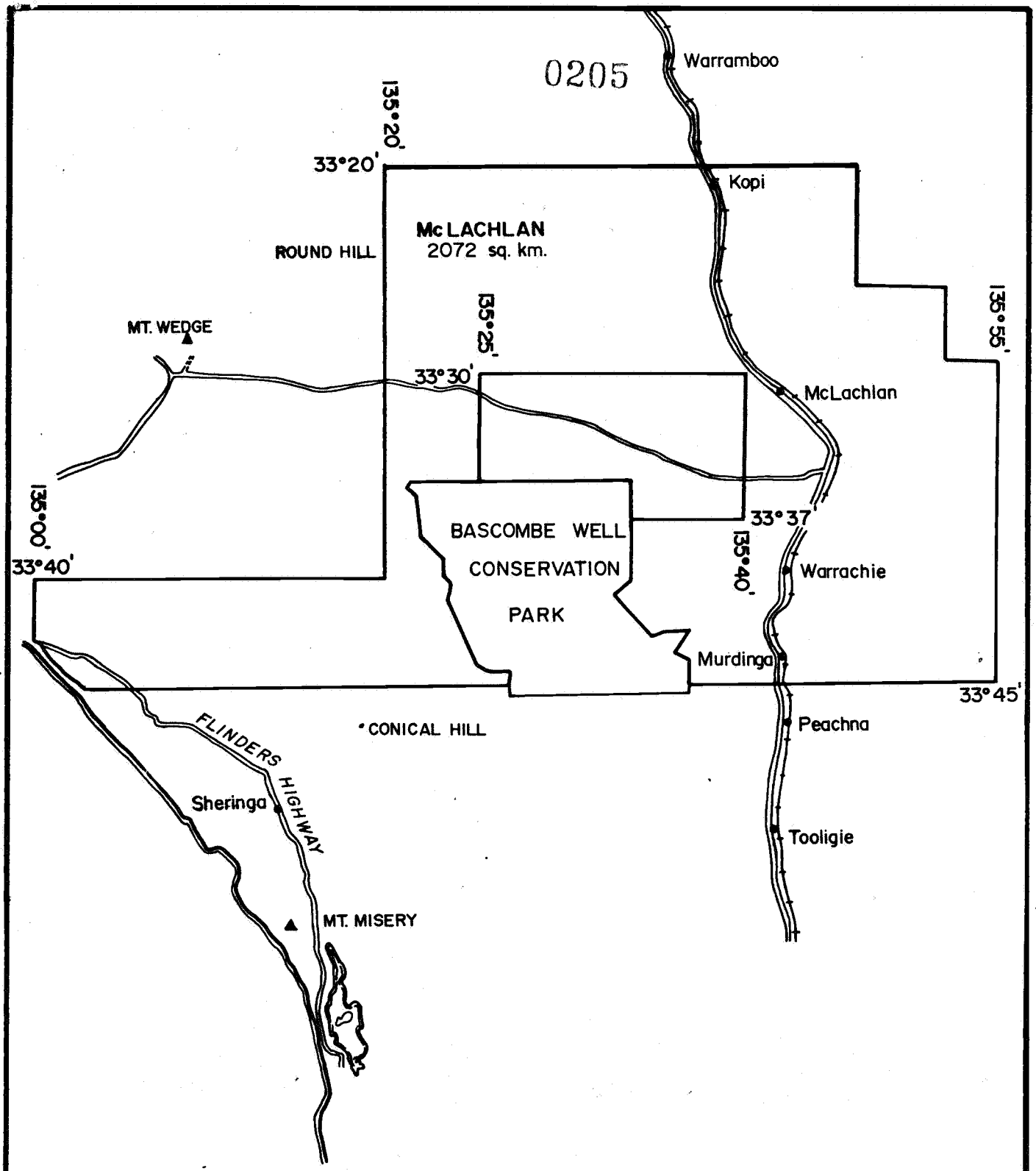
C.R.A. EXPLORATION PTY. LIMITED.

SHERINGA DM 124/80
LOCATION MAP

SHEET REF: KIMBA SI53-7

Geol.	Scale : 1:500,000	Report N°10307
Drawn J.C.R.	Date : June 1980	Plan N°: SAa382

0205



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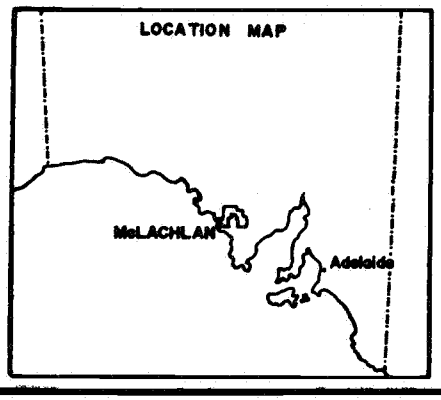

C.R.A. EXPLORATION PTY. LIMITED.

McLACHLAN DM 709/79
LOCATION MAP

SHEET REF: KIMBA SI53-7

Geol.	Scale: 1:500,000	Report N°: 10307
Drawn: J.C.R.	Date: June 1980	Plan N°: SAa 472

APPENDIX I

Proximate Analyses - Samples from Holes 80L5C and 80L30C

TENEMENT POLDA BASIN – COAL GEOCHEMICAL COAL SAMPLING LEDGER Page No. 1

AREA/PROSPECT MACKLAN EL670 TUCKEY EL687 SAMPLE Nos. 889301 – 306 D.P.O. No.

PLAN REFERENCE KIMBA SI53-7, SAa 490, SAa 601/5 GEOLOGIST MJNE DATE 12-12-80

A 9006 ANALYSED BY AMDEL

Hole No.	Sample No.	From	To	PROXIMATE ANALYSIS							ULTIMATE ANALYSIS						SPECIFIC ENERGY	Geological observations
				AS RECEIVED				MOISTURE FREE										
				Moisture	Volatile Matter	Fixed Carbon	Ash.	Volatile Matter	Fixed Carbon	Ash.								
80L30C	889301	48·16	51·02	51·44	22·26	19·38	6·92	45·84	39·91	14·25								Eocene lignite
80L30C	889302	58·49	59·80	26·42	26·63	13·69	33·26	36·19	18·61	45·20								Jurassic hard subbituminous
80L30C	889303	60·12	62·8	26·93	31·44	16·15	25·47	43·03	22·11	34·86								" " "
80L5C	889304	60·28	63·08	55·57	21·76	17·21	5·46	48·97	38·74	12·29								Eocene lignite
80L5C	889305	63·08	65·82	53·46	22·23	18·45	5·87	47·76	39·64	12·60								" " woody
80L5C	889306	65·82	69·0	53·30	19·98	18·56	8·15	42·79	39·75	17·46								" "

0208

APPENDIX II

Geochemical Ledger Sheets

Pyrite from Hole 80L30C

0209

TENEMENT POLDA BASIN – COAL

GEOCHEMICAL SOIL SAMPLING LEDGER

Page No. 1

AREA/PROSPECT McLACHLAN EL670, TUCKEY EL687 SAMPLE Nos. 889 309 – 11

D.P.O. No. B 0113

PLAN REFERENCE KIMBA SI 53-7

GEOLOGIST MJNF DATE 15NOV80

A 9006

ANALYSED BY COMLABS

Grid Co-ordinate	Sample No.	Soil Composition					Soil Horizon	Sample		Bedrock			Metal Content in ppm.					Geological observations
		Rock %	Organic %	Sand %	Silt %	Clay %		Depth cm.	Colour	Outcrop	Con-cealed	Est. Depth to	Pb	Zn	Cu	Au	Co	
80L30C ~49m	889309												10	14	16	<0.05	24	Pyrite nodule replaced wood fragment in lignite.
80L30C 86m – EOH	889310												<4	8	10	<0.05	50	Pyrite in green diamictite basement.
80L30C ~52m	889311												24	12	22	<005	40	Pyrite – replacing woody fragment.

CRA EXPLORATION PTY. LIMITED

0210

THIRD QUARTERLY REPORT ON POLDA BASIN, SOUTH AUSTRALIA, McLACHLAN E.L. 670 FOR THE PERIOD ENDING APRIL 6, 1981 TUCKEY E.L. 687 AND SHERINGA E.L. 688 FOR THE PERIOD ENDING MAY 10, 1981.

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AUTHOR: D.R. McBAIN

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DATE: JULY 20, 1981

SUBMITTED BY: D R McBain

ACCEPTED BY:

10307

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1. SUMMARY

A gravity survey has proved the existence along the northern margin of the Polda Basin, of an east-west trending fault with a downthrow to the south; the downthrow is variable along strike. Step faulting is indicated on line 3 with E.L. 670 (McLachlan). Future drilling will be able the confirm the geophysical interpretation.

2. CONCLUSIONS

2.1 Faulting is more complex along parts of the northern margin of the Polda Basin than previously envisaged.

2.2 The northern marginal fault is east-west trending with downthrow to the southern side.

2.3 The throw on the fault varies along strike, from a negligible throw on line 1 to the west, up to 1300 metres on line 5.

2.4 Drilling will determine whether faulting influences sedimentation, and has an effect on lignite deposition.

3. INTRODUCTION

The Polda Basin tenements, covering 4 168 square kilometres, comprise three E.L.'s - McLachlan E.L. 670, Tuckey E.L. 687 and Sheringa E.L. 688. (See Plan No. SAa 472, 381, 382). These three exploration licences extend from Sheringa on the west coast of Eyre Peninsula, through Lock to Rudall in the east.

This report describes the work carried out by CRA Exploration Pty. Limited during the third quarter to May 11, 1981.

4. WORK CARRIED OUT

0213

4.1 Gravity Survey

Five gravity traverses each approximately five kilometres in length were surveyed by Geoterrex Pty. Limited in February 1981. (Plan SAa 722). The survey data is supplied in Appendix I.

The object of the gravity survey was to determine the location and the magnitude of faulting inferred from the 1980 drilling programme. Interpretation of the gravity data appears in Appendix I.

The faulting interpreted from the gravity survey will be validated or otherwise by forthcoming drilling.

D.R. McBAIN

DRM/pw

KEYWORDS

0214

Kimba SI 53-7, Tertiary, Coal-lignite, Geophys-grav

LOCATION

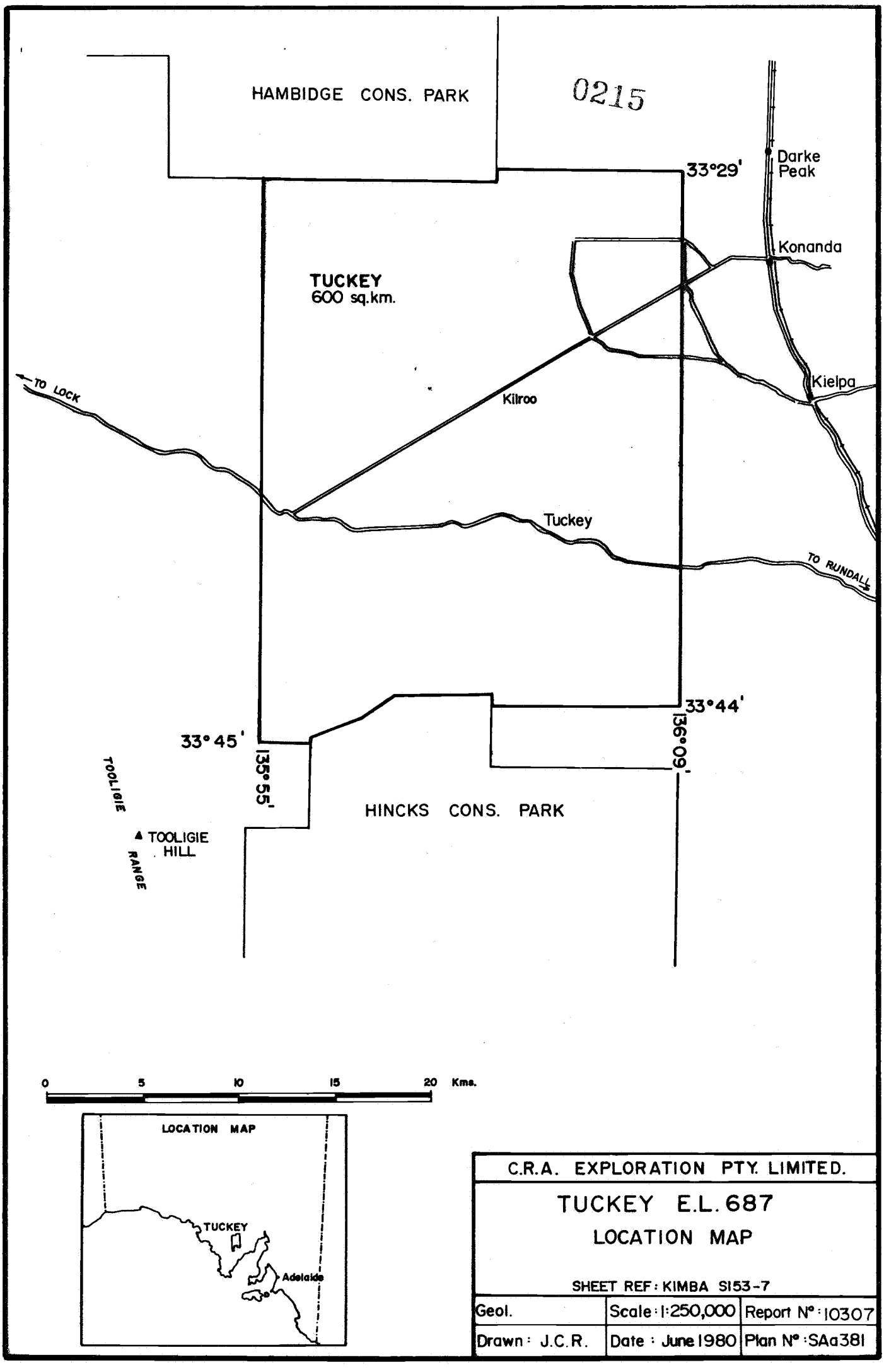
Kimba SI 53-7 1:250 000

LIST OF PLANS

Plan No.	Title	Scale
SAa 381	Location Map Tuckey E.L. 687	1:250 000
SAa 382	Location Map Sheringa E.L. 688	1:250 000
SAa 472	Location Map McLachlan E.L. 670	1:250 000
SAa 772	Polda Basin - Location of Geoterrex Gravity Traverses	1:250 000

APPENDIX

Appendix I Gravity Survey - Data and Interpretation



C.R.A. EXPLORATION PTY. LIMITED.

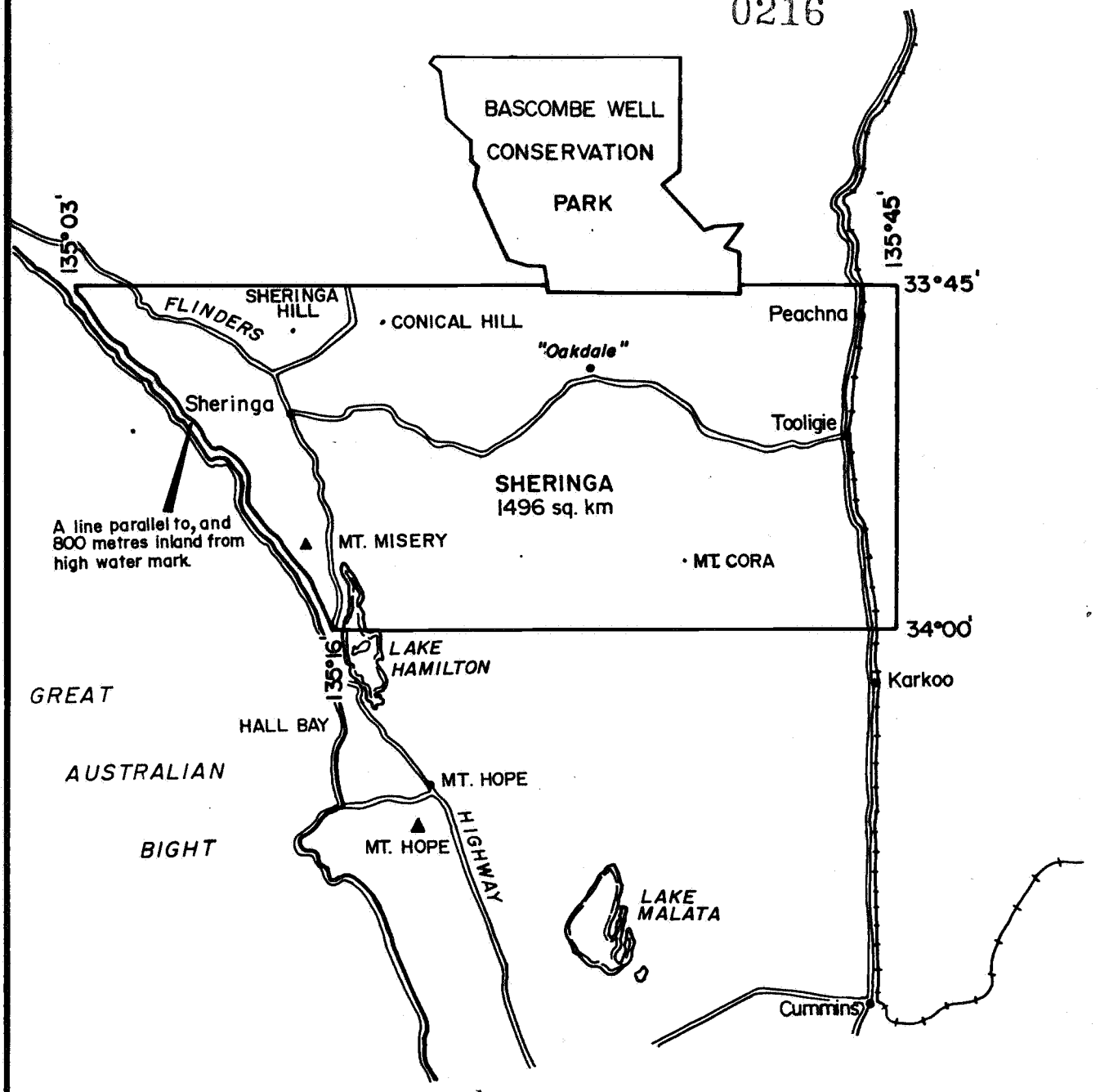
TUCKEY E.L. 687

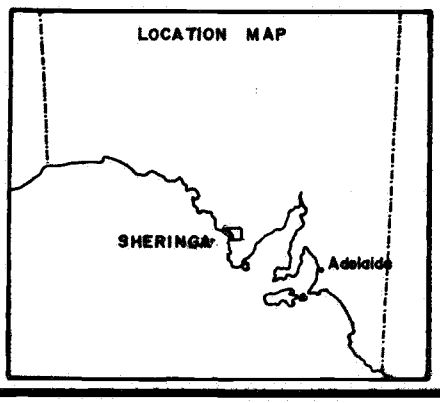
LOCATION MAP

SHEET REF: KIMBA SI53-7

Geol.	Scale: 1:250,000	Report N°: 10307
Drawn: J.C.R.	Date: June 1980	Plan N°: SAa381

0216





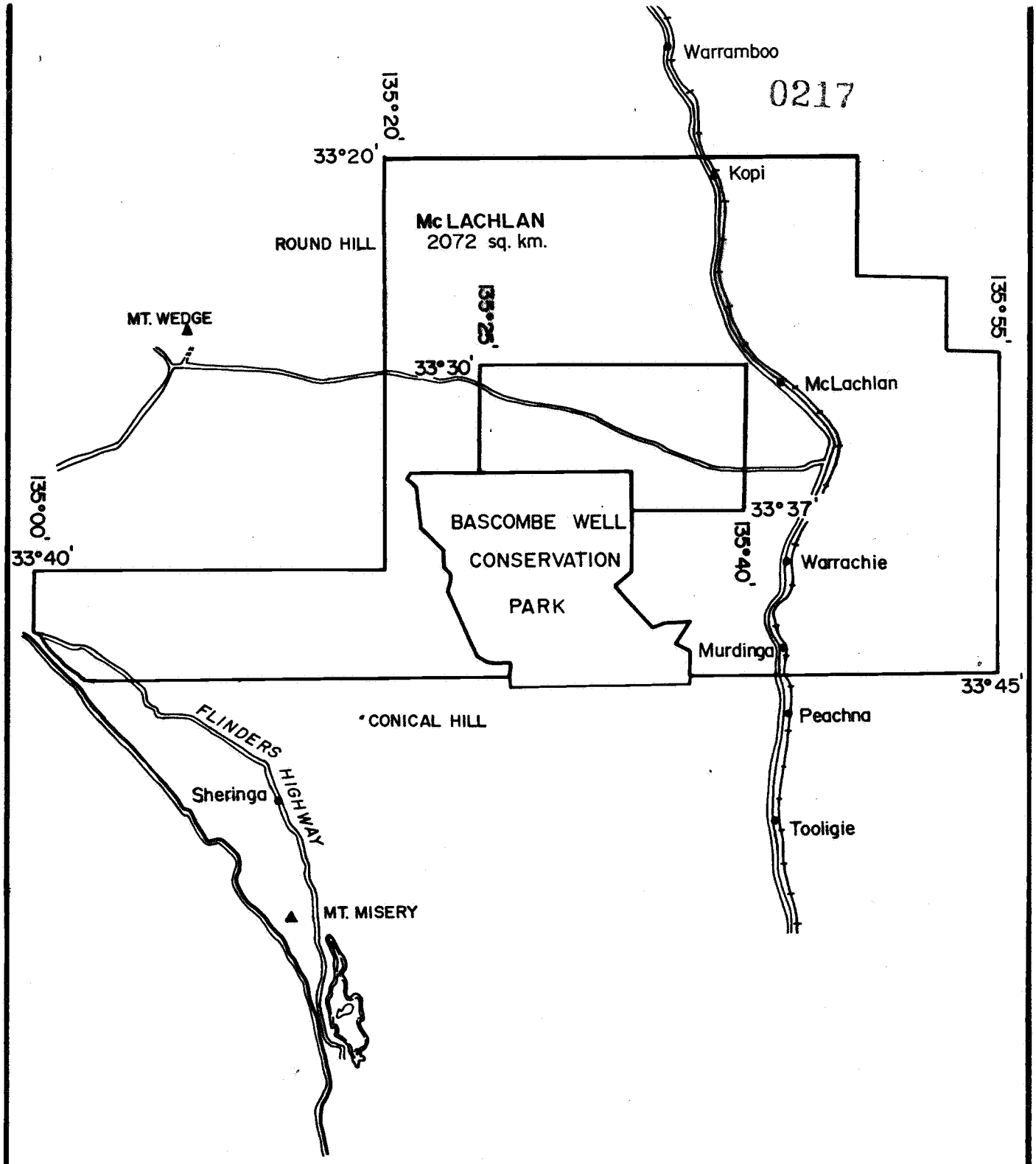
C.R.A. EXPLORATION PTY. LIMITED.

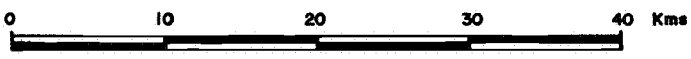
SHERINGA E.L.688
LOCATION MAP

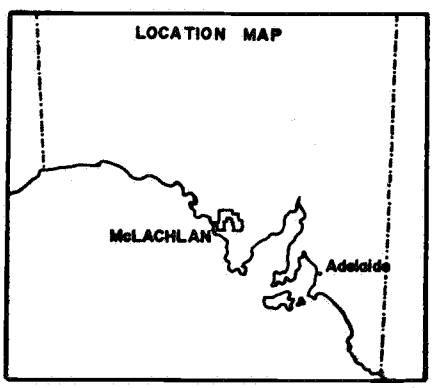
SHEET REF: KIMBA S153-7

Geol.	Scale : 1:500,000	Report N°10307
Drawn J.C.R.	Date : June 1980	Plan N°: SAa382

0217







C.R.A. EXPLORATION PTY. LIMITED.

McLACHLAN E.L. 670

LOCATION MAP

SHEET REF: KIMBA SI53-7

Geol.	Scale: 1:500,000	Report N°: 10307
Drawn: J.C.R.	Date: June 1980	Plan N°: SAa 472

135°15'
33°15'
6320000N
135°30'
550000E
136°00'
136°00'
600000E
136°15'
33°15'
6320000N

McLACHLAN E.L. 670

●DARKE PEAK

TUCKEY E.L. 687

33°30'

33°30'

LINE 1
33°29'42"
135°22'54"
33°32'24"

LINE 2
33°31'15"
135°41'37"
33°33'58"
LOCK●

LINE 3
33°31'39"
135°46'43"
33°34'23"

LINE 4
33°31'39"
135°55'00"
33°34'21"

LINE 5
33°31'46"
136°01'37"
33°34'29"

BASCOMBE WELL
CONSERVATION PARK

6000000E
136°15'
6270000N
6270000N
33°45'
135°15'
135°30'
550000E
135°45'
136°00'

C. R. A. EXPLORATION PTY. LIMITED

POLDA BASIN

LOCATION OF GEOTERREX GRAVITY TRAVERSES

Ref. KIMBA SI 53-7	
Scale 1:250,000	Drawn DD
Author G.J.B.	Report No. 10307
Date MARCH 1981	Plan No. SAc 722

APPENDIX I

GRAVITY SURVEY - DATA AND INTERPRETATION

0220

LOGISTICS REPORT ON A

RELATIVE GRAVITY SURVEY

AT

LOCK, SOUTH AUSTRALIA

CARRIED OUT BY

GEOTERREX PTY LTD, AUSTRALIA

ON BEHALF OF

C.R.A. EXPLORATION

Job. No. 85-1283

Date: February 1981

Geophysicist: G. Piper

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3)	SURVEY PROCEDURE	3.
4)	DATA REDUCTION AND PRESENTATION	4.
5)	DATA ACCURACY	5.
6)	CONCLUSIONS	7.

APPENDICES

APPENDIX	I.	Equipment Specifications
	II.	Bench Mark Location Diagrams
	III.	Survey Production Reports
	IV.	Repeat Statistics
	V.	Field data sheets

LIST OF FIGURES

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FIGURE 2	HISTOGRAM OF REPEAT BOUGUER GRAVITY VALUES	9.

0223

1) INTRODUCTION

From the 6th February, 1981 to 20th February, 1981 Geoterrex Pty Ltd carried out a regional gravity survey in the Lock area of South Australia, on behalf of C.R.A. Exploration.

The purpose of this survey was to locate a major fault which was of an east-west trending nature. This fault was to be used as an indicator to possible coal deposits i.e. an increas in basement depth along one side of the fault giving rise to an increase in the thickness of the sedimentary sequence which contains the coal measure.

0224

2) PERSONNEL

Geoterrex provided an experienced geophysicist/crew chief (G. Piper) and a surveyor/technician (B. McMahon) for the field work. C.R.A. provided a field assistant (J. Carbone) to assist the Geoterrex crew.

3) SURVEY PROCEDURE

C.R.A. defined the starting point of each of five lines to be gridded, and surveyed using the gravity technique. The lines were gridded using 'chain and compass' with pegs being used to mark stations at 200 metre intervals. Pegs were marked with line number and station number. The lines being numbered 1 through 5 with line 1 being designated as the westernmost line. The southern most peg on each line was designated 0000 with the co-ordinate numbers increasing northwards.

The lines were then marked onto the 1:31,680 and 1:50,000 base maps of the areas using the location of distinct cultural and natural features.

These lines were then optically levelled using a Wild automatic level with a closure of +/- 5cms over 5 kilometres being maintained. All levels were adjusted to the Australian Height Datum by optical ties to known Bench Marks in the area.

A LaCoste and Romberg Gravity Meter, G586, was used to survey the stations established. Measurement loop times (typically less than one hour) were kept to a minimum to minimise the effects of instrument drift and to allow tidal drift to be assumed to be linear for calculation purposes. An arbitrary base level of 100.00 mgal was chosen for the survey base, station 0000/line 1, and all bouguer gravity values calculated are with respect to this station.

0226

4) DATA REDUCTION AND PRESENTATION

Data reduction was performed assuming tidal drift to be linear throughout each data reading loop. Under this assumption the 'tidal drift' and 'meter drift' were considered as a single 'drift' correction which was applied to each reading. Using the optical elevations and a 'bouguer density' of $2.67 gcm^{-3}$, the free air and bouguer correction were calculated and applied to the data. A latitude correction was also applied to the data. This correction was calculated from the latitude gradient north of $33^{o}36'00"S$ and south of $33^{o}29'00"S$ (a correction of + 748 x 10^{-6} mgal m^{-1} is applied for each metre a station falls north of latitude $33^{o}36'00"S$)

From the above, data plots of Bouguer Gravity and elevation were prepared and submitted to C.R.A. The field data sheets and daily production reports are appended to this report.

5) DATA ACCURACY

0227

The final error in the "Bouguer Gravity' values will be a combination of 'measurement error' and 'instrumentation error'.

Using the expression listed below an estimate of the error inherant in a survey can be obtained.

$$G = g_{obs} + c.h. + g_{\phi} + g_T$$

where:

g_{obs} = observed gravity (corrected for tidal and meter drift)

c = elevation correction constant (combined free air and Bouguer correction)

h = station elevation

g_{ϕ} = latitude correction

g_T = terrain correction

The total error in the Bouguer gravity value, e_G, may then be expressed as:-

$$e_G^2 = eg_{obs}^2 + (c.e._h)^2 + eg_o^2 + e_T^2$$

where:-

eh is of the order of +/- 5cms (max. loop misclosure)

$c.e._h$ = +/- (.05 x .19686) mgal

eg_o (max) = +/- .007mgal (as station positions are considered accurateto +/- 10m N/S)

As repeat gravity values are calculated using the same elevation and latitude corrections then the standard deviation of the bouguer gravity values is equal to the error in the observed gravity value (i.e. eg_{obs})

Therefore using the histogram in Figure 1:-

eg_{obs} = +/- .027 mgal

Hence:

$$e_G^2 = (.027)^2 + (.05 \times .19686)^2 + (.007)^2$$

$$= .000729 \text{ mgal}^2 + .0001452 \text{ mgal}^2$$

and

$$e_G = +/- .03 \text{ mgal}$$

0229

6) CONCLUSIONS

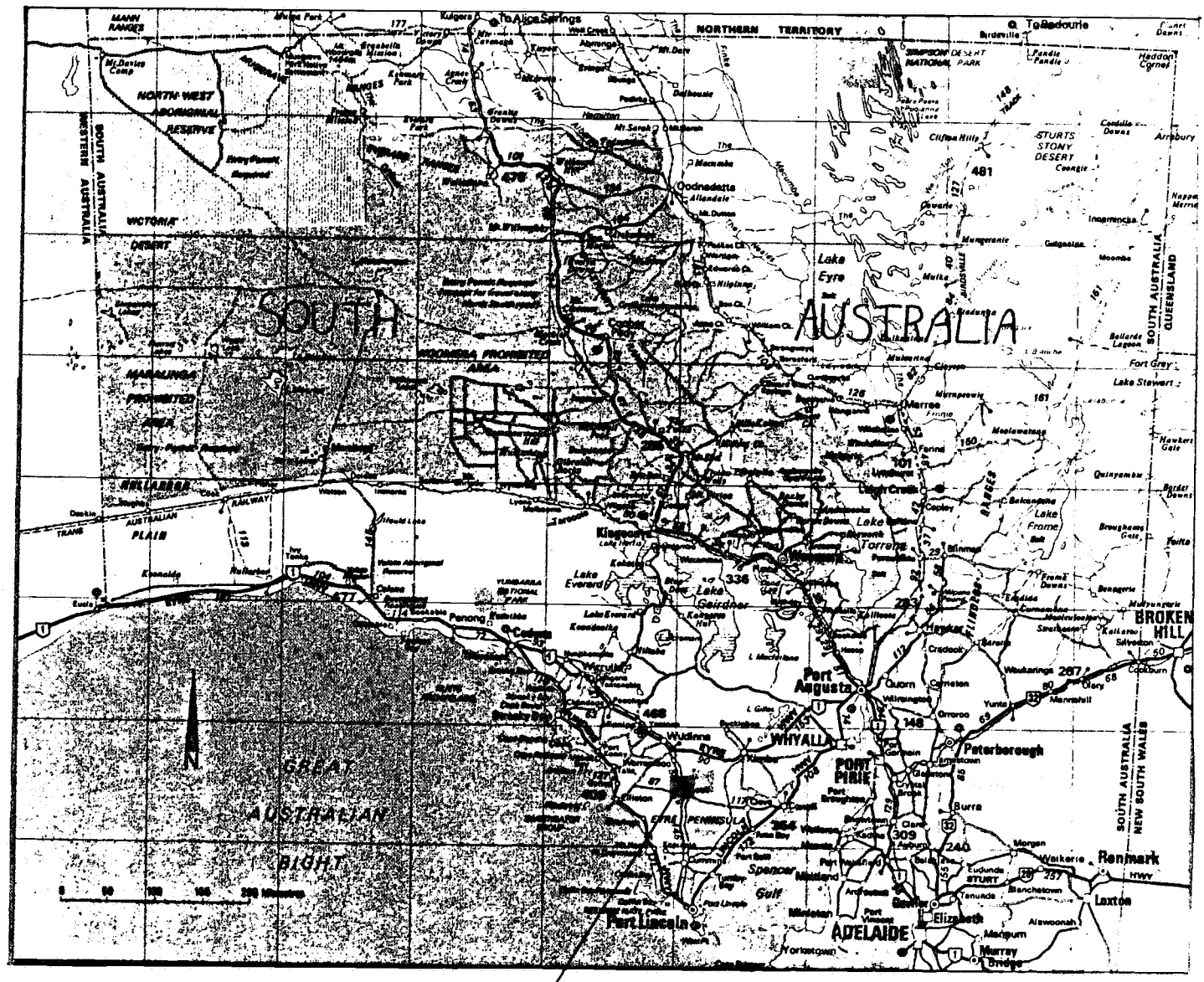
In the course of this survey 130 stations were established. Using approximately a 10% repeat statistic an accuracy of +/- .03 mgal has been determined as being representative. The main sources of inaccuracy are represented as being from instrument/tidal drift and elevation determination.

Respectfully submitted,

Greg Piper
Geophysicist

FIGURE 1 LOCATION DIAGRAM

0230

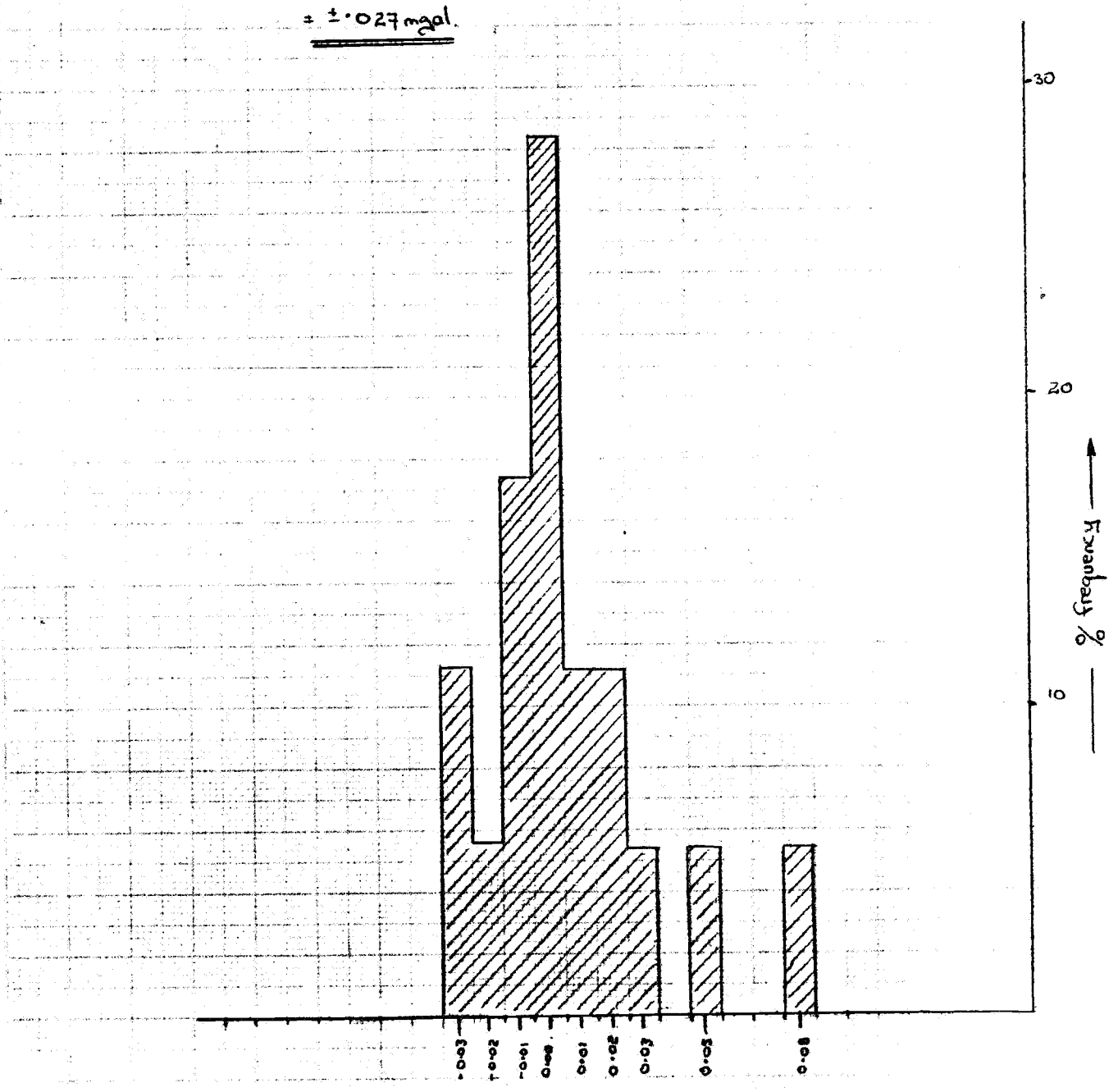


0231

Histogram Showing Gravity Repeat Variation

$$S.D. = \sqrt{\frac{\sum_{1}^{N} (x - \bar{x})^2}{N-1}}$$

$= \pm 0.027$ mgal.



0232

A P P E N D I X 1

Equipment Specifications

(1) LaCoste and Romberg 'Model G Gravity Meter'

(2) Wild NAK-O Level

This instruction manual is issued for

Model G Gravity Meter #G- 586 0233

Reading Line: 2.90

Operating Temperature: 51.5 °C

The LaCoste & Romberg Model G gravity meter and the accessories that are normally supplied with the gravity meter are shown on the following pages. Model G gravity meters have a range of over 7000 milligals, a reading accuracy of ±.01 milligal, and a drift rate of less than 1 milligal per month.

LaCoste & Romberg gravity meters are sealed to eliminate any effect from changes in the atmospheric pressure. As a safety precaution, they are also internally pressure compensated. The sensor is completely demagnetized and then enclosed within a magnetic shield.

The gravity meter, carrying case and battery weigh about 19 pounds. The battery charger and leveling disc weigh an additional 8 pounds.

LaCoste and Romberg Model G Geodetic Gravity Meter

The LaCoste and Romberg, Model G Gravity Meter and the accessories that are normally supplied with the gravity meter are shown in Figures 1 thru 4. Model G Gravity Meters have a range of over 7000 Milligals, a reading accuracy of ± .01 Milligal, and a drift rate of less than 1 mgl. per month.

LaCoste and Romberg Gravity Meters are sealed to eliminate any effect from changes in the atmospheric pressure. As a safety precaution, they are also internally pressure compensated. The sensor is completely demagnetized and then enclosed within a magnetic shield.

The gravity meter, carrying case and battery weigh about 19 pounds. The battery charger and levelling disc weigh an additional 8 pounds.

TABLE 1

0235

MILLIGAL VALUES FOR LACOSTE & ROMBERG, INC. MODEL G GRAVITY METER #G- 586

COUNTER READING*	VALUE IN MILLIGALS	FACTOR FOR INTERVAL	COUNTER READING*	VALUE IN MILLIGALS	FACTOR FOR INTERVAL
000	000.00	1.02727	3600	3697.90	1.02806
100	102.73	1.02711	3700	3800.70	1.02810
200	205.44	1.02696	3800	3903.51	1.02813
300	308.13	1.02686	3900	4006.32	1.02815
400	410.82	1.02679	4000	4109.14	1.02818
500	513.50	1.02676	4100	4211.96	1.02819
600	616.18	1.02672	4200	4314.78	1.02821
700	718.85	1.02671	4300	4417.60	1.02822
800	821.52	1.02671	4400	4520.42	1.02823
900	924.19	1.02673	4500	4623.24	1.02823
1000	1026.86	1.02675	4600	4726.07	1.02820
1100	1129.54	1.02677	4700	4828.89	1.02817
1200	1232.21	1.02680	4800	4931.70	1.02812
1300	1334.89	1.02682	4900	5034.51	1.02807
1400	1437.58	1.02686	5000	5137.32	1.02802
1500	1540.26	1.02690	5100	5240.12	1.02796
1600	1642.95	1.02694	5200	5342.92	1.02790
1700	1745.65	1.02699	5300	5445.71	1.02783
1800	1848.35	1.02703	5400	5548.49	1.02774
1900	1951.05	1.02708	5500	5651.27	1.02768
2000	2053.76	1.02713	5600	5754.03	1.02751
2100	2156.47	1.02720	5700	5856.78	1.02738
2200	2259.19	1.02724	5800	5959.52	1.02722
2300	2361.91	1.02731	5900	6062.24	1.02704
2400	2464.64	1.02736	6000	6164.94	1.02684
2500	2567.38	1.02741	6100	6267.63	1.02661
2600	2670.12	1.02748	6200	6370.29	1.02637
2700	2772.87	1.02755	6300	6472.93	1.02612
2800	2875.62	1.02763	6400	6575.54	1.02585
2900	2978.39	1.02770	6500	6678.12	1.02557
3000	3081.16	1.02775	6600	6780.68	1.02529
3100	3183.93	1.02781	6700	6883.21	1.02501
3200	3286.71	1.02788	6800	6985.71	1.02471
3300	3389.50	1.02793	6900	7088.18	1.02442
3400	3492.29	1.02798	7000	7190.62	
3500	3595.09	1.02803			

* Note: Right-hand wheel on counter indicates approximately 0.1 milligal.

10-27-80
TN-

WILD NAK-O LEVEL 0236

Technical Data

Heighting accuracy of a single 30m/100ft sight with an adjusted instrument (i.e. estimation on normal staff)	about +/- 1mm		+/- 0.003ft
Telescope	erect image		
Magnification	20x		
Clear objective aperture	30mm		1.18in
Field of view at 100m/ft	3.6m		3.6ft
Shortest focussing distance	0.9m		3.0ft
Multipliaation constant	100		
Additive constant	0		
Tilting range of compensator	+/- 15'		
Sensitivity of circular bubble	8' per 2mm		
Horizontal circle (metal)	400^{o}	or	360^{o}
Diameter	100mm		3.94in
Graduation interval	1^{o}	or	1^{o}
Reading by estimation	0.1^{o}	or	0.1^{o}

A P P E N D I X 2

Bench Mark Location Diagrams

272 5711. V33 0238 Form 176

ENGINEERING and WATER SUPPLY DEPARTMENT

To BRUCE CBRR HYDRO 19

OBTAINED FROM E.W.S. (CLEM. DRUMMOND)

HOLE

SQR -69 on
No. 325 on
634-000-204(3)

WHERE ELEV. IS REFERENCED to, TOP OF PIPE CAP?

ELEV. = 50.312 metres

50.118
Ga. 49.978
Tel 50.740
50.737

MR. GREG PIPER
% LOCK HOTEL
Rm #5

ALSO PIPE LINE
B.M. for

SQR. - MAP SECTION 22 or 4

McLACHLAN - MAP SECTION 116, 24, 26, 25

L7239

FROM	LINE	B.M. USED			EL.
EWS.	1	SQR-69	No. 325	634-000-204	50.312m
D. of LAND	S.A.2	769			110.222m
"	3	~~754~~ 741			126.663
"	4	734			82.831m
E.W.S	5	6130-4078			105.946m

Form 176

...ERING and WATER SUPPLY DEPARTMENT

0239

..... 19

*

FROM DEPT MINES AND ENEGY
PHONE 08 - 272 5711 EXTENSION 33
SQR - 69
Nº 325
634 · 000 - 204 (3)

ELEV 50 · 118
GROUND 49 · 978 *
TOP OF PIPE 50 · 737

CALLER MR BRUCE EBERHARDT
OTHER REFERENCES FOR SQUIRE AND
McLACHLAN STILL COMING.

GRID NEW !

"0130 · 4078" ⇒ TRIANGULATION STN.
IN BOONERAH RESERVE
LOT, 31, 32, 22.

NO CO-ORDS

1) ELEV = ? 105·940m 2) ACCURRACY OF IT!
3RD ORDER

L7239

0240

BENCH MARK SUMMARY 6030/1079

Station No. 769

Loop KAPPAWANTA

Established by - Dept of Lands S.A

Date - 19-2-64

Reference book -

Mark - BM Plaque set in concrete at surface level OBM

Reference mark - CHR SIP Post F.L 0.7', 3.5', 32.25' Water Valve Manhole

State S.A

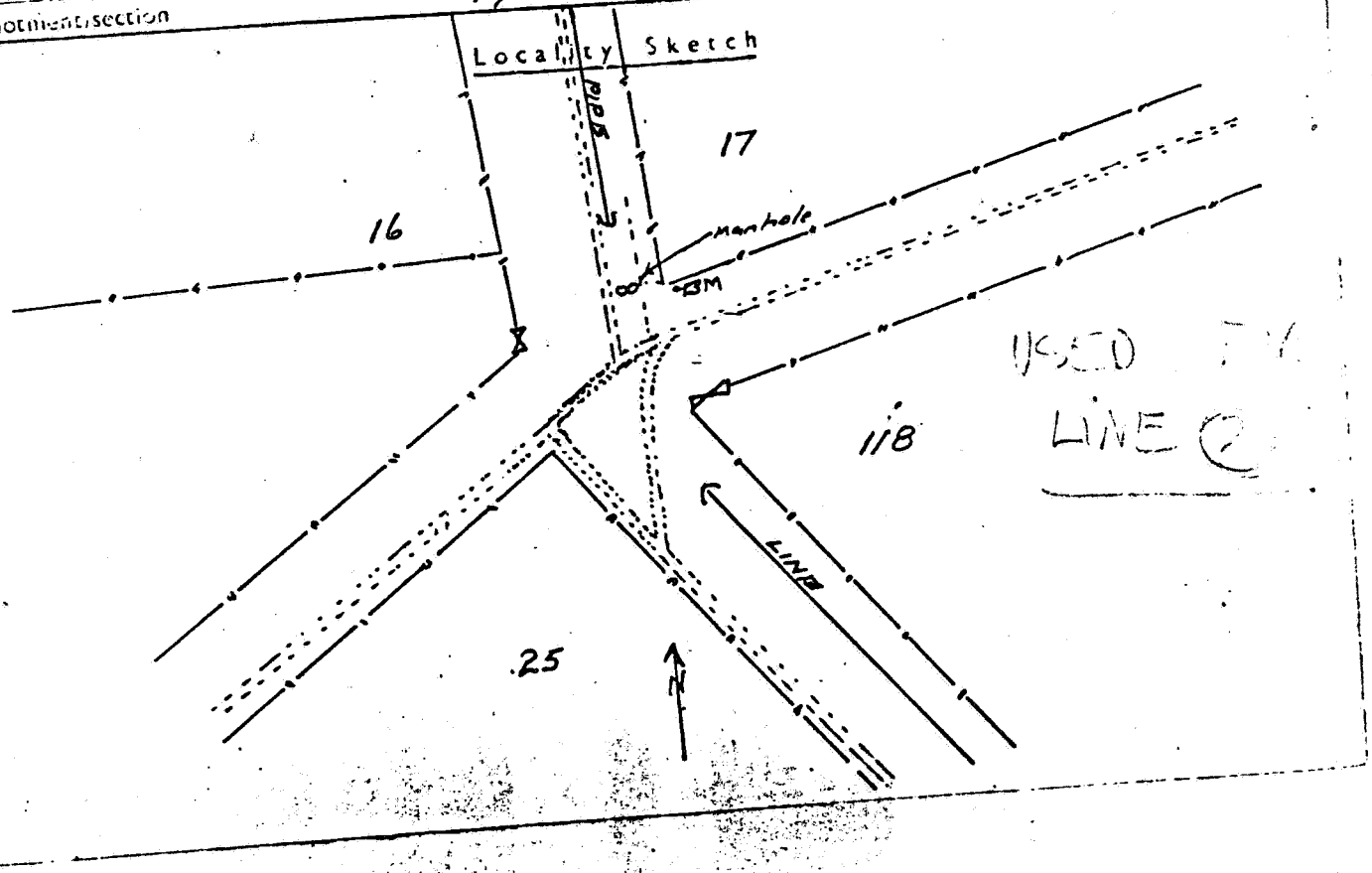
Allotment/section 17

Station Value		
Date	Datum	Ht. (feet)
29-5-64	Tg. Lincoln	415.531
"	M.S.L.(2)	361.971
"	MSL (1)	360.716
Nov 71	A.M.D.	110.222 metres

Title no 658

Photo no - 0101

Locality Sketch



USED FOR LINE 2

0241

BENCH MARK SUMMARY 603c/1077

Loop KAPPAWANTA Station No. 767 3

Established By - Dept of Lands S.A

Date - 19-2-64

Reference book -

Mark - BM Plaque set in concrete at surface level

Reference mark - F.L. 1.3'
Gate Post 3.0'
Fence Intersection 24.0'

Map ref -

Series - Cat. No. 11

Map - 377 Parish 856

County -

State S.A

Locality - MUSGRAVE

Adjoining Section - McLACHLAN 18

Station Value		
Date	Datum	Ht. (feet)
24-3-64	Ph. Lincoln	Assd.
"	M.S.L.(2)	335.830
"	MSL (1)	334.578
Nov 71	A.H.D.	102.249

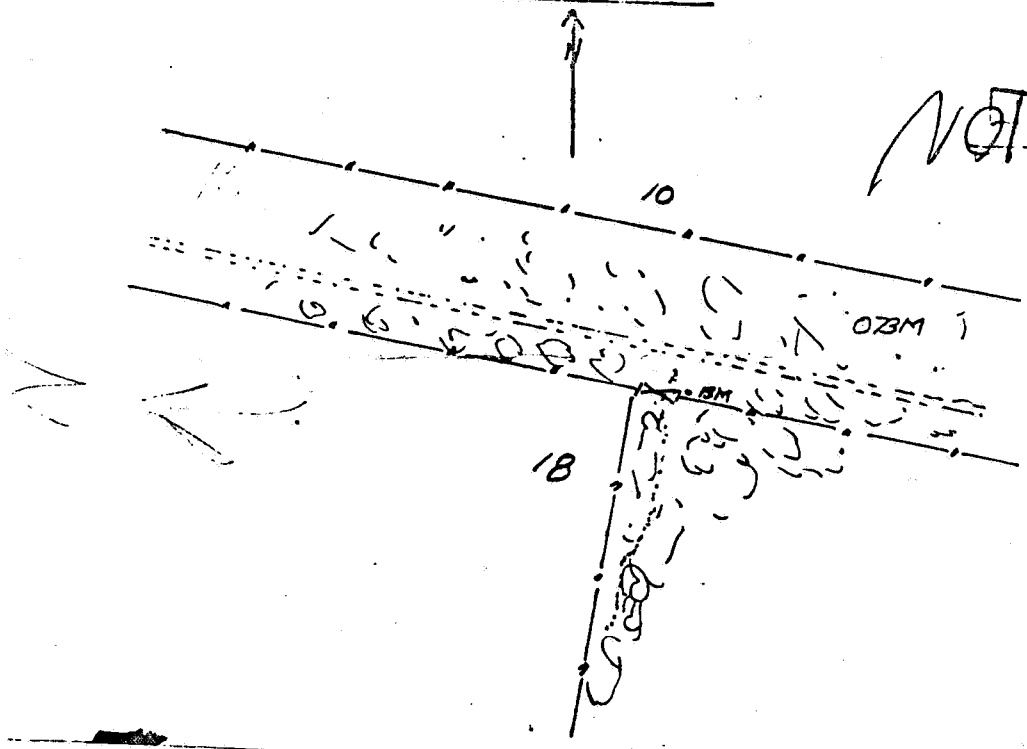
Plan ref. - 658

Photo ref. - 0155

Survey -

Remarks -

Locality Sketch



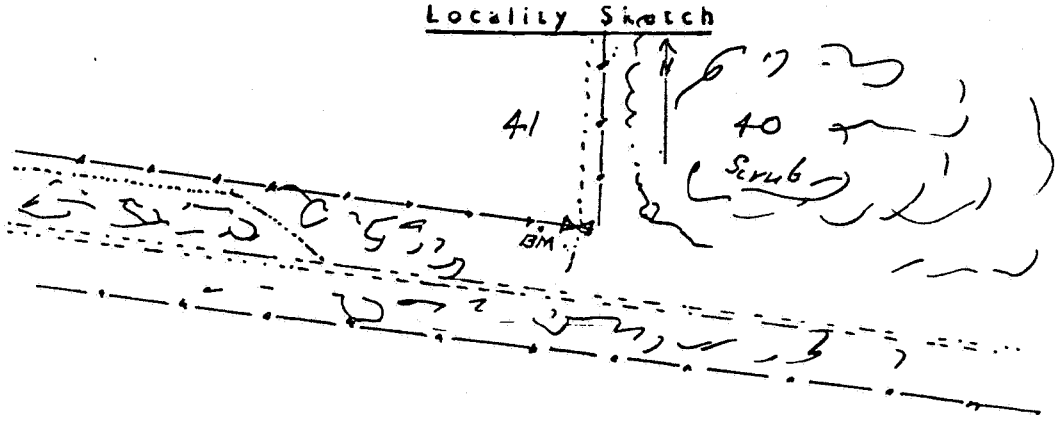
NOT USED

0242

BENCH MARK SUMMARY 6030/1044

Loop TODLIGIE	Station No. 734			Cir. 3
Established by - Dept of Lands S.A	Station Value			
Date -	Date	Datum	Ht. (feet)	Remarks
Reference book - L.P. 8585-86 7907	7-3-64	P.M. Lincoln	272.315	
Mark - 12" Brass Bolt set in concrete 11.6' E/10 Nut sunk flush with BM Plaque at surface level	"	M.S.L. (2)	272.315	"
	"	MSL (1)	271.095	ADJ 2
Reference mark - F.L. 0.8' S/F Post 2.0' Fence Intersection S/F Post 19.1' S/F Post 4.3' Gate to	May 74	A.H.O	E2.831	metres
Map reference -	Photo identification -			
Series Scale	Title	Film no 158	Run	
Map East 312 North 852	Photo no. - 0093			
Cadastral reference -	Situation - ~~Dam~~			
State S.A. TRIG. SERVOIS	Access -			
Area MOONARERDO				
Allotment 41				

Locality Sketch



15

LINE (4)

BENCH MARK SURVEY

Station No. 741

0243 3

Loop TOOLLGIE

Established by - Dept of Lands S.A

Date - 15 - 2 - 69

Reference book - L.P. 8294-95, 7879

Mark - BM Plaque set in concrete at surface level

Reference mark - Str Post 2.5' E 1.5' Fire Sign 75.7' Stop Valve & E.D.S.S FIRE

Map ref.

Series

Map 377 North 853

Locality

State S.A MUSGRAVE

Hundred - McLACHLAN

Allotment section 19

Date	Datum	Station Value Ht. ft.
"	M.S.L.(2)	435.940
"	MSL (1)	434.697
May 74	A.H.D.	~~432.750~~
28-9-77	A.H.D.	415.562

ADJ. 2. metre- ~~feet~~

658

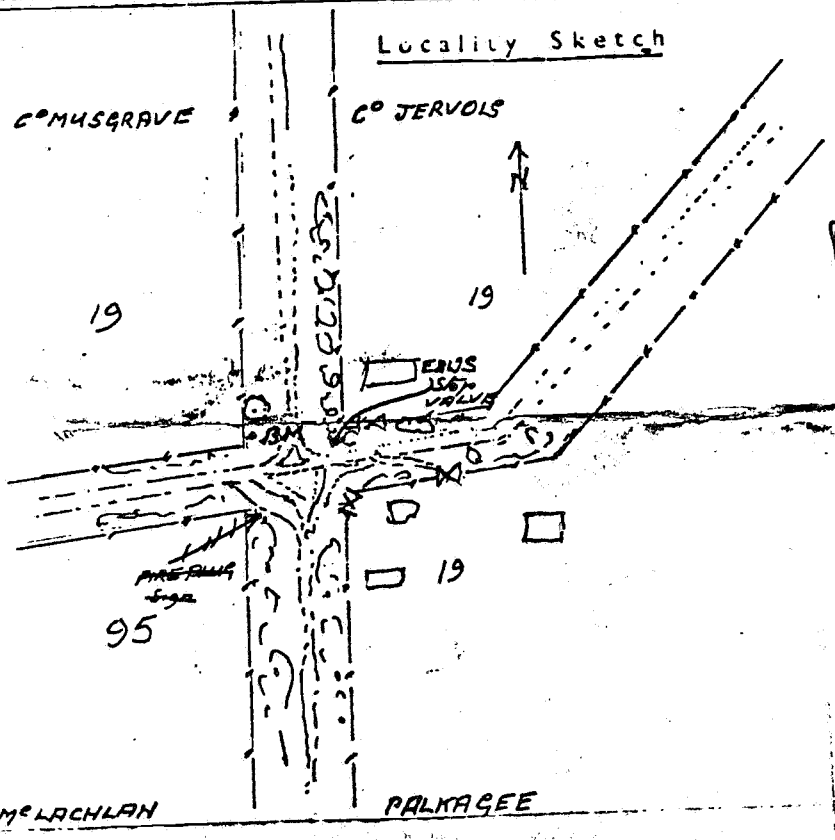
26.663 metre

Plan 0157

Situation -

Access -

Locality Sketch



LINE 3

B.M. - #741

"734"

LINE 4

1.707

3.264

1.443

2400

50

10.1

1.455

A P P E N D I X 3

Survey Production Reports

JOB No. 85-1283

PRODUCTION REPORTS

FINAL

0245

CLIENT C.R.A. JOB NO. 85-1283 SURVEY AREA LOCK S.A. INSTRUMENT NO. G-586 (1)

DAY	DATE	PRODUTION	CALCULATED	DRAWED	ACTIVITIES LOCATION	PROBLEMS	REMEDY (TIME)	COMMENTS
FRI	6	AG NEW STATIONS REPEAT STATIONS LEVEL KMS. GRID KMS.	MAPPED		MOBE TO LOCK	VISITED ALL 5 LINES. WITH MURRAY FLINTROFT. NO LARGE PEGS CALLED G. BUBNER	———	
SAT.	7	CHAINED LINE (3) 5 Km's CHAINED 2.4 Km LINE (1)			CHAINING	SHORT PEGS, HARD TO LINE UP LINE, HAD TO LEAP FROG PULLING + RE-USING FEW LONG PEGS. TO KEEP LINE STRAIGHT	———	
SUN.	8	FINISHED CHAINING LINE (1) 2.6 Km's CHAINED ALL OF LINE (2) 5.0 Km's			CHAINING	STILL SHORT PEGS, LONG PEGS TO ARRIVE TOMMORROW (SLOW CHAINING)	———	
MON.	9	CHAINED 4 Km's LINE (4)			CHAINING	VERY SLOW GOING HEAVY SCRUB + NO CUTTING TOOLS: BROKE SCRUB WITH HANDS + FEET.	(FINALLY LARGE PEGS ARRIVED MADE CHAINING MORE EFFICIENT)	
TUES.	10	FINISHED LAST 1 Km of LINE (4) CHAINING. CHAINED ENTIRE 5 Km OF LINE (5)			CHAINING " CHAINING IS NOW	STILL HEAVY GOING THROUGH SCRUB.	——— COMPLETE !"	
WED.	11	ΔG NEW = 26 STN, ΔG RPT. = 3 STN. LINE (1) 7.5 Km of LINE (1)		7.5 Km	ΔG + LEVELING	BROKE SMALL SECTION OF LYIN DOWN FENCE AS DROVE OVER IT. (CAUGHT ON SUSPENSION)	LOOP + BAD TIE 0.83 mgals (REDID ON THURS. 12)	
THURS.	12	ΔG NEW = 12 STN ΔG RPT = 2 STN LINE (2) 2.5 Km of LINE (1); 2.5 Km LINE (3) (3 man level team in morning)		5.0 Km	ΔG + LEVELING	(REPAIR FENCE DRIFT RATE A LITTLE HIGH 0.20 mgal)	REPAIRED FENCE IN MORNING ALL 3 OF US. ½ HOUR.	

TOTAL STNS 39
TOTAL RPTS 5
SIGNED: Greg Pipe

CLIENT C.R.A JOB NO. 85-1283 SURVEY AREA LOCH S.A. INSTRUMENT NO. G-586 (2)

DAY	DATE	PRODUTION	CALCULATED	DRAWED	ACTIVITIES LOCATION	PROBLEMS	REMEDY (TIME)	COMMENTS
FRI.	13	LINE (2) AG NEW STATIONS 7 REPEAT STATIONS LEVEL KMS. 2.5 Km ON LINE (2) PICKED UP MISSING STN. 23 ON GRID KMS. ON LINE (2)	7	1	AG + LEVEL	RAINED VERY HARD FROM 1:00 → ALL AFT. (OFFICE REDUCTION)	BAD TIE FOR LOOP P (0.30 mgal) RE-READ ON DAT. 14	
		MAPPED		2.5 Km				
SAT.	14	TIE LINE (2) → (3) RE-READ LOOP D LINE 3 COMPLETE FINISH LINE (4) LINE (3) 5.0 Km LINE (2); 2.5 Km LINE (3)	20	5	AG + LEVEL	—	—	
				7.5 Km				
SUN.	15	NO GRAVITY READ, DATA REDUCTIONS PERFORMED ALL DAY + NIGHT !	0	0	LEVEL / ONLY.	—	—	
		2.5 Km line (3); 5.0 Km line (3)		7.5 Km				
MON.	16	TIE LINE (3) TO LINE (4), TIE LINE (1) → (4) LINE (4) COMPLETE	26	3	AG + LEVEL	—	—	
		6.0 Km of line (4)		6.0 Km				
TUES.	17	LINE (5) TIED LINE (4) + (5) TOGETHER W AG	13	2	AG + LEVEL	—	—	
		TIED IN LINE (2) TO B.M. 4.0 Km TIED IN LINE (3) TO B.M. (NIL) LEVELED 4 Km LINE (4), 2.0 Km TIE IN LINE (5) to B.M.	+ 3 MEN	10 Km				
WED	18	FINISHED ALL LINE (5) (OFFICE REDUCTION)	13	2	AG + LEVEL	—	—	
		6.0 Km OF LINE (5) 2.0 Km to TIE IN B.M.		8.0 Km				
THURS.	19	OFFICE REDUCTIONS + PLOTS ALL DAY	0	0	LEVEL ONLY.	—	—	
		2.0 Km FINISH LINE (5), PATCH UP PART OF LINE (2) 3.0 Km		5.0 Km				

TOTAL STNS 85

TOTAL RPTS 13

SIGNED: Greg Pye

CLIENT C.R.A. JOB NO. 85-1283 SURVEY AREA LOCK S.A. INSTRUMENT NO. G-586 (3)

DAY	DATE	PRODUTION	CALCULATED	CHECKED	ACTIVITIES LOCATION	PROBLEMS	REMEDY (TIME)		COMMENTS
FRI.	20	AG NEW STATIONS REPEAT STATIONS LEVEL KMS. GRID KMS.	MAPPED		DEMOBE TO PT. LINCOLN (G. PIPER B. McMAHON) STAGE 1	NO FLIGHTS FROM WHYALLA ALL BOOKED	ARRIVED SYDNEY 7:00 p.m.	IN @	

TOTAL STNS 130

TOTAL RPTS 13

SIGNED: Greg Piper

APPENDIX 4

Repeat Statistics

REPEAT STATISTICS

0250

LINE	STATION	GRAVITY READING	Repeat GRAVITY READING	DIFFERENCE
1	0200N	3181.23	3181.22	-0.01
1	2200N	3182.89	3182.94	+0.05
1	3400N	3181.75	3181.76	+0.01
2	3000N	3181.16	3181.16	0.00
2.	4400N	3183.07	3183.10	+0.03
2	0400N	3167.19	3167.16	-0.03
2	0200N	3176.35	3176.43	+0.08
3	0600N	3159.70	3159.68	-0.02
3	1800N	3162.21	3162.22	+0.02
3	3200N	3172.66	3172.66	0.00
3	4000N	3176.06	3176.06	0.00
4	4400N	3180.89	3180.88	-o.01
4	1400N	3166.54	3166.56	+0.02
4	2600N	3171.83	3171.80	-0.03
5	3200N	3181.70	3181.70	0.00
5	4400N	3184.97	3184.98	+0.01
5	1800N	3170.44	3170.44	0.00
5	0800N	3167.05	3167.04	-0.01

A P P E N D I X 5

Field Data Sheets

GEOTERREX GRAVITY DATA SHEET

SHEET NO. 1 | BASE STAT

CLIENT C.R.A. | DATE WED. FEB. 11/81 | INSTRUMENT G-586 | REF. LEVEL BOOK = P. 6 ALT SHEETS = P. | P_1= P_2= P_3= 2.67 | CORR BASE (mgals)

JOB NO. 81-1282 | AREA LOCK S.A. | METER CONST. — | OPERATOR G. PIPER | C_1 C_2 C_3 | STAND. CORR (mgals)

$C_n = 0.3086 - 0.04185 - P_n$

REMARKS	LINE	STAT	RDG	TIME	TIDAL	CORR RDG	ELEV	LAT or LAT CORR	BOUGUER GRAVITY			REMARKS
[RPT?]	1		[DIV]		Mgals	[Mgal]	[Meters]	[Km North of N.S.B.]	[Mgal]	P_1	P_2	P_3	
GRAVITY BASE 1		LOCK NOTE	3075.73	9:40									
	1	2400	3099.00	11:06									BAD TIE!
	1	2300	3098.82	11:23									
	1	2000	3098.99	11:33									
	1	1800	3099.23	11:38									
	1	1600	3098.81	11:45									
	1	1400	3098.77	11:52									
	1	1200	3098.92	11:58									
	1 *	1000	3098.56	12:05		3182.96	47.246		5.748			100.97	
	1	0800	3098.76	12:20		3182.66	47.202		5.598			101.04	
	1	0600	3098.88	12:32		3182.77	47.529		5.449			101.04	
	1	0400	3098.61	12:40		3182.49	48.244		5.299			100.75	
PIPE COLLAR	*	0200	3097.38	12:49		3181.23	52.449		5.150			100.17	
TAG No. SQR 69		0000	3097.84	12:58		3181.70	49.778		5.000			100.00	DEEMED BY GEOPHYSICIST AS STARTING BOUGUER VALUE
CONCRETE PAD													
No. 325													
G34 900 204													
*(RPT)	1	0200	3097.38	13:09		3181.22	52.449		5.150			100.16	(RPT.)
(R.P.T.)	1	0000	3098.2	13:20									
	1	1000	3098.59	13:27		3182.46	47.246		5.748			100.97	
	1	2400	3099.23	13:52		3183.14	42.965		6.795			101.84	
	1	2200	3098.98	~~1301~~ 1401		3182.89	44.205		6.646			101.69	
	1	2000	3099.21	14:20		3183.12	44.419		6.496			101.81	
	1	1800	3099.21	14:27		3183.12	45.015		6.347			101.78	
	1	1600	3098.85	14:34		3182.75	46.915		6.197			101.63	

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LOOP B

(SEE SHEET TOP OF)

SHEET NO. 2

GEOTERREX GRAVITY DATA SHEET

BASE STAT

CLIENT G.R.A. | DATE 11-2-81 | INSTRUMENT 586 | REF. LEVEL BOOK = P. 60 ALT SHEETS = P. | P_1= P_2= P_3= 2.67 | CORR BASE (mgals)

JOB NO. 85-1283 | AREA LOCH S.A. | METER CONST. — | OPERATOR G. PIPER | C_1 C_2 C_3 | STAND. CORR (mgals)

$C_n = 0.3086 - 0.04185 - P_n$

REMARKS [RPT?]	LINE	STAT	RDG [DIV]	TIME	TIDAL Mgals	CORR RDG [Mgal]	ELEV [Meters]	LAT or LAT CORR [Km North of N.S.B.]	[Mgal]	BOUGUER GRAVITY P_1	P_2	P_3	REMARKS
Loop B	1	1400 N	3098·80	14:44		3182·70	47·030		6·047			101·46	
	1	1200 N	3098·95	14:49		3182·86	46·022		5·898			101·26	
	1	1000 N	3098·57	14:55		3182·47	47·267		5·7481			100·97	SEE SHEET 1 FOR THIS VALUE OF STN. 1000N, START POINT FOR LOOP B
*RPT.	1	2200 N	3099·03	15:04		3182·94	44·205		6·646			101·74	(RPT.) ← *
RPT.	1	2400 N	3099·22	15:09		3183·14	42·965		6·795			101·87	
	LUNCH		BREAK										
													SHOULD HAVE USED 101·87
	1	2400 N	3099·14	16:17		3183·05	42·965		6·795			101·84	101·84 AS STARTING PT. FOR LOOP, WAS IN MIDDLE
	1	2600 N	3098·92	16:26		3182·82	43·933		6·945			101·95	
	1	2800 N	3098·58	16:32		3182·46	44·466		7·095			101·85	
	1	3000 N	3099·00	16:47		3182·88	41·496		7·244			101·83	
Loop C	1	3200 N	3098·70	16:53		3182·56	41·620		7·394			101·69	
	1	3400 N	3097·91	16:58		3181·75	42·856		7·544			101·27	
	1 *	3600 N	3097·24	17:05		3181·05	43·266		7·693			100·80	
	+	3800 N	3097·35	17:11		3181·16	42·079		7·843			100·83	
*(RPT.)	1	3400 N	3097·91	17:17		3181·76	42·856		7·544			101·28	(RPT.)
(RPT.)	1	3400 N	3098·24	17:28		3183·05	42·965		6·795			101·84	
	—	4000 N	3097·36	17:40		3181·22	42·079		7·843			100·83	
	1	4200 N	3097·60	17:47		3181·47	41·461		7·992			101·10	
	1	4200 N	3097·70	17:52		3181·57	41·421		8·142			101·35	
Loop D	1	4400 N	3097·41	17:59		3181·27	41·992		8·292			101·31	
	1	4600 N	3097·09	18:05		3180·94	44·024		8·441			101·53	
3096·99	1	4800 N	3096·99	18:11		3180·84	43·241		8·591			101·42	10 54
	1	5000 N	3096·68	18:19		3180·52	42·866		8·741			101·03	15
	—	3000 N	3097·37	18:35		3181·22	42·079		7·843			100·83	
Norrisprint LOCH HOTEL	—		3075·90	19:02									

* (SEE SHEET 1 TOP OF 2)

0254

SHEET NO. 3 — **GEOTERREX GRAVITY DATA SHEET** — BASE STAT

CLIENT C.R.A. | DATE 12-2-81 | INSTRUMENT 586 | REF. LEVEL BOOK = P. to | P_1= P_2= P_3= 2.67 | CORR BASE (mgals)

JOB NO. 85-1283 | AREA LOCK S.A. | METER CONST. ——— | OPERATOR G. PIPER | C_1 C_2 C_3 | STAND. CORR (mgals)

$C_n = 0.3086 - 0.04185 - P_n$

REMARKS [RPT?]	LINE	STAT	RDG [DIV]	TIME	TIDAL Mgals	RDG [Mgal]	ELEV [Meters]	LAT or LAT CORR [Km North of N.S.B.]	[Mgal]	BOUGUER GRAVITY P_1	P_2	P_3	REMARKS
BASE LOCK HOTEL			3075·97	13:00		3159·24							
(MIDDLE OF ALRSTRIP)		2400N	3094·78	13:44		3178·57	109·970		4·595			108·30	108·30 (SEE BOTTOM OF SHEET No. 1a)
		2200N	3093·86	13:53		3177·61	114·948		4·446			108·17	
		2000N	3092·65	14:00		3176·35	119·795		4·296			107·72	
		1800N	3090·06	14:14		3173·66	125·347		4·147			105·97	
	LOOP A	1600N	3087·45	14:23		3170·96	132·153		3·997			104·46	·61
		1400N	3085·57	14:34		3169·00	138·647		3·847			103·63	
E.O.L.		1200N	3084·77	14:39		3168·17	141·765		3·698			103·27	
(RPT.)		2000N	3092·83	14:49		3176·43	119·795		4·296			107·80	(RPT)
		2400N	3094·93	14:56		3178·57	109·970		4·595			108·30	
		1200N	3084·76	15:09		3168·27	141·765		3·698			103·27	(SEE E.O.L. STN 1200N LOOP B TOP OF THIS SHEET)
		1000N	3083·71	15:17		3167·17	145·791		3·548			102·81	
	LOOP B	0800N	3083·09	15:24		3166·52	147·358		3·398			102·32	
E.O.L.		0600N	3083·26	15:31		3166·68	146·140		3·249			102·08	
		1200N	3084·84	15:41		3168·27	141·765		3·698			103·27	·61
		600N	3083·34	15:56		3166·81	146·140		3·249			102·08	(SEE E.O.L. STN. 0600N LOOP B MIDDLE OF THIS SHEET)
		400N	3083·70	16:03		3167·19	144·184		3·099			101·92	
	LOOP C	200N	3083·83	16:10		3167·33	144·185		2·950			101·91	
E.O.L.		0000	3084·99	16:18		3169·53	138·873		2·800			101·92	
(RPT)		400N	3083·64	16:28		3167·16	144·184		3·099			101·89	(RPT) ·75
		600N	3083·30	16:32		3166·81	146·140		3·249			102·08	
BASE LOCK HOTEL			3076·15	16:56		3159·42							B 100 → 112 E 80 - 150

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SHEET NO. 4	GEOTERREX GRAVITY DATA SHEET				BASE STAT
CLIENT C.R.A.	DATE 13-2-81	INSTRUMENT 586	REF. LEVEL BOOK = P_1 ALT SHEETS = P_1	P_1= P_2= P_3= 2.67	CORR BASE (mgals)
JOB NO. 85-1263	AREA LOCK S.A.	METER CONST. —	OPERATOR G. PIPER	C_1 C_2 C_3	STAND. CORR (mgals)

REMARKS	LINE	STAT	RDG	TIME	TIDAL	~~GRAV~~ RDG	ELEV	LAT or LAT CORR		BOUGUER GRAVITY			$C_n = 0.3086 - 0.04185 - P_n$
[RPT?]			[DIV]		Mgals	[Mgal]	[Meters]	[Km North of N.S.B.]	[Mgal]	P_1	P_2	P_3	REMARKS
LOCK			3076.02	9:05		3159.29							
		2400N	3094.84	10:37		3178.63							
		2600N	3095.68	10:42		3179.50							
		2800N	3096.43	10:49		3180.27							
	LOOP D	3000N	3097.21	11:07									
		3200N	3098.18	11:14									
		3400N	3098.53	11:18									
E.O.L.		3600N	3098.28	11:24									
(RPT.)		3000N	3096.99	11:32									
		2400N	3094.54	11:40		3178.32							
		3600N	3097.93	12:04		3181.81	94.514		5.493			109.66	← SEE (E.O.L.) STN. 3600N FROM LOOP (D) ON SHEET No. 5
		3800N	3098.23	12:09		3182.09	93.777		5.643			109.94	
	LOOP E	4000N	3098.25	12:18		3182.07	94.120		5.792			110.14	
E.O.L.		4200N	3098.63	12:27		3182.43	93.95		5.942			110.47	
		3600N	3098.06	12:33		3181.81	94.514		5.493			109.66	(.25)
(R.P.T.)		4200N	3098.79	13:03		3182.69	93.195		5.942			110.47	← SEE E.O.L. STN. 4200N LOOP (E) MIDDLE OF THIS SHEET
		4400N	3099.16	13:08		3183.07	89.285		6.092			110.35	
		4600N	3099.43	13:15		3183.34	87.611		6.241			110.32	
	LOOP F	4800N	3099.36	13:20		3183.26	88.371		6.391			110.54	
E.O.L.		5000N	3099.54	13:27		3183.44	87.796		6.541			110.79	(.31)
(R.P.T.)		4400N	3099.21	13:38		3183.10	89.285		6.092			110.28	(R.P.T.)
		4200N	3098.82	13:43		3182.69	93.195		5.942			110.47	
LOCK	HOTEL		3075.93	14:30		3159.20							

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GEOTERREX GRAVITY DATA SHEET

SHEET NO. 5 | BASE STAT

CLIENT C.R.A | DATE 14-2-81 | INSTRUMENT 586 | REF. LEVEL BOOK = P. to | P_1= P_2= P_3= 2.67 | CORR BASE (mgals)

JOB NO. 95-1283 | AREA LOCK, S.A. | METER CONST. —— | OPERATOR G. PIPER | C_1 C_2 C_3 | STAND. CORR (mgals)

$C_n = 0.3086 - 0.04185 - P_n$

REMARKS	LINE	STAT	RDG	TIME	TIDAL	~~CORR~~ RDG	ELEV	LAT or LAT CORR	BOUGUER GRAVITY			REMARKS
[RPT?]	2		[DIV]		Mgals	[Mgal]	[Meters]	[Km North of N.S.B.]	[Mgal]	P_1	P_2	P_3	
LOCK	HOTEL	——	3076·12	9:48	POSSIBLE METER CHANGED AT HOTEL, ORIGINAL READING								
LOCK	HOTEL	——	3076·09	9:52									
LOCK	HOTEL	——	3076·09	10:00					3075·8?				
		2400N	3094·88	10:35		3178·67	109·970		4·595			108·30	(SEE TIE-IN BOTTOM OF SHEET No. 10)
NOTE: THIS LOOP D REPLACES FROM SHEET NO. 4		2622N	3095·71	10:43		3179·53	106·33		4·745			108·58	
		2822N	3096·49	10:48		3180·33	103·64		4·895			109·02	
		3000N	3097·30	10:55		3181·16	101·196		5·044			109·52	
	LOOP D	3200N	3098·22	11:02		3182·11	97·44		5·194			109·87	(·61)
		3400N	3098·55	11:06		3182·44	94·451		5·344			109·77	
N.O.L.		3622N	3098·28	11:11		3182·17	94·517		5·493			109·66	
(RPT)		3000N	3097·30	11:22		3181·16	101·196		5·044			109·52	(RPT)
		2400N	3094·88	11:29		3178·67	109·970		4·595			108·30	
LOCK	HOTEL		3076·25	15:18		3159·53							

Norrisprint

GEOTERREX GRAVITY DATA SHEET

J. 6
.T C.R.A.
3 NO. 85-1283

DATE 14-2-91
AREA LOCH S.A.

INSTRUMENT 586
METER CONST. —

REF. LEVEL BOOK = P. &
ALT SHEETS = P.

OPERATOR G. PIPER

$P_1 =$ $P_2 =$ $P_3 = 2.67$
C_1 C_2 C_3

BASE STAT
CORR BASE (mgals)
STAND. CORR (mgals)

$C_n = 0.3086 - 0.04185 - P_n$

REMARKS	LINE	STAT	RDG	TIME	TIDAL	CORR RDG	ELEV	LAT or LAT CORR		BOUGUER GRAVITY			REMARKS
[RPT?]	3		[DIV]		Mgals	[Mgal]	[Meters]	(Km North of N.S.B.)	[Mgal]	P_1	P_2	P_3	
LOCK	HOTEL	——	3076·12	9:48		3159·39	——						
		0000N	3075·40	12:04		3158·65	132·573		2·240			90·41	90·41 (SEE BOTTOM OF THIS SHEET A)
		0200N	3075·67	12:08		3158·93	131·273		2·390			90·58	
		0400N	3075·78	12:13		3159·04	130·953		2·529			90·78	
	LOOP A	0600N	3076·43	12:18		3159·70	128·111		2·689			91·03	
		0800N	3077·02	12:27		3160·31	125·933		2·838			91·36	
		1000N	3076·47	12:33		3159·74	128·484		2·988			91·44	
E.O.L.		1200N	3076·42	12:39		3159·69	129·119		3·138			91·67	
(R.P.T.)		0600N	3076·42	12:45		3159·68	128·111		2·689			91·01	(RPT.)
		0000N	3075·42	12:50		3158·65	132·573		2·240			90·41	
		1200N	3076·51	12:57		3159·79	129·119		3·138			91·67	
		1400N	3077·18	13:03		3160·48	126·846		3·287			92·06	
		1600N	3077·97	13:07		3161·29	123·631		3·437			92·39	
		1800N	3078·86	13:10		3162·21	121·053		3·587			92·95	
	LOOP B	2000N	3079·20	13:16		3162·56	121·495		3·736			93·52	
		2200N	3079·99	13:22		3163·37	120·642		3·886			94·33	
(RIGHT ON ROAD 1M EAST OF STAKE)		2400N	3081·09	13:33		3164·50	119·770		4·035			95·43	
E.O.L.		2600N	3082·44	13:39		3165·89	118·398		4·185			96·69	
(RPT.)		1800N	3078·87	13:46		3162·22	121·053		3·587			92·96	(RPT.)
		1200N	3076·51	13:52		3159·79	129·119		3·138			91·67	
TIE FROM LINE 2→3		③ 0000N	3075·55	14:00		3158·81	132·573		2·240			90·41	
		① 2400N	3095·01	14:18		3178·80	109·970		1·595			108·30	108·30 (SEE BOTTOM OF SHEET No. 10)
		③ 0000N	3075·57	15:09		3158·81	132·573		2·240			90·41	
LOCK	HOTEL		3076·25	15:18		3159·53							

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GEOTERREX GRAVITY DATA SHEET

J. 7
AT C.R.A.
B NO. 85-1283

DATE 4-2-85
AREA LOCH S.A.

INSTRUMENT 586
METER CONST. —

REF. LEVEL BOOK = P. to
ALT SHEETS = P.

OPERATOR G. PIPER

P_1 = P_2 = P_3 = 2.67
C_1 C_2 C_3

BASE STAT
CORR BASE (mgals)
STAND. CORR (mgals)
$C_n = 0.3086 - 0.04185 - P_n$

REMARKS	LINE	STAT	RDG	TIME	TIDAL	CORR RDG	ELEV	LAT or LAT CORR		BOUGUER GRAVITY			REMARKS
[RPT?]	3		[DIV]		Mgals	[Mgal]	[Meters]	[Km North of N.S.B.]	[Mgal]	P_1	P_2	P_3	
LOCH	HOTEL	—	3076·26	16:36		3159·54							
		2600N	3082·48	17:03		3165·93	118·348		4·185			96·69	96·69 (SEE STN. 2600N ON LOOP B SHEET "6")
		2800N	3085·13	17:08		3168·65	109·876		4·335			97·90	
		3000N	3087·38	17:13		3170·96	106·296		4·484			99·64	
		3200N	3089·04	17:17		3172·66	104·074		4·634			101·06	
	LOOP C	3400N	3090·53	17:23		3174·19	100·982		4·784			101·98	
		3600N	3091·32	17:28		3175·00	98·615		4·933			102·63	
		3800N	3092·04	17:33		3175·74	95·816		5·083			102·97	
E.O.L.		3200N	3089·05	17:38		3172·66	104·074		4·634			101·06	(RPT.)
(RPT.)		2600N	3082·50	17:44		3165·93	118·348		4·185			96·69	
		=											
		3800N	3092·05	17:52		3175·76	95·816		5·083			102·97	
		4000N	3092·34	17:57		3176·06	94·082		5·232			103·07	
		4200N	3091·88	18:02		3175·59	95·637		5·382			103·06	
		4400N	3091·99	18:06		3175·71	94·607		5·532			103·13	
	LOOP D	4600N	3092·45	18:12		3176·19	92·002		5·681			103·24	
		4800N	3091·93	18:17		3175·65	93·613		5·831			103·17	
E.O.L.		5000N	3092·20	18:21		3175·93	91·342		5·981			103·15	
(R.P.T.)		4000N	3092·32	18:28		3176·06	94·082		5·232			103·07	(RPT.)
		3800N	3092·03	18:34		3175·76	95·816		5·083			102·97	
		=											
LOCH	HOTEL	—	3076·27	19:18		3159·55							

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SHEET NO. 2 — **GEOTERREX GRAVITY DATA SHEET** — BASE STAT

CLIENT C.R.A. | DATE 16-2-81 | INSTRUMENT 596 | REF. LEVEL BOOK = P. ALT SHEETS = P. | P_1= P_2= P_3= 2.67 | CORR BASE (mgals)

JOB NO. 35-283 | AREA LOCH S.A. | METER CONST. — | OPERATOR G. PIPER | C_1 C_2 C_3 | STAND. CORR (mgals)

$C_n = 0.3086 - 0.04185 - P_n$

REMARKS [RPT?]	LINE 4	STAT	RDG [DIV]	TIME	TIDAL Mgals	CORR RDG [Mgal]	ELEV [Meters]	LAT or LAT CORR [Km North of N.S.B.]	[Mgal]	BOUGUER GRAVITY P_1	P_2	P_3	REMARKS
LOCH HOTEL			3076.10	9:18		3159.37							
	3	0000	3075.43	9:45		3158.68	132.573		2.240			90.41	← SEE BOTTOM OF SHEET 6
TIEING LINE 3+4	4	2000N	3087.05	10:24		3170.65	87.266		3.783			95.00	
	3	0000	3075.39	10:48		3158.68	132.573		2.240			90.41	
CENTRE OF ROAD IS @ 2032 m	4	2000N	3087.03	11:13		3170.65	87.266		3.783			95.00	
		2000N	3087.03	11:13		3170.61	87.266		3.783			95.00	← SEE TIE IN STN: 2000N, TOP OF THIS SHEET
		2200N	3087.28	11:21		3170.86	86.941		3.933			95.34	
		2400N	3087.79	11:25		3171.39	85.026		4.082			95.64	
FENCE @ 2595N		2600N	3088.22	11:30		3171.83	84.771		4.232			96.18	← (.57)
		2800N	3088.61	11:34		3172.23	84.991		4.382			96.77	
LOOP A		3000N	3089.50	11:39		3173.14	85.656		4.531			97.96	
FENCE @ 3385N		3200N	3089.25	11:45		3172.89	93.076		4.681			99.32	
		3400N	3089.50	11:50		3173.14	100.211		4.831			101.13	
E.O.L.		3600N	3093.12	11:57		3176.86	93.211		4.980			103.63	
(RPT.)		2600N	3088.19	12:05		3171.80	84.771		4.232			96.15	(RPT.)
		2000N	3087.03	12:11		3170.61	87.266		3.783			95.00	

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SHEET NO. 1	GEOTERREX GRAVITY DATA SHEET				BASE STAT
CLIENT C.R.A.	DATE 16-2-81	INSTRUMENT 586	REF. LEVEL BOOK = P, to ALT SHEETS = P,	P_1= P_2= P_3= 2.67	CORR BASE (mgals)
JOB NO. 82-1283	AREA LOCH. S.A.	METER CONST.—	OPERATOR G. PIPER	C_1 C_2 C_3	STAND. CORR (mgals)

REMARKS [RPT?]	LINE 4	STAT	RDG [DIV]	TIME	TIDAL Mgals	CORR RDG [Mgal]	ELEV [Meters]	LAT or LAT CORR [Km North of N.S.B.]	[Mgal]	BOUGUER GRAVITY P_1	P_2	P_3	C_n = 0.3086 - 0.04185 - P_n REMARKS
		3600N	3093·11	12:23		3176·85	93·244		1·980			103·63	← (SEE (E.O.L.) STN. 3600N LOOP B SHEET 8
		3800N	3095·48	12:29		3179·29	90·104		5·130			105·60	
HEAVY SCRUB		4000N	3095·54	12:34		3179·35	95·984		5·279			106·96	
BEG. 1/2 @		4200N	3096·83	12:44		3180·67	94·772		5·429			108·20	(·5₀)
3950N → 5000N		4400N	3097·05	12:53		3180·89	96·824		5·579			108·97	←
(LOOP B)		4600N	3097·69	13:00		3181·55	95·789		5·728			109·58	
		4800N	3097·56	13:06		3181·40	98·997		5·878			110·21	
E.O.L.		5000N	3098·38	13:12		3182·25	97·263		6·028			110·87	
(RPT.)		4400N	3097·06	13:27		3180·88	96·824		5·579			108·96	(RPT.)
		3800N	3093·15	13:38		3176·85	93·244		1·980			103·63	
		2000N	3087·07	13:59		3170·65	87·266		3·783			95·00	← (SEE TIE IN STN. 2000N TOP OF SHEET. No. 8
		1800N	3085·79	14:04		3169·33	93·074		3·634			94·68	
SCRUB FROM		1600N	3083·89	14:12		3167·37	101·681		3·484			94·26	
900N → 850N		1400N	3083·09	14:18		3166·54	105·930		3·334			94·12	← (·61)
(LOOP C)		1200N	3083·69	14:23		3167·16	103·911		3·185			94·20	
		1000N	3084·43	14:28		3167·91	100·944		3·035			94·21	
E.O.L.		0800N	3084·55	14:33		3168·03	100·544		2·885			94·19	
(R.P.T.)		1400N	3083·13	14:45		3166·56	105·930		3·334			94·14	(RPT.)
		2000N	3087·11	14:55		3170·65	87·266		3·783			95·00	
HEAVY SCRUB FROM													
1750N → 1100N													

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0261

SHEET NO. 10	GEOTERREX GRAVITY DATA SHEET				BASE STAT
CLIENT C.R.A.	DATE 16-2-81	INSTRUMENT 586	REF. LEVEL BOOK = P. to ALT SHEETS = P.	P_1= P_2= P_3= 2.67	CORR BASE (mgals)
JOB NO. 85-1283	AREA LOCK S.A.	METER CONST. —	OPERATOR G. PIPER	C_1 C_2 C_3	STAND. CORR (mgals)

REMARKS	LINE	STAT	RDG	TIME	TIDAL	CORR RDG	ELEV	LAT or LAT CORR	BOUGUER GRAVITY			$C_n = 0.3086 - 0.04185 - P_n$
[RPT?]	4		[DIV]		Mgals	[Mgal]	[Meters]	[Km North of N.S.B.] [Mgal]	P_1	P_2	P_3	REMARKS
		0000N	3082.46	16:18		3165.91	108.634	2.287			92.83	
FENCE @ 550N		0200N	3082.73	16:23		3166.19	107.837	2.137			93.11	.75
	LOOP D	0400N	3083.80	16:27		3167.29	103.781	2.586			93.56	
		0600N	3084.02	16:34		3167.52	103.016	2.736			93.79	
E.O.L.		0800N	3084.65	16:40		3168.17	100.544	2.885			94.10	← (SEE (E.O.L.) STN. 0800N ON LOOP D SHEET No. 9)
		0000N	3082.45	16:50		3165.91	108.634	2.287			92.83	
SCRUB FROM 250N → 900N		(ON LINE 4)										
LOCK HOTEL		—	3076.25	17:35		3159.53						
	2	2400N	3095.06	19:04		3178.86	109.970	4.595			108.30	
TIE LINE	1	2800N	3098.91	19:37		3182.80	44.466	7.095			101.85	101.85 (FROM SHEET 2)
1+2	2	2400N	3095.08	20:08		3178.86	109.970	4.595			108.30	

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GEOTERREX GRAVITY DATA SHEET

F.F NO. 11 | CLIENT C.R.A | JOB NO 85-1283 | DATE 12-2-8 | AREA LOCH S.A.

INSTRUMENT 586 | METER CONST. — | REF. LEVEL BOOK = P. to | ALT SHEETS = P. | OPERATOR G. PIPER

P_1= P_2= P_3= 2·67 | C_1 C_2 C_3

BASE STAT | CORR BASE (mgals) | STAND. CORR (mgals) | $C_n = 0.3086 - 0.04185 - P_n$

REMARKS [RPT?]	LINE 5	STAT	RDG [DIV]	TIME	TIDAL Mgals	CORR RDG [Mgal]	ELEV [Meters]	LAT or LAT CORR [Km North of N.S.B.]	[Mgal]	BOUGUER GRAVITY P_1	P_2	P_3	REMARKS
LOCH	HOTEL	——	3076·12	12:01		3159·39							
	4	2000N	3087·11	13:54		3170·69	87·266		3·783			95·00	← SEE TOP OF SHEET No. 8
TIE FOR	5	2400N	3093·52	14:42		3177·23	108·852		3·890			105·90	
LINES 4+5	4	2000N	3087·15	15:04		3170·69	87·266		3·783			95·00	
	5	2400N	3093·55	15:24		3177·23	108·852		3·890			105·90	
LOCH	5	2400N	3093·55	15:24		3177·31	108·852		3·890			105·90	← SEE TIE-IN LOOP FOR STN. 2400N, TOP OF THIS SHEET
TIE @ 2595N		2600N	3095·12	15:32		3178·91	108·907		4·040			107·66	
		2800N	3096·15	15:41		3179·96	110·747		4·190			109·22	
		3000N	3097·61	15:46		3181·96	108·110		4·339			110·35	
	LOOP	3200N	3097·95	15:51		3181·70	110·374		4·489			111·19	←
TIE @ 3250N		3400N	3098·50	15:59		3182·36	109·430		4·639			111·82	
		3600N	3098·08	16:04		3182·92	112·690		4·788			113·16	
COL		3800N	3099·54	16:11		3183·42	108·407		4·938			112·97	
RPT.)		3200N	3097·89	16:23		3181·70	110·374		4·489			111·19	(R.P.T.)
		2400N	3093·62	16:32		3177·31	108·852		3·890			105·90	

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SHEET NO. 12	GEOTERREX GRAVITY DATA SHEET				BASE STAT
CLIENT	DATE 17-2-81	INSTRUMENT 586	REF. LEVEL BOOK = P. 60 ALT SHEETS = P.	P_1= P_2= P_3= 2.67	CORR BASE (mgals)
JOB NO. 25-1232	AREA Lake 2.9.	METER CONST. ——	OPERATOR G. PIPER	C_1 C_2 C_3	STAND. CORR (mgals)

$C_n = 0.3086 - 0.04185 - P_n$

REMARKS [RPT?]	LINE	STAT	RDG [DIV]	TIME	TIDAL Mgals	CORR RDG [Mgal]	ELEV [Meters]	LAT or LAT CORR [Km North of N.S.B.]	[Mgal]	BOUGUER GRAVITY P_1	P_2	P_3	REMARKS
	E	3800N	3099.57	16:52		3183.99	108.407		4.938			112.97	← (SEE E.O.L. STA. 3800N FROM LOOP ④ SHEET No. 11)
		4000N	3100.17	16:58		3184.10	107.632		5.087			113.58	
		4200N	3100.77	17:04		3184.72	107.529		5.237			114.33	
		4400N	3101.02	17:08		3184.97	109.995		5.387			115.21	
		4600N	3101.73	17:11		3185.70	110.611		5.536			116.21	
		4800N	3102.75	17:14		3186.76	110.858		5.686			117.47	
E.O.L.		5000N	3102.83	17:18		3186.83	113.132		5.836			118.14	
(RPT.)		4400N	3101.04	17:30		3184.98	109.995		5.387			115.22	(RPT.)
		3800N	3099.59	17:36		3183.49	108.407		4.938			112.97	
ROCK	HOTEL	——	3076.32	18:50		3159.60							

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0264

GEOTERREX GRAVITY DATA SHEET

SHEET NO. 13 | CLIENT C.R.A | JOB NO. 85-1283 | DATE 18-2-81 | AREA LOCK S.4. | INSTRUMENT 586 | METER CONST. — | REF. LEVEL BOOK = P1 60, ALT SHEETS = P1 | OPERATOR G. PIPER. | P_1= P_2= P_3= 2.67 | C_1 C_2 C_3 | BASE STAT | CORR BASE (mgals) | STAND. CORR (mgals)

$C_n = 0.3086 - 0.04185 - P_n$

REMARKS [RPT?]	LINE 5	STAT	RDG [DIV]	TIME	TIDAL Mgals	CORR RDG [Mgal]	ELEV [Meters]	LAT or LAT CORR [Km North of N.S.B.]	LAT or LAT CORR [Mgal]	BOUGUER GRAVITY P_1	P_2	P_3	REMARKS
LOCK	HOTEL	—	3076.22	10:13		3159.50							
		⑤ 2400N	309350	11:35		3177.25	108.882		3.890			105.90	← SEE TIE-IN LOOP, STN. 2400N TOP OF SHEET. No. 11
		2200N	3091.31	11:42		3175.00	106.695		3.741			103.08	
		2000N	3088.85	11:47		3172.47	105.853		3.591			100.23	
	LOOP c	1800N	3086.87	11:54		3170.44	107.003		3.442			98.28	← (.14)
		1600N	3086.49	11:59		3170.04	103.671		3.292			97.07	
E.O.L.		1400N	3085.56	12:04		3169.09	104.076		3.142			96.05	
(RPT.)		1800N	3086.88	12:11		3170.44	107.003		3.442			98.28	(RPT.)
		⑤ 2400N	3093.51	12:18		3177.25	108.882		3.890			105.90	
		⑤ 1400N	3085.53	12:50.		3169.06	104.076		3.142			96.05	← SEE (E.O.L.) OF LOOP c STN. 1400N TOP OF THIS SHEET No. 13
		1200N	3084.72	12:55		3168.23	105.306		2.993			95.31	
		1000N	3084.18	13:01		3167.67	105.695		2.843			94.68	
		0800N	3083.58	13:06		3167.05	106.340		2.693			94.04	←
	LOOP b	0600N	3083.87	13:10		3167.34	103.155		2.544			93.55	
		0400N	3084.16	13:15		3167.64	100.190		2.394			93.12	(.64)
		0200N	3083.78	13:21		3167.25	100.660		2.245			92.67	
E.O.L.		0000	3082.12	13:26		3165.54	107.385		2.095			92.13	
(RPT.)		0800N	3083.59	13:32		3167.04	106.340		2.693			94.03	(RPT.)
		⑤ 1400N	3085.56	13:37		3169.06	104.076		3.142			96.05	
													100 114
LOCK	HOTEL	—	3076.36	19:20		3159.64							92 → 110

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FOLDA BASIN GEOTERREX TRAVERSE #5 : B.D.=2.67 : [illegible]

Number of stations = 26 File No. : 61

No.	---X---	---Y---
1	0.00	9.70
2	200.00	10.24
3	400.00	10.69
4	600.00	11.12
5	800.00	11.61
6	1000.00	12.25
7	1200.00	12.88
8	1400.00	13.62
9	1600.00	14.64
10	1800.00	15.85
11	2000.00	17.80
12	2200.00	20.65
13	2400.00	23.47
14	2600.00	25.23
15	2800.00	26.79
16	3000.00	27.90
17	3200.00	28.76
18	3400.00	29.72
19	3600.00	30.72
20	3800.00	32.61
21	4000.00	34.15
22	4200.00	31.90
23	4400.00	32.76
24	4600.00	33.78
25	4800.00	35.04
26	5000.00	35.71

BASIN GEOTIFFRE TRANSFER #4 : E.I. 2.0T - ...SL...

Number of stations = 26 File No. : 62

(N)	---)---	---)---
1	0.00	10.40
2	200.00	10.68
3	400.00	11.13
4	600.00	11.36
5	800.00	11.67
6	1000.00	11.78
7	1200.00	11.77
8	1400.00	11.69
9	1600.00	11.83
10	1800.00	12.25
11	2000.00	12.57
12	2200.00	12.91
13	2400.00	13.21
14	2600.00	13.79
15	2800.00	14.34
16	3000.00	15.57
17	3200.00	16.89
18	3400.00	18.70
19	3600.00	21.20
20	3800.00	22.17
21	4000.00	24.93
22	4200.00	26.77
23	4400.00	27.74
24	4600.00	27.11
25	4800.00	27.72
26	5000.00	28.44

BOLDA BASIN BENTEPREY TRANSECT #3 - S.I. E.I. - 10.22.84

Number of stations = 26 File No. = 42

No.	---/---	---/---
1	0.00	7.98
2	200.00	8.13
3	400.00	8.35
4	600.00	8.60
5	800.00	8.73
6	1000.00	9.01
7	1200.00	9.24
8	1400.00	9.63
9	1600.00	9.96
10	1800.00	10.52
11	2000.00	11.09
12	2200.00	11.90
13	2400.00	13.00
14	2600.00	14.26
15	2800.00	15.47
16	3000.00	17.21
17	3200.00	18.63
18	3400.00	17.55
19	3600.00	20.20
20	3800.00	20.54
21	4000.00	20.64
22	4200.00	20.63
23	4400.00	20.70
24	4600.00	20.81
25	4800.00	20.74
26	5000.00	20.72

[illegible] 2 [illegible]

Number of stations = 26 File No. : 61

No.	---x---	---y---
1	0.00	19.49
2	200.00	19.48
3	400.00	19.49
4	600.00	19.65
5	800.00	19.89
6	1000.00	20.38
7	1200.00	20.84
8	1400.00	21.20
9	1600.00	22.03
10	1800.00	23.54
11	2000.00	25.29
12	2200.00	25.74
13	2400.00	25.87
14	2600.00	26.15
15	2800.00	26.59
16	3000.00	27.09
17	3200.00	27.44
18	3400.00	27.34
19	3600.00	27.23
20	3800.00	27.51
21	4000.00	27.71
22	4200.00	28.04
23	4400.00	27.93
24	4600.00	27.89
25	4800.00	28.11
26	5000.00	28.36

FILE: E:\EN SEDIMENT TRAVERSE #1 : 2.0.dat : 11/21/2.

Number of stations = 26 File No. = 2

CS	[illegible]	[illegible]
1	0.00	17.57
2	200.00	17.74
3	400.00	18.02
4	600.00	18.61
5	800.00	18.61
6	1000.00	18.34
7	1200.00	18.33
8	1400.00	19.22
9	1600.00	19.20
10	1800.00	17.22
11	2000.00	19.78
12	2200.00	19.24
13	2400.00	19.41
14	2600.00	19.72
15	2800.00	19.42
16	3000.00	19.40
17	3200.00	19.18
18	3400.00	18.74
19	3600.00	15.17
20	3800.00	19.42
21	4000.00	19.67
22	4200.00	19.22
23	4400.00	19.33
24	4600.00	19.12
25	4800.00	19.77
26	5000.00	19.50

REFERENCE

1981 Proposed Rotary Mud Drill Hole.

Inferred fault, position accurate.

Inferred fault, position approximate.

Geological boundary, position approximate.

Outline of E.T.S.A. coal basin

Road

33°20' 135°20'

McLACHLAN E.L.670

TT VV SS RR UU WW XX YY ZZ AAA BBB

135°25' 135°40' 33°30'

E.T.S.A. E.L.434

LOCK COALFIELD
150 mT sub-bituminous coal
18m thick between 40 and 96m depth.

BASEMENT HIGH

McLACHLAN

LOCK

MURDINGA

BASCOMBE WELL CONS PARK

HAMBIDGE CONS. PARK

TUCKEY E.L.687

33°29' 136°09'

S 45 43 O K I E 42 P L 44 F A EE BB Y V FF CC Z W T Q M J G 41 B GG DD AA X U R N H D C MM NN OO PP QQ LL II HH JJ KK

U D

33°45' SHERINGA E.L.688

33°44' 136°09'

135°45' 33°45'

TOOLIGIE HILL

SCALE 1:100,000

KILOMETRES 0 2 4 6 8 10 KILOMETRES

T.N. M.N. 7°

RECEIVED
13 MAY 1981
DEPT. OF MINES AND ENERGY
SOUTH AUSTRALIA
3973-III

ENV 3973-49

C.R.A. EXPLORATION PTY. LTD.

POLDA BASIN

TUCKEY E.L.687, SHERINGA E.L.688, McLACHLAN E.L.670

1981 DRILL HOLE LOCATION PLAN

SHEET REFERENCE KIMBA 1:53 7

Geol. A.G.C.D.R.K.M.J.F. Date MARCH 1981. Report No. 10307

Drawn S.J.B. Scale 1:100,000 Plan No. SAa 723.

0270

CRA EXPLORATION PTY. LIMITED

FOURTH QUARTERLY REPORT ON POLDA BASIN

SOUTH AUSTRALIA

MCLACHLAN E.L. 670, TUCKEY E.L. 687 AND SHERINGA E.L. 688

FOR THE PERIOD ENDING AUGUST 11, 1981

The contents of this report remain the property of C.R.A. Exploration Pty. Limited and may not be published in whole or in part nor used in a company prospectus without the written consent of the Company.

AUTHOR: M.J.N. FLITCROFT

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DATE: 15TH SEPTEMBER, 1981

SUBMITTED BY:

ACCEPTED BY:

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1. SUMMARY

0272

A 30 hole rotary mud drilling programme has been completed. Interpretation and evaluation of the results is in progress. A further gravity survey is consistent with an east-west trending fault, south block down, along the northern margin of the Polda Basin. The downthrow is of the order of 1000m in the region of hole 80LRM5. An experimental seismic survey and a "Maxi-probe" E.M. survey was run through hole 80LRM5 and 81LRM41. Both methods appeared to be successful. Interpretation is proceeding.

2. CONCLUSIONS

2.1 Drilling has confirmed the existence of more lignite in the area of hole 80LRM5 drilled last year.

2.2 Further gravity work has confirmed the throw on the northern ~~marginal fault to~~ be of the order of 1000 metres in the region of hole 81LRM5.

2.3 Preliminary interpretation of the "Maxi-probe" E.M. system suggests the method was successful in defining horizons corresponding to known or suspected geological interfaces.

2.4 Recommendations will be made subsequent to full interpretation and appraisal of all data currently held.

3. INTRODUCTION

The Polda Basin tenements, covering 4 168 square kilometres, comprise three E.L.'s - McLachlan E.L. 670, Tuckey E.L. 687 and Sheringa E.L. 688 (see Plan No. SAa 472, 381 and 382). These three exploration licences extend from Sheringa on the west coast of Eyre Peninsula, through Lock to Rudall in the east.

This report describes the work carried out by CRA Exploration Pty. Limited during the fourth quarter to August 11, 1981.

4. WORK CARRIED OUT

0273

4.1 Drilling

W.L. Sides and Son Pty. Limited were contracted to complete the 30 hole rotary mud and rotary core drilling programme shown on Plan SAa 840. Extraordinarily wet weather, bad luck and mechanical breakdowns hindered drilling progress. The programme was completed between 4th May and 21st August.

A total of 3 623 metres was drilled, 2045.7m in Tuckey E.L. 687 and 1577.3m in McLachlan E.L. 670. Included in this total are 112.8m of coring in hole 81L41C (Tuckey).

Hole 81L41C was aborted at 220.6m when the core barrel became stuck at 220.6m. Nine days were lost whilst fishing operations proceeded. The core barrel and 50m of drill rods were eventually abandoned.

Coal was intersected in a number of holes. Seam thickness ranged from less than one metre to a maximum of 15 metres in hole 81LRM41/L41C. The seams were defined from geophysical borehole logs.

Significant coal intersections were obtained in holes 81LRM59, 60, 63, 64 and 81L41C. The best intersections are summarised Table 4.1.1. Holes 81LRM60 and 64 were drilled 1.5 kilometres east and 2.5 kilometres south of hole 81L41C respectively. Hole 81L41C was drilled 0.9 kilometres south of hole 80LRM5 which intersected lignite last year.

Palynological samples of the lignite intersection from 222.9 to 237.9m in hole 81LRM41 have been dated as Eocene.

A full assessment of all geological and analytical data is currently being undertaken and will be reported in the next quarter.

TABLE 4.1.1

0274

SUMMARY OF BEST COAL INTERSECTIONS

HOLE NO.	FROM (M)	TO (M)	THICKNESS (M)
81L41C	150.90	151.69	0.8
	152.05	152.24	0.2
	222.90	237.90	15.0
81LRM43	50.85	52.90	2.0
81LRM46	21.00	21.40	0.4
	21.60	22.20	0.6
	24.20	25.90	1.7
81LRM56	46.50	49.40	2.9
	50.00	51.00	1.0
	71.50	74.60	3.0
	107.30	108.30	1.0
81LRM57	34.60	35.40	0.8
	53.40	54.70	1.3
81LRM59	75.62	76.23	0.61
	76.78	77.94	1.16
	85.61	86.94	1.33
	87.55	88.56	1.01
	119.22	121.34	2.12
81LRM60	102.75	104.40	1.65
	104.78	106.50	1.72
	151.42	152.74	1.32
	202.68	208.07	5.39
	227.12	240.10	12.98
81LRM63	92.97	94.70	1.73
	32.60	35.46	2.86
81LRM64	157.74	160.35	2.61
	164.88	165.87	0.99
	185.69	186.74	1.05

4.2 Geophysics

0275

Gravity, experimental seismic and experimental E.M. surveys have been conducted along a north-south traverse centred on drillhole 80LRM5. The location of this traverse is shown on Plan SAa 1024.

4.2.1 Gravity

Gravity readings were taken at 40 metre intervals from 400mN to 3000mN, using a LaCoste and Romberg gravity meter #544. Elevation data was obtained by S.A.D.M.E. personnel using an optical level and staff from 400mN to 1840mN, and by CRA Exploration Pty. Limited using EDM equipment from 1840mN to 3000mN. The data has been reduced to A.H.D. by reference to B.M. 727. The Bouguer gravity has been calculated using a dial factor of 1.02176 and a Bouguer density of 2.67 gm/cc. Repeatability of the Bouguer gravity values is estimated at better than +/- 0.02 milligals. All field data sheets, and listings of latitude, elevation, drift-corrected gravity and Bouguer gravity are included in Appendix I.

Profiles of Bouguer gravity and elevation are plotted on Plan SAa 984 . The gravity exhibits a smooth inflexure of 17 milligals amplitude, which is interpreted to represent a fault zone between 1200mN and 1500mN. Modelling the data using a 2D inversion program and control on depth to (weathered) basement from drillholes 80LRM5 (116 metres) and 81LRM42 (81 metres) produces the result shown in Plan SAa 985 . The deepening of basement to the south may or may not be as severe as calculated. The model is diagrammatic on the assumption of sediments and basement of homogeneous density. It should also be noted that the apparent basement lows at 1880mN and 2760mN are inversion artifacts; the observed gravity lows correspond to readings taken on sand ridges. However, the general model of a fault zone with basement at approximately one kilometre and 100 metres to the south and north respectively explains the essential components of the observed gravity.

Table 4.2.1 is the output listing generated by the inversion program.

4.2.2 Seismic

During April 1981 an experimental seismic reflection survey was conducted by the S.A.D.M.E. along the traverse from approximately 650mN to 1700mN. In-field results suggests the method was successful in defining reflectors corresponding to known or suspected geological interfaces, although the unconsolidated soils and sands necessitated extensive numbers of repeat shots with the "Betsy" sources to provide sufficient energy.

The data is currently being processed in Houston.

****
* LOCK EXPERIMENTAL SEISMIC LINE : 2D GRAVITY INVERSION *
********** 0276

OBS. DATA : FILE 14

TITLE : LOCK EXP. SEISMIC LINE : BOUGUER GRAVITY(d.f.=1.02176;B.D.=2.67) JUN81

DEPTH TO TOP OF MODEL = 1.0E-3 KILOMETRES

NUMBER OF SIDE PRISMS = 20

DENSITY CONTRAST = -0.5

DATE : 10/09/81

ITERATION NUMBER 4

ST.NO.	X(KM)	T(KM)	G(MEAS)	G(CALC)	DIFF
1	0.440	1.532	-19.695	-19.546	-0.149
2	0.520	1.495	-19.401	-19.248	-0.153
3	0.600	1.302	-18.820	-18.907	0.086
4	0.680	1.203	-18.352	-18.520	0.168
5	0.760	1.150	-17.920	-18.086	0.166
6	0.840	1.071	-17.402	-17.601	0.199
7	0.920	1.014	-16.877	-17.062	0.184
8	1.000	0.930	-16.261	-16.463	0.202
9	1.080	0.841	-15.582	-15.796	0.214
10	1.160	0.800	-14.926	-15.053	0.127
11	1.240	0.779	-14.238	-14.221	-0.018
12	1.320	0.639	-13.290	-13.286	-0.005
13	1.400	0.396	-12.101	-12.235	0.134
14	1.480	0.218	-10.944	-11.071	0.128
15	1.560	0.105	-9.846	-9.886	0.040
16	1.640	0.099	-8.954	-8.883	-0.071
17	1.720	0.097	-8.194	-8.148	-0.046
18	1.800	0.123	-7.625	-7.619	-0.006
19	1.880	0.194	-7.168	-7.075	-0.093
20	1.960	0.079	-6.375	-6.407	0.032
21	2.040	0.075	-5.847	-5.852	0.005
22	2.120	0.085	-5.490	-5.492	0.002
23	2.200	0.089	-5.207	-5.221	0.014
24	2.280	0.103	-4.961	-4.955	-0.006
25	2.360	0.070	-4.640	-4.659	0.019
26	2.440	0.107	-4.479	-4.467	-0.012
27	2.520	0.077	-4.181	-4.200	0.019
28	2.600	0.082	-3.922	-3.917	-0.005
29	2.680	0.049	-3.598	-3.608	0.010
30	2.760	0.099	-3.439	-3.443	0.005
31	2.840	0.022	-2.827	-2.831	0.003
32	2.920	0.030	-2.592	-2.598	0.006
33	3.000	0.022	-2.345	-2.349	0.004

STANDARD DEVIATION OF GRAVITY DIFFERENCE = 0.103

4.2.3 E.M.

0277

Concurrent with the seismic survey tests were carried out with the 'Maxi-probe' EMR-16 system developed by Geoprobe Limited. This is a frequency domain method using a three-coil receiver and (in this instance) three eight metre diameter transmitter loops. Fourteen soundings using a 200 metre transmitter-receiver separation were made from 200mN to 2700mN, plus four soundings with a 400 metres separation. The apparent resistivities calculated for the 200m separation soundings are plotted in Appendix II, also a preliminary interpretation by Geoprobe Limited.

M.J.N. FLITCROFT

MJNF/km

KEYWORDS

0278

Kimba SI53-7, Coal-lignite, Eocene, Drill-rotary, Geophys.-E.M., Geophys.-grav., Geophys.-seis.

LOCATION

Kimba SI53-7 1:250 000

LIST OF PLANS

Plan No.	Title	Scale
SAa 381	Location Map Tuckey E.L. 687	1:250 000
SAa 382	Location Map Sheringa E.L. 688	1:250 000
SAa 472	Location Map McLachlan E.L. 670	1:250 000
SAa 840	Polda Basin - 1981 Drillhole Location Plan	1:100 000
SAa 1024	Polda Basin - Location of Experimental Seismic Line	1:10 000
SAa 984	Polda Basin - Profiles of Bouguer Gravity and elevation	1:10 000
SAa 985	Polda Basin - Experimental Seismic Line: 2D Gravity Inversion	1:10 000

LIST OF APPENDICES

Appendix I Gravity Survey on Experimental Seismic Line - Data and Interpretation.

Appendix II E.M. 'Maxi-probe' Survey on Experimental Seismic Line - Data and Interpretation.

APPENDIX I

GRAVITY SURVEY ON EXPERIMENTAL SEISMIC LINE

- DATA AND INTERPRETATION

GRAVITY SURVEY SHEET

0280

Area: POLDA BASIN	Prospect: EXP. SEISMIC LINE	Survey N°: 1	
Title: TUCKEY E.L. 687	Sheet: KIMBA SI 53-7	Date: 27/4/81	Oper: G.J.B.

Meter: LACOSTE #544	Scale Factor:	Trav.: —

DIAL UNITS X 100

Station.	Time.	Reading DIAL UNITS.	M GALS.	Corr.	Obs. Gravity.	Comments.
1840 mN	1456	308904			308905	Geophone # 1
"	1504	308905			—	
"	1528	308905			—	
1800	1546	308916		+1	308917	5
1760	1550	308922		+3	308925	9
1720	1554	308912		+3	308915	13
1680	1558	308896		+3	308899	17
1640	1601	308876		+4	308880	21
1600	1606	308846		+4	308850	25
1560	1615	308807		+5	308812	29
1520	1619	308759		+5	308764	33
1480	1623	308713		+6	308719	37
1440	1626	308654		+6	308660	41
1400	1630	308607		+7	308614	45
1360	1634	308541		+7	308548	49
1320	1638	308454		+7	308461	53
1280	1643	308324		+8	308332	57
1240	1646	308329		+8	308337	61
1200	1651	308340		+9	308349	65
1160	1655	308322		+9	308331	69
1120	1659	308283		+9	308292	73
1080	1715	308262		+11	308273	77
1840	1721	308894		+11	—	

GRAVITY SURVEY SHEET

0281

Area: POLDA BASIN	Prospect: EXP. SEISMIC LINE	Survey N°: 1	
Title: TUCKEY E.L. 687	Sheet: KIMBA SI53-7	Date: 29/4/81	Oper: G.J.B.

Meter: LACOSTE #544	Scale Factor:	Trav.: —

DIAL UNITS x 100

Station.	Time.	Reading DIAL UNITS.	M GALS.	Corr.	Obs. Gravity.	Comments.
1080 mN	0934	308236		+37	308273	Geophone #77
"	0937	308236		+37	—	
1040	0945	308203		+37	308240	81
1000	0948	308168		+37	308205	85
960	0953	308106		+36	308142	89
920	0958	308091		+36	308127	93
880	1003	308093		+36	308129	97
840	1007	308069		+36	308105	101
800	1011	308034		+35	308069	105
760	1016	308020		+35	308055	109
720	1022	308012		+35	308047	113
680	1028	308012		+34	308046	117
640	1034	307993		+34	308027	121
600	1038	307957		+34	307991	125
560	1043	307872		+34	307906	129
520	1054	307844		+33	307877	
480	1059	307876		+33	307909	
440	1104	307881		+32	307913	
400	1109	307873		+32	307905	81LRM41
1080	1118	308241		+32	—	
1080	1120	308241		+32	—	
GRAVITY TIES						
28000 mN	1436	309328			309328	1980 CRAE LINE 2
1840 mN	1456	308878			308880	EXP. SEISMIC LINE
5000 mN	1512	309740			309740	1981 GEOTERREX LINE 5
28000 mN	1524	309329			—	1980 CRAE LINE 2
1840 mN	1542	308882			—	EXP. SEISMIC LINE
5000 mN	1557	309741			—	1981 GEOTERREX LINE 5
28000 mN	1608	309328			—	1980 CRAE LINE 2

GRAVITY SURVEY SHEET

0282

Area: POLDA BASIN	Prospect: LOCK SEISMIC LINE	Survey N°: 2	
Title: TUCKEY E.L.	Sheet: KIMBA	Date: 16/6/81	Oper: G. M

Meter: LACOSTE #544	Scale Factor: 1.02176	Trav.: 1

	Station.	Time.	Reading DIAL UNITS.	M GALS.	DRIFT Corr.	Obs. Gravity.	Comments.	DISH HT (cm)
*	1840 N	1155	3089·672		—			0
*	"	1157	3089·673		0·000		CORRN FOR PREVIOUS	
	1880	1204	3089·493		-0·005		NOTE = −0·62 DIS.	-4·0
	1920	1209	3090·685		-0·008			-6·5
	1960	1214	3091·367		-0·012			-7·5
	2000	1219	3091·802		-0·015			-10·5
	2040	1224	3092·037		-0·018			-12·0
	2080	1229	3092·083		-0·022			-10·0
	2120	1233	3092·044		-0·025			-9·5
	2160	1237	3091 945		-0·027			-5·5
	2200	1240	3091. 690		-0·029			-6.0
	2240	1243	3091. 485		-0·031			-7.0
	2280	1246	3091. 490		-0·034			-8.5
	2320	1249	3091. 897		-0·036			-7.5
	2360	1252	3092,257		-0·038			-7.0
*	1840	1258	3089.713		—			0
*	"	1259	3089.717		—			0
	~~2360~~							
							17/6/81	
	2360	0944	3092. 834		-0·115			-7 0
	"	0945	3092. 330		-0·111			-7. 0
	2400	0950	3092 , 428		-0·001	-0·114		0
	2440	0953	3092 , 639		-0·001	"		0
	2480	0957	3092. 715		-0·001			0
	2520	1000	3092. 755		-0·001	"		0
	2560	1003	3092 · 770		-0·002	-0·113		0
	2600	1007	3092. 813		-0·002	"		0
	2640	1010	3092. 908		-0·002			0
	2680	1013	3093 , 075		-0·003	-0·113		0
	2720	1016	3092, 989		-0·003	"		-2.5
	2760	1023	3092, 625		-0·003			0
	2800	1027	3093, 271		-0·004	-0·113		-2
	2840	1031	3093, 987		-0·004			0
	2880	1034	3094, 187		-0·004			0
	2920	1037	3094, 294		-0 005	"		0
	2960	1040	3094 , 355		-0 005			0
	3000	1043	3094, 346		-0 005			0
	2360	1053	3092, 340		—			-7.0
	"	1054	3092, 336		—			-7.0

PREVIOUS [illegible]

Date ..... Levels ..... taken for 0283

From ..... To .....

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	DISTANCE	CROSS SECTION LEFT	CROSS SECTION RIGHT	REMARKS
	90 53 35		0·4161		55·647	[illegible].37			2560 metres
	91 00 40		0·7079		55·939	158.67			2600
	91 18 00		0·8196		56·051	118.48			2640
	92 04 40		0·6687		55·900	78.27			2680
	92 59 35		1·5068		56·738	38.28			2720
	89 36 55		3·5192		58·750	1.63			2760
	91 07 50		1·2522		56·483	41.25			2800
	92 [illegible] 00			0·7299	54·501	81.78			2840
	92 19 40			1·4532	53·778	122.08			2880
	91 46 00			1·4816	53·749	161.78			2920
	91 22 15			1·2885	53·942	200.45			2960
	91 01 15			0·7834	54·448	240.85			3000
						END OF LINE			

NOTE: REDUCED LEVELS SHOWN ARE BASED ON ARBITRARY DATUM. TO OBTAIN AHD LEVELS, ADD 58.911 m.

81L R11AR
DRILL HOLE AT 2730 mN

0284

Date 16/6/81 Levels taken for LEVELLING WITH EDM

From LOCK SEISMIC LINE To 1840mN to 3000mN

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL		DISTANCE	CROSS SECTION LEFT	CROSS SECTION RIGHT	REMARKS
91 53·00	·	·	·	·	57·149	m	41.51			1840 metres
·	81 51·30	·	1·6439	·	↑58·793		1.95			1880 metres
·	95 23·15	·	·	2·2735	54·875		39.63			1920
·	94 01·45	·	·	4·2652	52·884		79.93			1960
·	93 08·00	·	·	5·2353	51·914		120.57			2000
·	92 22·55	·	·	5·3085	51·840		160.43			2040
·	91 46·15	·	·	4·8184	52·331		200.00			2080
·	·	91 13·65	·	3·7892	53·360		239.67			2120
·	·	·	·	·	·					
91 55·20	·	·	·	·	53·360		151.05			2120
·	92 02·20	·	1·1414	·	54·501		110.34			2160
·	91 40·55	·	2·9714	·	56·331		71.45			2200
·	91 12·00	·	4·4325	·	↑57·793		30.41			2240
·	90 38·05	·	4·9637	·	58·324		9.55			2280
·	91 41·50	·	3·5245	·	56·885		50.17			2320
·	91 44·05	·	2·3504	·	55·710		89.78			2360
·	91 22·25	·	1·9302	·	55·290		130.92			2400
·	91 06·40	·	1·7363	·	55·096		171.86			2440
·	90 55·10	·	1·6916	·	55·052		210.43			2480
·	·	90 43·50	1·8705	·	55·231		250.88			2520
·	·	·	·	·	·					
90 50 40	·	·	·	·	55·231		238.02			2520

0285

Date 16/6/81 Levels taken for TIE FROM BM 727

From LOCK SEISMIC LINE To TO GEOPHONE #132

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL		DISTANCE	CROSS SECTION LEFT	CROSS SECTION RIGHT	REMARKS
89 43·50					111·350	m	316.38	↑		BM 727 (111·350m)
		89 59 45		0·8245			364.83			"A"
90 01·35							324.38	↑		"A"
		90 01·10	0·0477				299.56			"B"
89 56·30							443.74	↑		"B"
		89 47 50	0·9450				394.67			"C"
92 20·40							20.22	↑		"C"
		87 37 20	1·8688		113·387	m	25.07			~~SHOTPOINT~~ 132 GEOPHONE

LOCK EXP. SEISMIC LINE - LATITUDES (Deg.x100) : 04/05/81

Number of stations = 66 File No. : 65

No.	---X---	---Y---	No.	---X---	---Y---
1	400.00	3356.49	51	2400.00	3354.66
2	440.00	3356.46	52	2440.00	3354.62
3	480.00	3356.42	53	2480.00	3354.59
4	520.00	3356.38	54	2520.00	3354.55
5	560.00	3356.35	55	2560.00	3354.51
6	600.00	3356.31	56	2600.00	3354.48
7	640.00	3356.27	57	2640.00	3354.44
8	680.00	3356.24	58	2680.00	3354.40
9	720.00	3356.20	59	2720.00	3354.37
10	760.00	3356.16	60	2760.00	3354.33
11	800.00	3356.13	61	2800.00	3354.29
12	840.00	3356.09	62	2840.00	3354.26
13	880.00	3356.05	63	2880.00	3354.22
14	920.00	3356.02	64	2920.00	3354.18
15	960.00	3355.98	65	2960.00	3354.15
16	1000.00	3355.94	66	3000.00	3354.11
17	1040.00	3355.91			
18	1080.00	3355.87			
19	1120.00	3355.83			
20	1160.00	3355.80			
21	1200.00	3355.76			
22	1240.00	3355.72			
23	1280.00	3355.69			
24	1320.00	3355.65			
25	1360.00	3355.61			
26	1400.00	3355.58			
27	1440.00	3355.54			
28	1480.00	3355.50			
29	1520.00	3355.47			
30	1560.00	3355.43			
31	1600.00	3355.39			
32	1640.00	3355.36			
33	1680.00	3355.32			
34	1720.00	3355.28			
35	1760.00	3355.25			
36	1800.00	3355.21			
37	1840.00	3355.17			
38	1880.00	3355.14			
39	1920.00	3355.10			
40	1960.00	3355.06			
41	2000.00	3355.03			
42	2040.00	3354.99			
43	2080.00	3354.95			
44	2120.00	3354.92			
45	2160.00	3354.88			
46	2200.00	3354.84			
47	2240.00	3354.81			
48	2280.00	3354.77			
49	2320.00	3354.73			
50	2360.00	3354.70			

LOCK EXP. SEISMIC LINE - ELEVATIONS(metres) - tied to Bench Mark 727

Number of stations = 66 File No. : 66

No.	---X---	---Y---	No.	---X---	---Y---
1	400.00	110.01	51	2400.00	114.20
2	440.00	110.28	52	2440.00	114.01
3	480.00	111.19	53	2480.00	113.96
4	520.00	113.33	54	2520.00	114.14
5	560.00	112.65	55	2560.00	114.56
6	600.00	110.06	56	2600.00	114.85
7	640.00	109.32	57	2640.00	114.96
8	680.00	109.27	58	2680.00	114.81
9	720.00	110.11	59	2720.00	115.65
10	760.00	110.69	60	2760.00	117.66
11	800.00	111.00	61	2800.00	115.39
12	840.00	110.42	62	2840.00	113.41
13	880.00	110.37	63	2880.00	112.69
14	920.00	111.63	64	2920.00	112.66
15	960.00	112.02	65	2960.00	112.85
16	1000.00	110.41	66	3000.00	113.36
17	1040.00	110.12			
18	1080.00	110.01			
19	1120.00	110.51			
20	1160.00	110.03			
21	1200.00	110.68			
22	1240.00	112.90			
23	1280.00	114.72			
24	1320.00	110.97			
25	1360.00	109.20			
26	1400.00	108.76			
27	1440.00	109.10			
28	1480.00	108.88			
29	1520.00	109.05			
30	1560.00	109.32			
31	1600.00	109.45			
32	1640.00	110.01			
33	1680.00	110.81			
34	1720.00	111.75			
35	1760.00	112.87			
36	1800.00	114.22			
37	1840.00	116.06			
38	1880.00	117.70			
39	1920.00	113.79			
40	1960.00	111.79			
41	2000.00	110.82			
42	2040.00	110.75			
43	2080.00	111.24			
44	2120.00	112.27			
45	2160.00	113.41			
46	2200.00	115.24			
47	2240.00	116.70			
48	2280.00	117.23			
49	2320.00	115.80			
50	2360.00	114.62			

LOCK EXP. SEISMIC LINE - DRIFT CORR. GRAVITY : 04/05/81 & 17/06/81

Number of stations = 66 File No. : 67

No.	---X---	---Y---
1	400.00	3079.05
2	440.00	3079.13
3	480.00	3079.09
4	520.00	3078.77
5	560.00	3079.06
6	600.00	3079.91
7	640.00	3080.27
8	680.00	3080.46
9	720.00	3080.47
10	760.00	3080.55
11	800.00	3080.69
12	840.00	3081.05
13	880.00	3081.29
14	920.00	3081.27
15	960.00	3081.42
16	1000.00	3082.05
17	1040.00	3082.40
18	1080.00	3082.73
19	1120.00	3082.92
20	1160.00	3083.31
21	1200.00	3083.49
22	1240.00	3083.37
23	1280.00	3083.32
24	1320.00	3084.61
25	1360.00	3085.48
26	1400.00	3086.14
27	1440.00	3086.60
28	1480.00	3087.19
29	1520.00	3087.64
30	1560.00	3088.12
31	1600.00	3088.50
32	1640.00	3088.80
33	1680.00	3089.01
34	1720.00	3089.15
35	1760.00	3089.25
36	1800.00	3089.17
37	1840.00	3089.05
38	1880.00	3088.89
39	1920.00	3090.06
40	1960.00	3090.74
41	2000.00	3091.17
42	2040.00	3091.40
43	2080.00	3091.44
44	2120.00	3091.40
45	2160.00	3091.30
46	2200.00	3091.04
47	2240.00	3090.83
48	2280.00	3090.84
49	2320.00	3091.24
50	2360.00	3091.60
51	2400.00	3091.75
52	2440.00	3091.81
53	2480.00	3091.98
54	2520.00	3092.02
55	2560.00	3092.04
56	2600.00	3092.08
57	2640.00	3092.17
58	2680.00	3092.34
59	2720.00	3092.25
60	2760.00	3091.89
61	2800.00	3092.53
62	2840.00	3093.25
63	2880.00	3093.45
64	2920.00	3093.56
65	2960.00	3093.62
66	3000.00	3093.61

LOW EXP. SEISMIC LINE : BOUGUER GRAVITY(d.f.=1.02176,S.D.=2.67) JUN81

Number of stations = 66 File No. : 68

No.	---X---	---Y---	No.	---X---	---Y---
1	400.00	13.14	51	2400.00	28.46
2	440.00	13.31	52	2440.00	28.52
3	480.00	13.47	53	2480.00	28.71
4	520.00	13.60	54	2520.00	28.82
5	560.00	13.79	55	2560.00	28.96
6	600.00	14.18	56	2600.00	29.08
7	640.00	14.43	57	2640.00	29.22
8	680.00	14.65	58	2680.00	29.40
9	720.00	14.85	59	2720.00	29.50
10	760.00	15.08	60	2760.00	29.56
11	800.00	15.31	61	2800.00	29.80
12	840.00	15.60	62	2840.00	30.17
13	880.00	15.86	63	2880.00	30.27
14	920.00	16.12	64	2920.00	30.41
15	960.00	16.38	65	2960.00	30.53
16	1000.00	16.74	66	3000.00	30.66
17	1040.00	17.07			
18	1080.00	17.42			
19	1120.00	17.74			
20	1160.00	18.07			
21	1200.00	18.42			
22	1240.00	18.76			
23	1280.00	19.10			
24	1320.00	19.71			
25	1360.00	20.28			
26	1400.00	20.90			
27	1440.00	21.47			
28	1480.00	22.06			
29	1520.00	22.58			
30	1560.00	23.15			
31	1600.00	23.60			
32	1640.00	24.05			
33	1680.00	24.45			
34	1720.00	24.81			
35	1760.00	25.16			
36	1800.00	25.38			
37	1840.00	25.64			
38	1880.00	25.83			
39	1920.00	26.29			
40	1960.00	26.63			
41	2000.00	26.90			
42	2040.00	27.15			
43	2080.00	27.32			
44	2120.00	27.51			
45	2160.00	27.67			
46	2200.00	27.79			
47	2240.00	27.89			
48	2280.00	28.04			
49	2320.00	28.20			
50	2360.00	28.36			

0290

APPENDIX II

E.M. "MAXI-PROBE" SURVEY ON EXPERIMENTAL SEISMIC LINE - DATA AND INTERPRETATION

0291

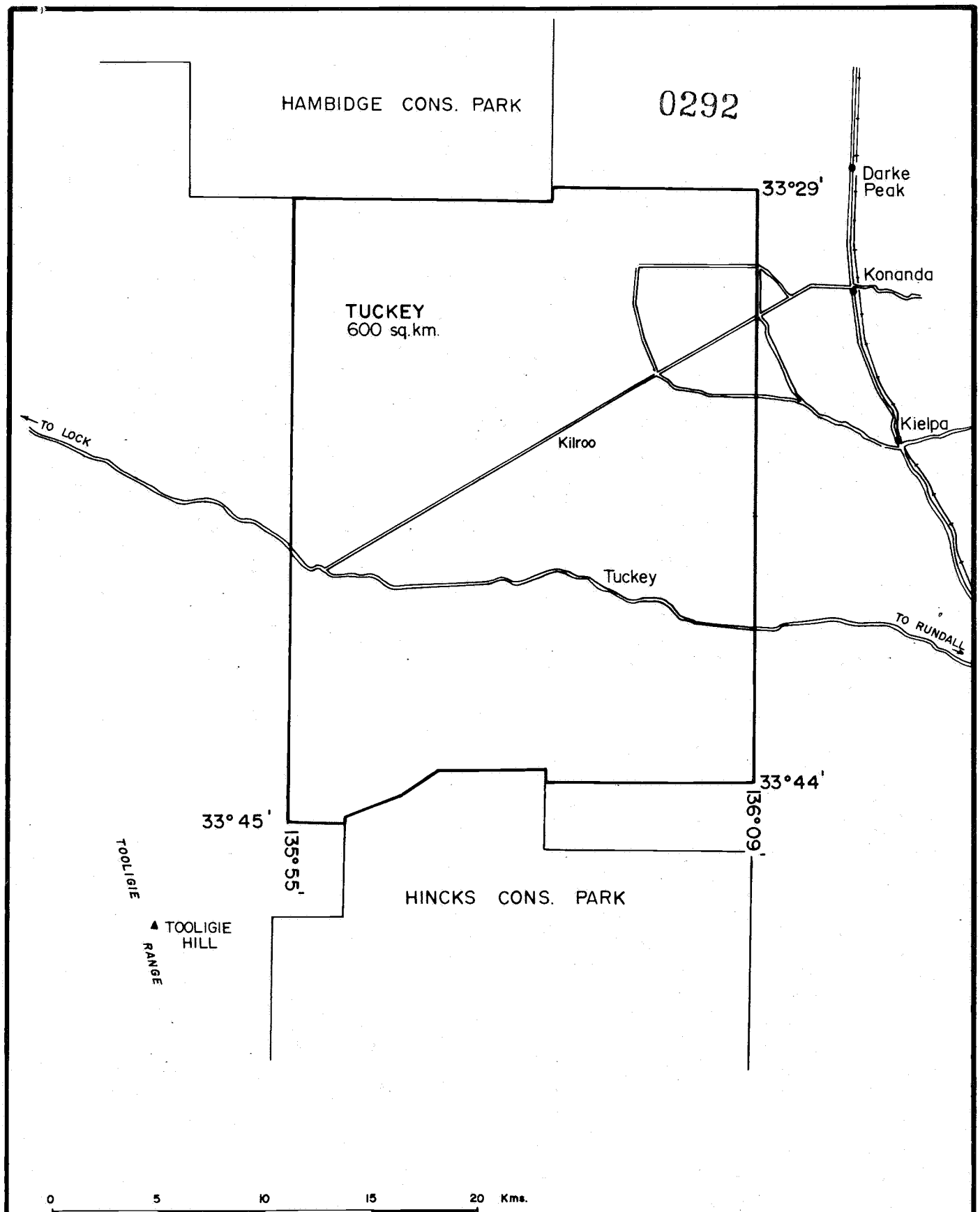
GEOPROBE® LIMITED

– 41 HORNER AVENUE
'ORONTO, ONTARIO
:ANADA, M8Z 4X4

TELEPHONE: (416) 252-5775
TELEX: 06-967858 AGACAN
CABLE: GEOPRO - TORONTO

May 22, 1981

We have run a very simple 3-point averaging filter to the data to smooth out the spikes caused due to tremendous enlargement of the "apparent resistivity scale" (20 inches/cycle). This filtered data is much easier to correlate. I have not tried to correlate the unfiltered data. Four soundings using a Tx-Rx spread of 400 Meters are difficult to correlate because of lack of density of stations. Some low resistivity slopes may correlate with coal formations. We suspect faults between 13N-15N, 23N-25N and 9N-11N. Probable hinge fault around 5N. Section from 23N to 15N seems to dip about ½ to 1 degree south.



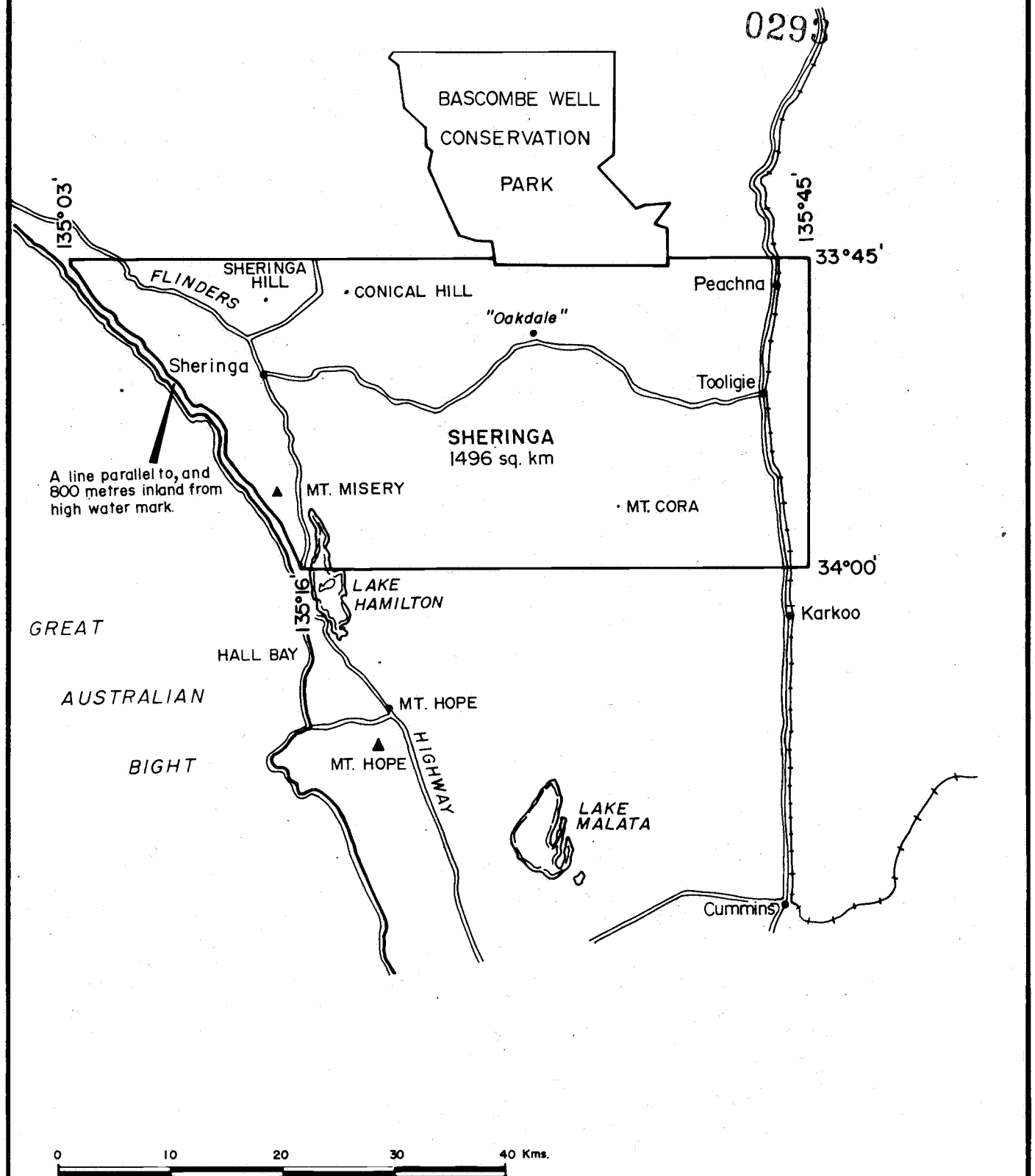
C.R.A. EXPLORATION PTY. LIMITED.

TUCKEY E.L. 687

LOCATION MAP

SHEET REF: KIMBA SI53-7

Geol.	Scale: 1:250,000	Report N°: 10307
Drawn: J.C.R.	Date: June 1980	Plan N°: SAa381



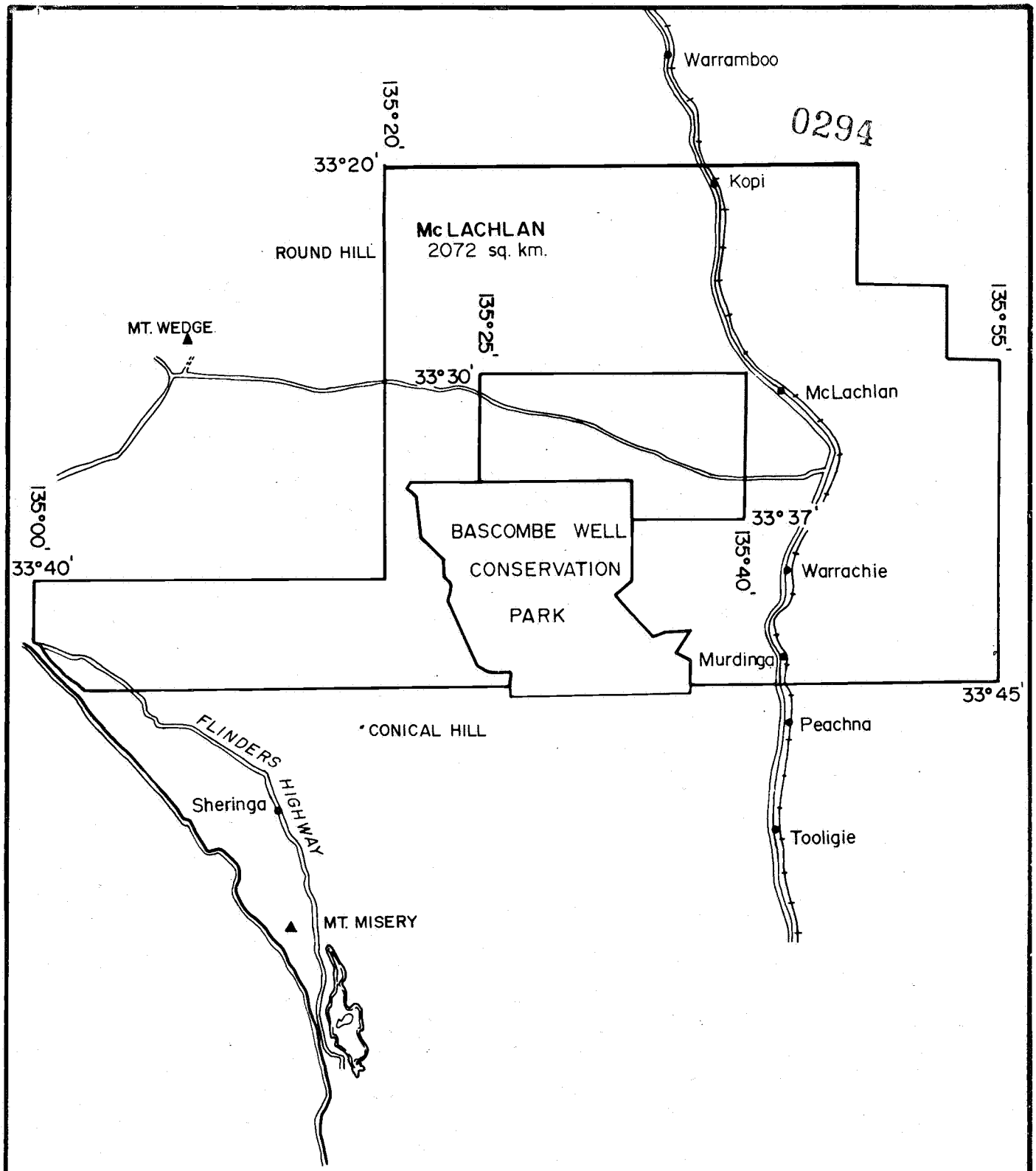
C.R.A. EXPLORATION PTY. LIMITED.

SHERINGA E.L.688

LOCATION MAP

SHEET REF: KIMBA SI53-7

Geol.	Scale : 1:500,000	Report N°10307
Drawn J.C.R.	Date : June 1980	Plan N°: SAa 382



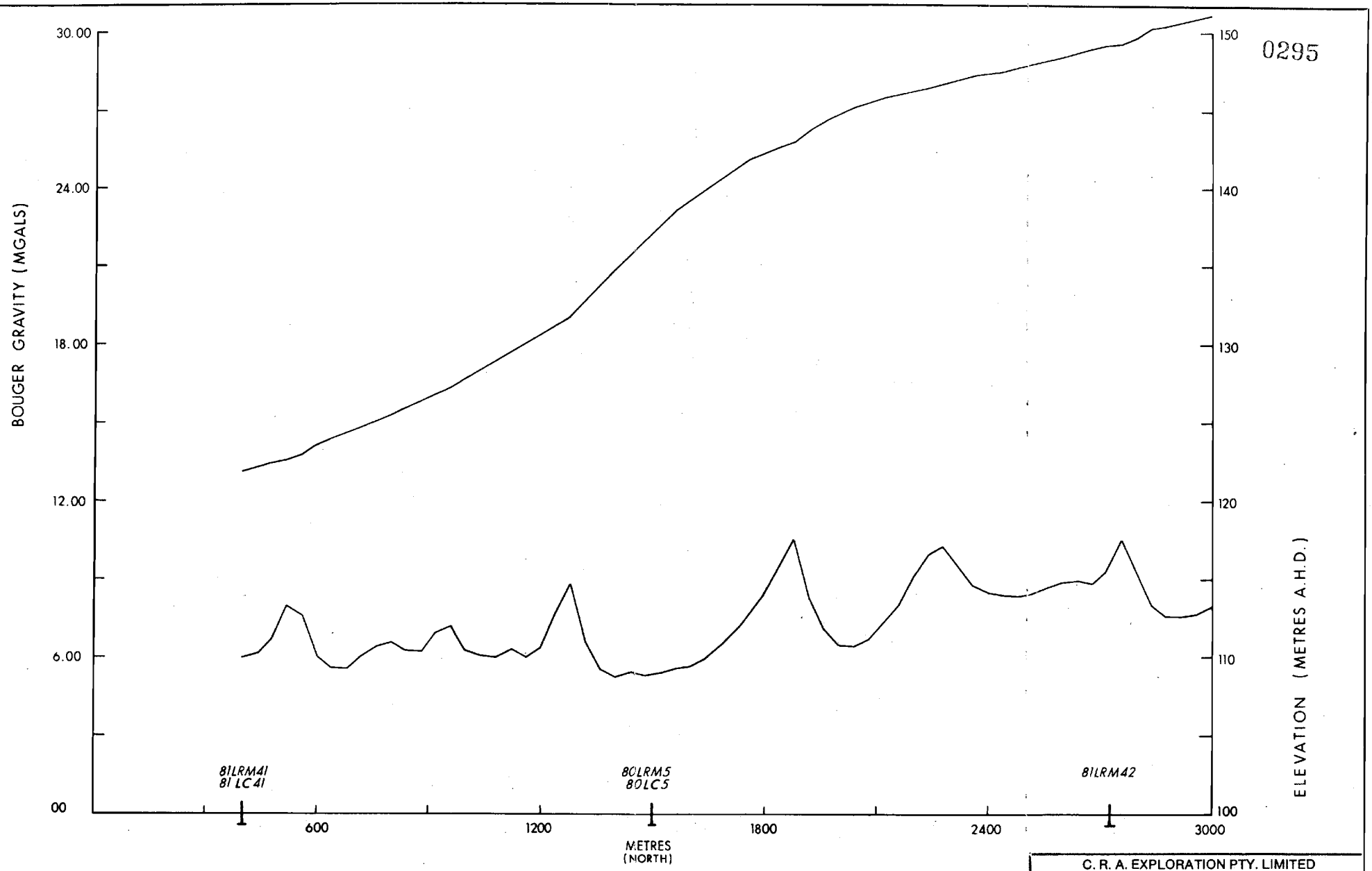
C.R.A. EXPLORATION PTY. LIMITED.

McLACHLAN E.L. 670

LOCATION MAP

SHEET REF: KIMBA SI53-7

Geol.	Scale: 1:500,000	Report N°: 10307
Drawn: J.C.R.	Date: June 1980	Plan N°: SAa 472



(Bouguer density = 2.67)

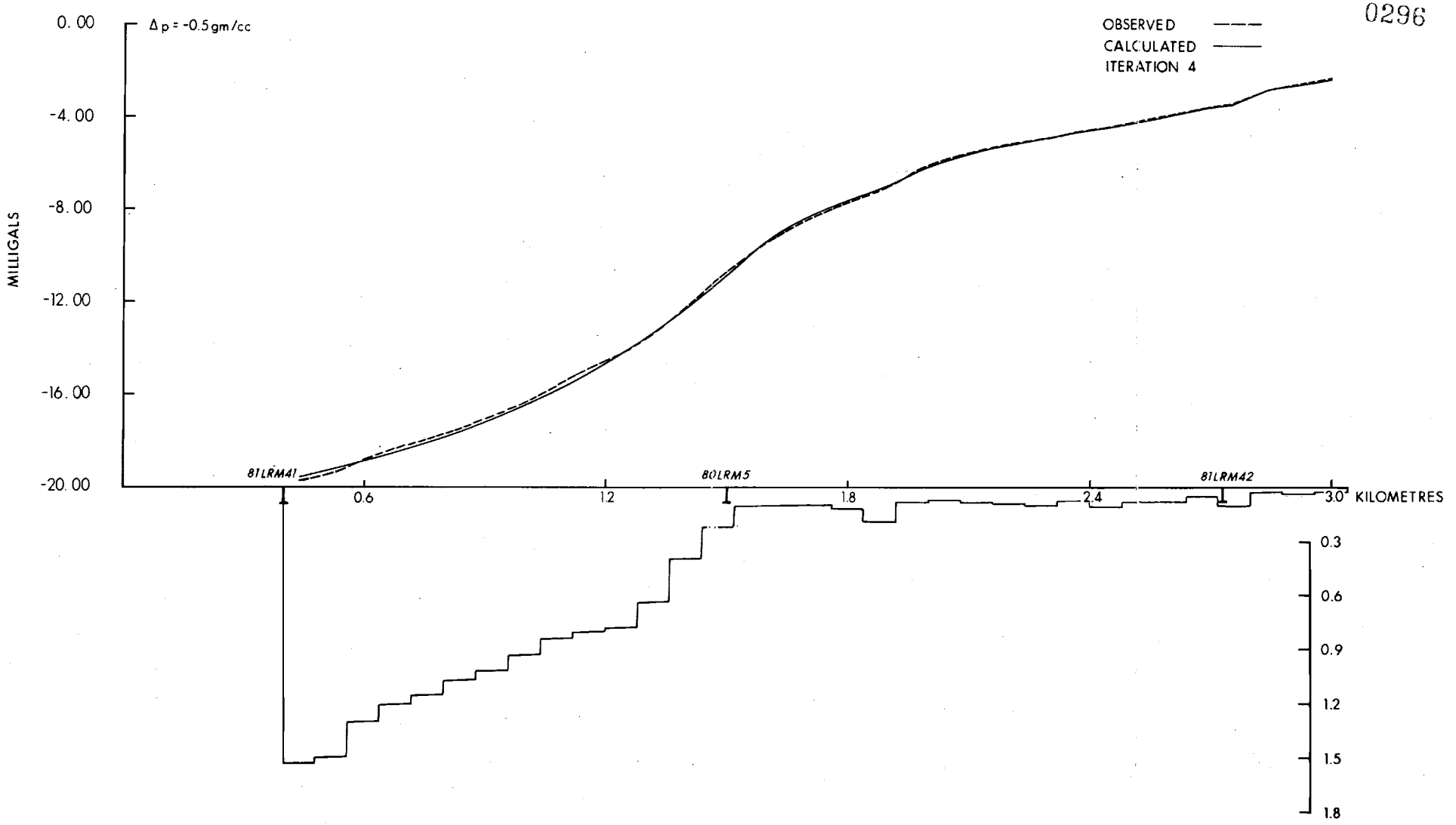
C. R. A. EXPLORATION PTY. LIMITED

TUCKEY E.L.687

NORTH - SOUTH GRAVITY PROFILE
THROUGH 80LRM5

Ref. KIMBA SI53-7	
Scale Horiz. 1:10 000	Drawn J.C.R.
Author G.J.B.	Report No. 10307
Date SEPT. 1981	Plan No. SAg 984

0296

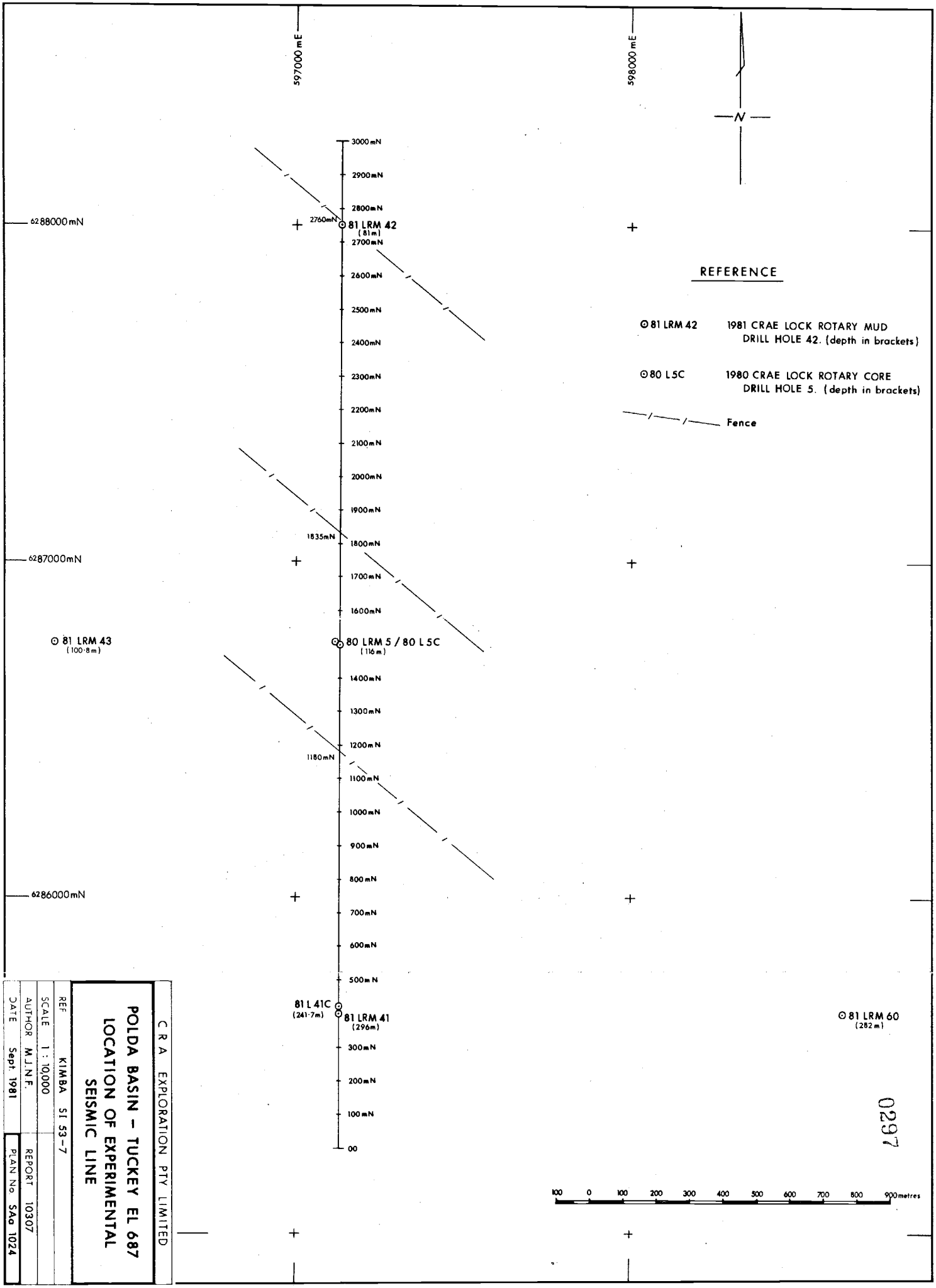


C. R. A. EXPLORATION PTY. LIMITED

TUCKEY E.L.687

LOCK EXPERIMENTAL SEISMIC LINE
TWO DIMENSIONAL GRAVITY INVERSION

Ref.	KIMBA SI53-7		
Scale	Horiz. 1:10000	Drawn	J.C.R.
Author	G.J.B.	Report No.	10307
Date	SEPT. 1981	Plan No.	SAa 985

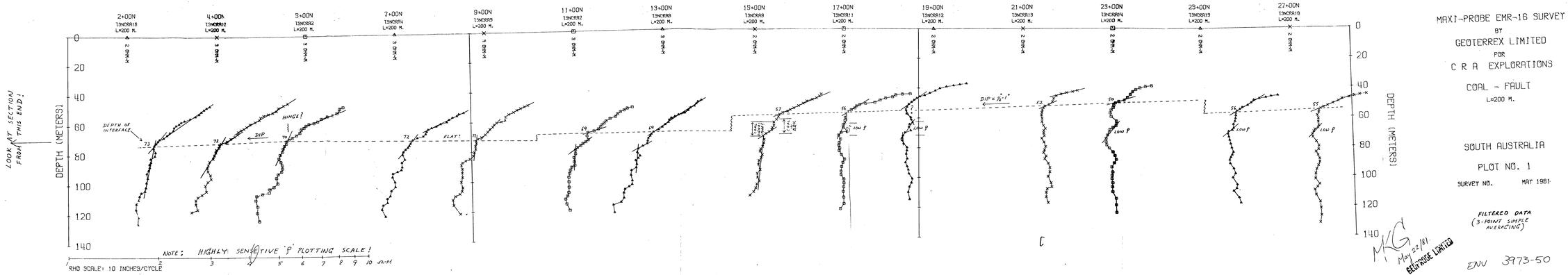


POLDA BASIN – TUCKEY EL 687
LOCATION OF EXPERIMENTAL SEISMIC LINE

C R A EXPLORATION PTY LIMITED

REF	KIMBA SI 53-7
SCALE	1 : 10,000
AUTHOR	M.J.N.F.
DATE	Sept. 1981
REPORT	10307
PLAN No	SAa 1024

0297



MAXI-PROBE EMR-16 SURVEY
BY
GEOTERREX LIMITED
FOR
C R A EXPLORATIONS

COAL - FAULT
L=200 M.

SOUTH AUSTRALIA

PLOT NO. 1

SURVEY NO. MAY 1981

FILTERED DATA
(3-POINT SIMPLE AVERAGING)

MG May 22/81
GEOTERREX LIMITED

ENV 3973-50

3973-50

REFERENCE

- Inferred fault, position accurate.
- Inferred fault, position approximate.
- Geological boundary, position approximate.
- Outline of E.T.S.A. coal basin
- Road

41 (296m) — CRAE, 1981 Lock Rotary Mud Drill Hole. Full designation : 81 LRM 41. Depth in brackets.

CRAE, 1980 Lock Rotary Mud Drill Hole

- Hole with coal or lignite intersection > 5m
- Hole with coal or lignite intersection 2-5m
- Hole with coal or lignite minor seams
- Hole with lignitic sand and clay only

135°20' 33°20'

McLACHLAN EL 670

50 (180.4m) 51 (88.8m) 80 LRM 29 (86m) 49 (80.6m) 47 (194.8m) 53 (147.2m) 80 LRM 28 (66m) 54 (144.4m) 48 (141.5m) 55 (132m) 52 (147m) 46 (161.3m) 69 (134m) 44 (137.5m) 45 (180.8m)

HAMBIDGE CONS. PARK

TN MN 7°

135°25' 135°40' 33°30'

ETSA EL 434

BASEMENT HIGH

LOCK COALFIELD
150 mT sub-bituminous coal
18m thick between 40 and 96m depth.

56 (122.5m) 80 LRM 30 (112 m) 80 LRM 30c (96 m) 57 (75m) 80 LRM 31 (138 m) 58 (180 m) 59 (182 m)

80 LRM 26 (120m) 80 LRM 27 (150m) 80 LRM 13 (194 m) 67 (226m) 80 LRM 10 (120 m) 80 LRM 25 (120m) 68 (180m) 80 LRM 12 (150 m) 80 LRM 11 (153 m) 80 LRM 24 (120m) 80 LRM 14 (124 m) 80 LRM 23 (124 m) 80 LRM 15 (122 m)

U D

BASCOMBE WELL CONS PARK

80 LRM 22 (68 m) 80 LRM 21 (68 m)

BASEMENT HIGH

80 LRM16 (72 m) 80 LRM 17 (124 m) 80 LRM 18 (124m)

MURDINGA

33°45'

SHERINGA EL 688

80 LRM 35 (58 m) 80 LRM 32 (36 m)

TOOLIGIE HILL

135°55'

TUCKEY EL 687

42 (81m) 80 LRM 5 (116m) 66 (106m) 43 (100.8) 80 LRM 8 (102 m) 41 (296m) 41C (241.7) 60 (282m) 80 LRM 2 (153m) 80 LRM1 (158m) 65 (116m) 80 LRM 9 (156m) EO LRM 6 (153m) 64 (282m) 80 LRM 3 (153 m) 80 LRM7 (153m) 80 LRM 4 (150m) 62 (202m) 61 (169m) 63 (170m) 80 LRM 19 (120 m) 80 LRM 20 (122 m)

136°09' 33°44' 33°29'

SCALE 1:100,000

KILOMETRES 0 2 4 6 8 10 KILOMETRES

ENV. 3973-51

C.R.A. EXPLORATION PTY. LTD.

POLDA BASIN

TUCKEY EL 687, SHERINGA EL 688, McLACHLAN EL 670

1980-1981 DRILL HOLE

LOCATION PLAN

SHEET REFERENCE KIMBA SI53-7

Geol: M.J.F, A.G.C, D.R.K.	Date: 1981.	Report No: 10307
Drawn S.W.	Scale: 1:100,000.	Plan No : SAa 840

CRA EXPLORATION PTY. LIMITED 0298

FIFTH QUARTERLY REPORT ON POLDA BASIN

SOUTH AUSTRALIA

McLACHLAN E.L. 670, TUCKEY E.L. 687 AND SHERINGA E.L. 688

PE 6.10.81.

FOR THE PERIOD ENDING NOVEMBER 11, 1981.

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AUTHOR: M.J.N. FLITCROFT

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SUBMITTED BY: M J Flitcroft

ACCEPTED BY:

RECEIVED
11 MAR 1982
DEPT. OF MINES AND ENERGY SECURITY
1973-III

10307

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3. WORK CARRIED OUT	1
KEYWORDS	2
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1. SUMMARY

0300

Review and interpretation of results from the 1981 drilling programme is continuing. A full report including all data obtained will be presented next quarter. Recommendations on the rationalization of the Polda Basin tenements will also be made.

2. INTRODUCTION

The Polda Basin tenements, covering 4 168 square kilometres, comprise three E.L.'s - McLachlan E.L. 670, Tuckey E.L. 687 and Sheringa E.L. 688 (see Plan No. SAa 472, 381 and 382).

These three exploration licences extend from Sheringa on the west coast of Eyre Peninsula, through Lock to Rudall in the east.

This report describes the work carried out by CRA Exploration Pty. Limited during the fifth quarter to November 11, 1981.

3. WORK CARRIED OUT

Interpretation and assessment of all geological and analytical data continued during this quarter.

Difficulty was experienced with correlation and interpretation of lithologies between boreholes.

A full report including all analytical data, geophysical borehole logs and drilling data will be presented next quarter together with recommendations on the rationalization of the Polda Basin tenements.

M J Flitcroft

M.J.N. FLITCROFT

MJNF/lmc

KEYWORDS

Kimba SI 53-7, Coal-lignite, Coal-brown.

0301

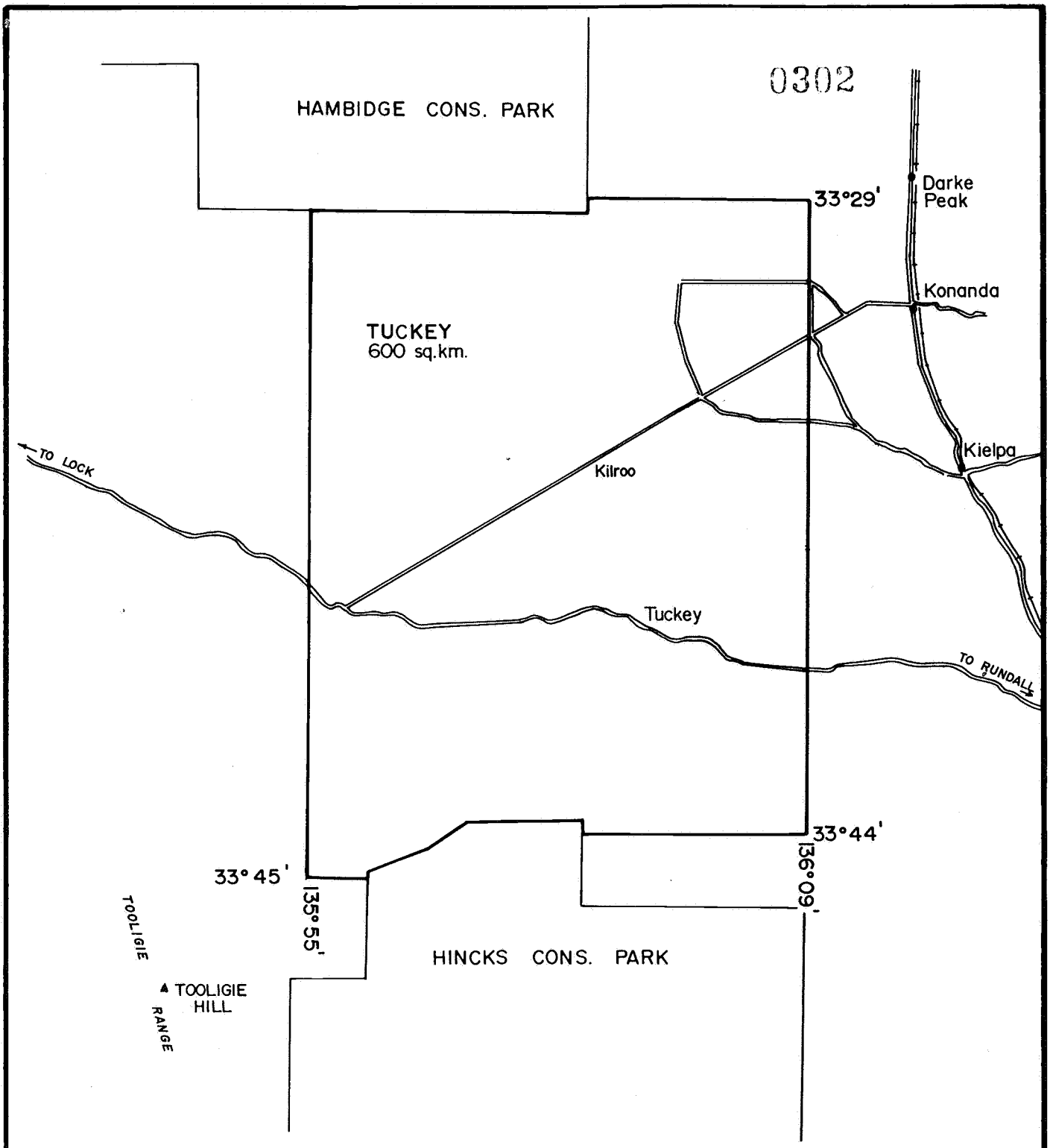
LOCATION

Kimba SI 53-7

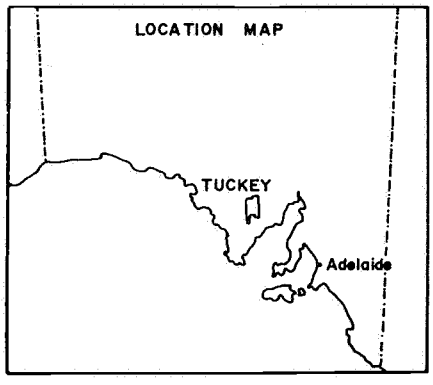
LIST OF PLANS

Plan No.	Title	Scale
SAa 381	Location Map Tuckey E.L. 687	1:250 000
SAa 382	Location Map Sheringa E.L. 688	1:500 000
SAa 472	Location Map McLachlan E.L. 670	1:500 000

0302



0 5 10 15 20 Kms.



C.R.A. EXPLORATION PTY. LIMITED.

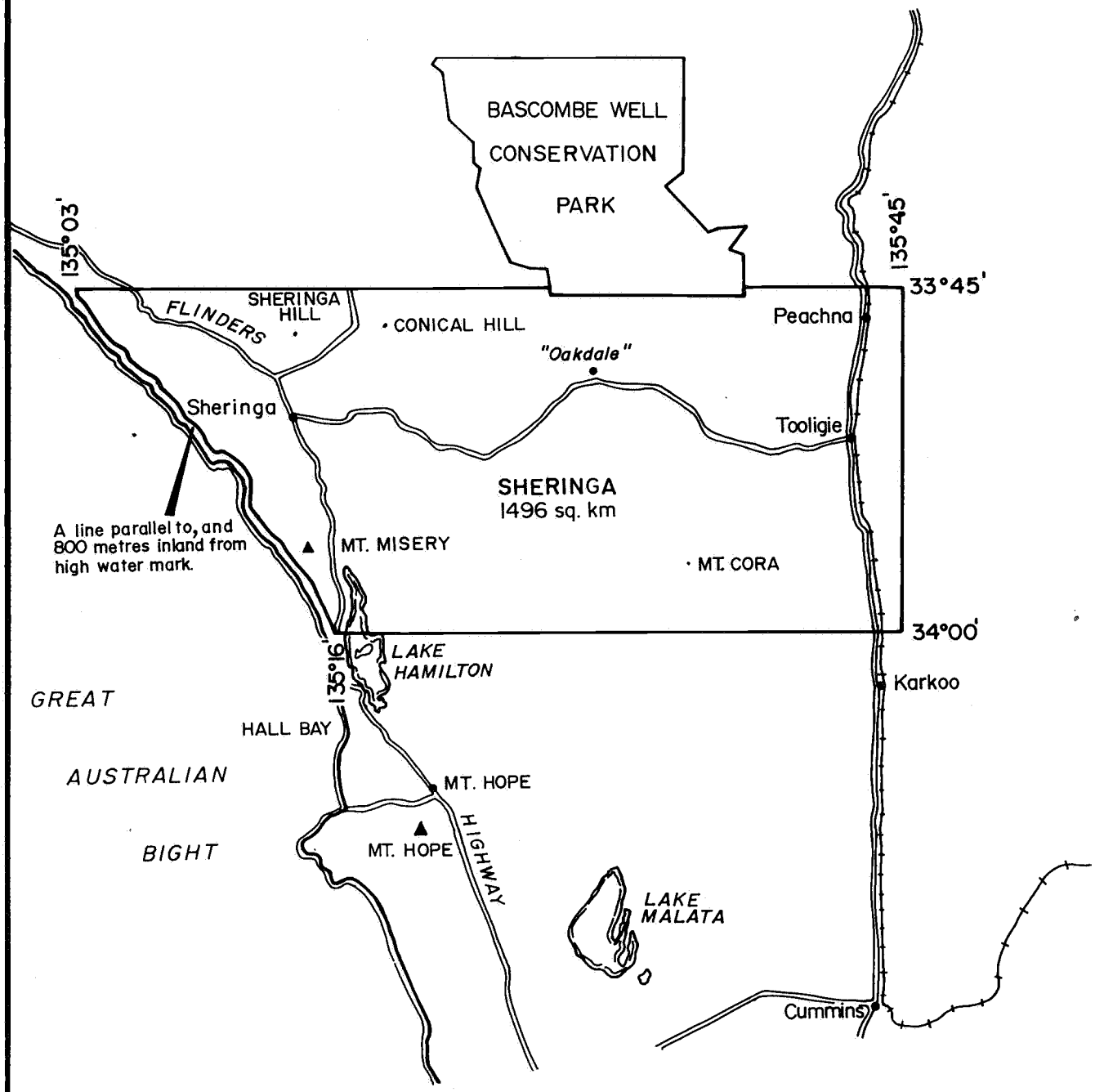
TUCKEY E.L. 687

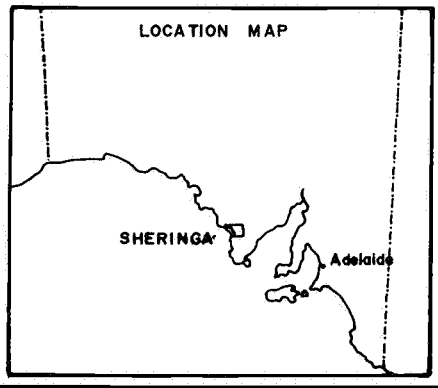
LOCATION MAP

SHEET REF: KIMBA SI53-7

Geol.	Scale: 1:250,000	Report N°: 10307
Drawn: J.C.R.	Date: June 1980	Plan N°: SAa381

0303



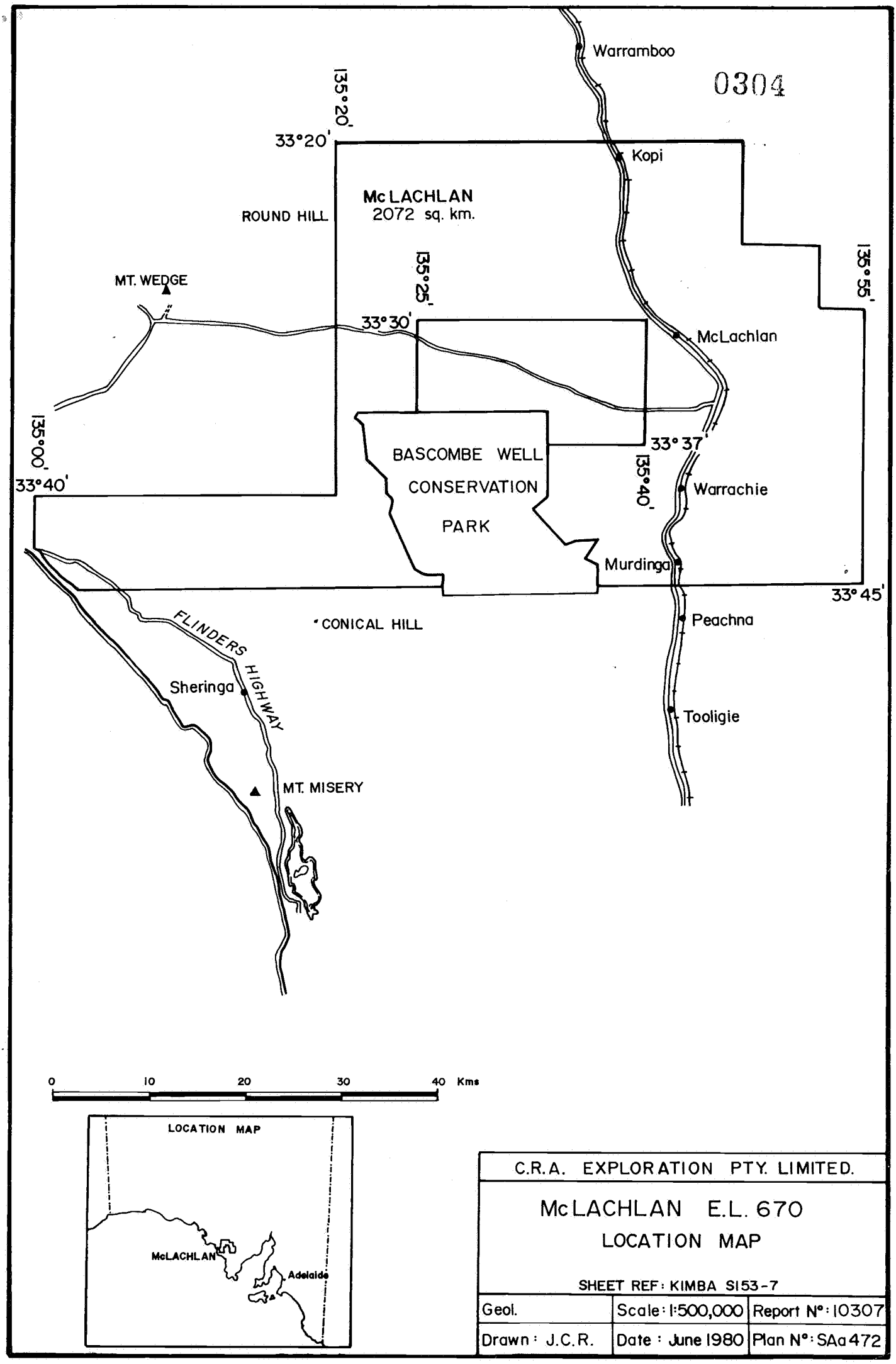


C.R.A. EXPLORATION PTY. LIMITED.

SHERINGA E.L.688
LOCATION MAP

SHEET REF: KIMBA SI53-7

Geol.	Scale : 1:500,000	Report N°10307
Drawn J.C.R.	Date : June 1980	Plan N°: SAa382



C.R.A. EXPLORATION PTY. LIMITED.

McLACHLAN E.L. 670
LOCATION MAP

SHEET REF: KIMBA SI53-7

Geol.	Scale: 1:500,000	Report N°: 10307
Drawn: J.C.R.	Date: June 1980	Plan N°: SAa 472

0305

CRA EXPLORATION PTY. LIMITED

SIXTH QUARTERLY REPORT ON POLDA BASIN, SOUTH AUSTRALIA, McLACHLAN E.L. 670, TUCKEY E.L. 687, AND SHERINGA E.L. 688 FOR THE PERIOD ENDING 10TH FEBRUARY, 1982.

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AUTHOR: M.J.N. FLITCROFT

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SUBMITTED BY: D.T. McBain

ACCEPTED BY:

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1. SUMMARY

A second, rotary-mud, drilling programme was completed on the Polda Basin E.L.'s in 1981. Twenty nine open holes and one partially cored hole were drilled. Sixty nine holes, comprising 7,922 metres, have been drilled by CRA Exploration Pty. Limited to date.

The potential of Tuckey E.L. 687 was enhanced by significant intersections, beneath 200 metres of cover, in holes 81LRM41 and 60. Further drilling is recommended to investigate the full extent of these seams.

Minor lignite and/or coal potential was exhibited in most other areas investigated. The seams are generally thin, of poor quality and are not laterally consistent for any distance.

The kerogen content of the seam in hole 81LRM41C at Tuckey is relatively high. However general depth to the lignite seam, which occurs adjacent to the northern fault margin of the basin, may be prohibitive. The kerogen content of the immediately adjacent sediments is minimal.

No anomalous base or precious metal values were identified in basement or overlying sediments.

Only the northern part of Tuckey E.L. 687, which includes the area of the significant lignite intersections, should be retained. Surrender of McLachlan E.L. 670 and Sheringa E.L. 688 is recommended.

2. CONCLUSIONS

2.1 Potential exists for reserves of 220 million tonnes of Eocene lignite in the Tuckey area around holes 80LRM5, 8, 81LRM41,43,60. Of this, 140 million tonnes is estimated to occur below 200 metres depth.

2.2 Lateral extensions of the deep lignite in 81LRM41 and 60 have not been tested within the Polda Trough.

2.3 No significant coal intersections were made in the Sheringa or western McLachlan areas.

2.4 Thin coal development over areas of deeper basement in the northern McLachlan area would approximate 80 million tonnes of lignite. This is centred on holes 80LRM29, 81LRM49 and 51.

2.5 Potential reserves of Jurassic and Eocene coals, in the southern Polda Basin area, are 72 and 80 million tonnes respectively. However, the seams in this area are thin (< 1.3 metres), laterally discontinuous and generally of low quality.

2.6 No significant coal intersections above 150 metres were made in the central portion of the basin.

2.7 The economic potential of the Jurassic and Eocene coal intersections in holes 80LRM30,31, 81LRM56, 59 is not significant in view of the small area and poor quality of the seams.

2.8 Quality of the lignite seams in 80L5C and 81LRM41C is similar to the better quality South Australian lignites.

2.9 Quality of the Jurassic coal seams in 80L30C is poor.

2.10 The kerogen content of the seam in 81LRM41C is high with a maximum value of 109.5 litres/tonne.

2.11 The kerogen content of coal intersections in other areas of the Polda Basin has not been tested.

2.12 Apart from the northern Tuckey area there is little apparent potential for economically exploitable lignite deposits.

2.13 No anomalous base or precious metal values were identified in basement or overlying sediments.

3. RECOMMENDATIONS

3.1 It is recommended that only the northern portion of Tuckey E.L. 687 centred on holes 80LRM5, 81LRM41 and 60 should be retained.

3.2 A further, ten to fifteen hole drilling programme is recommended to fully investigate this area.

3.3 No further work is warranted in Sheringa E.L. 688 or McLachlan E.L. 670 areas and it is recommended that these tenements be relinquished.

4. INTRODUCTION

The Polda Basin tenements, covering 4,168 square kilometres, comprise three E.L.'s - McLachlan E.L. 670, Tuckey E.L. 687 and Sheringa E.L. 688 (see Plan No. SAa472,381,382). These three exploration licences extend from Sheringa on the west coast of the Eyre Peninsula, through Lock to Rudall in the east.

McLachlan E.L. 670 was granted to CRA Exploration Pty. Limited on 7th July, 1980, with Tuckey E.L. 687 and Sheringa E.L. 688 on 11th August, 1980, for a period of twelve months. Subsequently, the E.L.'s were granted for a further twelve months. This report details work carried out by CRA Exploration Pty. Limited, in the quarter to February 11th, 1982, and summarizes the results of the CRAE 1980 and 1981 drilling programmes.

5. REGIONAL GEOLOGY

The Polda Basin is a narrow, graben-like, intracratonic basin elongated east-west in Precambrian basement rocks of the Gawler Block. The limits of the basin are not well defined (Harris and Foster, 1974). Precambrian igneous, sedimentary and metamorphic rocks form boundaries in the north, east and west. (Johns, 1957; Harris and Foster, 1974). Gravity contours give an approximate limit in the south (McInerney, 1977).

The origin of the basin is not known. Palaeozoic rifting leading to breakup and separation of the Australian and Antartic plates during the Eocene was suggested by Fraser and Tilbury (1979). Precambrian rifting was proposed by Morgan (1974). Permo-Carboniferous, Jurassic and Teritary sediments are known within the graben.

Permo-Carboniferous glacigene sediments (Cooper, 1980a) consisting of blue-grey and green claystone occur widely beneath the Lock coal deposit and to the west. They have been regarded by CRA Exploration Pty. Ltd. as economic basement.

Late Jurassic sediments of the "Polda Formation" are well defined by sub-surface exploration within the area of the Lock coalfield. They are also known (sub-surface only) in the Sheringa area, along the southern margin of the Basin near Tooligie Hill, to the east of Lock and in the central part of the basin. The formation consists predominantly of grey to black sands, silts clays and coals.

Tertiary sediments occur extensively throughout the basin. Eocene, Miocene and possibly Pliocene sediments have all been identified by sub-surface exploration. (Harris, 1973; Gatehouse, 1981). The mid-Eocene Poelpena Formation is most widely recognised, and comprises carbonaceous and oxidised sands, gravels, clays and lignite. The maximum known thickness is 290 metres in 81LRM41, near the eastern end of the basin.

Quaternary sediments overlie a large area of the Polda Basin. Sands and clays of the Bridgewater Formation are thickest in the east, whilst the Ripon Calcrete is best developed towards the coast.

6. WORK CARRIED OUT

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6.1 Drilling

6.1.1 General

The second phase of drilling was conducted from May 4th to July 21st, 1981. Drilling contractors were W.L. Sides & Son Pty. Limited.

Thirty holes, totalling 3,623 metres of rotary mud and rotary core drilling, were drilled. In Tuckey E.L. 687, 2045.7m were drilled and 1577.3m in McLachlan E.L. 670. Included in this total are 112.8m of coring in hole 81L41C (Tuckey). Location of CRA Exploration drill holes is shown on Plan SAa1280.

The second phase of drilling was designed to reconnoitre untested areas and to follow up significant intersections made in the 1980 drilling programme. An experimental seismic survey funded jointly by the S.A.D.M.E. and CRA Exploration Pty. Limited was conducted just prior to this drilling.

Two holes were drilled to provide geological control for interpretation of this survey.

Interesting sections of hole 81LRM41C were cored adjacent to rotary mud hole 81LRM41.

Conventional coring gave good recovery which varied from nil to 100% in all lithologies depending on the mud mix and drilling rate. Lignite and stiff clay units gave best overall recovery. HQ core samples were double wrapped in polythene to prevent moisture loss.

Drill logs were prepared from downhole geophysical logs and drill cutting logs, using the Coalbor system. Computer printed logs are presented in Appendix I.

6.1.2 Borehole Geophysical Logging

A truck mounted, computerised, geophysical logging unit, contracted from Geoex Pty. Ltd., logged all boreholes on completion of drilling. Caliper, short and long spaced density, natural gamma, neutron, self potential and resistance logs were provided for most holes. The full suite of logs was run on two probes. Probe malfunction occurred on two occassions.

Logging speed was constant at 5 metres/minute.

Graphic borehole and geophysical logs are presented in Appendix 2.

6.1.3 Stratigraphy & Palynology

0311

A detailed stratigraphic analysis of the basin was not the aim of the drilling programme. However a large amount of sub-surface information was obtained during exploration and this has greatly added to the available data on most of the units within the Polda Basin.

Differentiation of the middle Eocene Poelpena Formation from the Jurassic "Polda Formation" was the major problem in determining the stratigraphic succession in the main part of the basin. The boundary determined by Harris and Foster (1974) is difficult to recognise in both cuttings and geophysical logs.

Selected samples from a number of holes in the 1980 programme were sent for palynological investigation to resolve the problem. The report by W.K. Harris forms Appendix 4 of this report. Samples of lignite from hole 81LRM41C were also palynologically dated, indicating an Eocene age for the lignite intersected at about 220 metres depth. Rotary mud samples were dated and no contamination was evident. The dates are considered reliable.

The Miocene unit described by Harris (1973) was not readily identified during exploration. A ?Tertiary age is indicated from a sample from 80LRM3. A Pliocene age was very tentatively suggested by Harris (Appendix 4).

Several attempts were made to draw structure contour and isopach maps of the Tertiary and Jurassic coal-bearing sequences. This proved difficult because of rapid facies variations, the generally low drilling density, the lithological and geophysical similarity of the Tertiary and Jurassic sequences and the lack of marker horizons. Cross-sections were drawn. Tentative correlations using downhole geophysical logs are shown on these sections (Plans SAa 1356 to 1365).

Basement contour maps were completed for the Sheringa and western McLachlan; and the northern McLachlan areas (Plans SAa 1285,1286).

Detailed Polda Basin lithological descriptions are presented in Appendix 3, and summarised in Table 6.1.3.

6.1.4 Drilling Results

Several boreholes intersected coal or lignite seams. Table 6.1.4 summarises these intersections.

TABLE 6.1.3

STRATIGRAPHY OF THE POLDA BASIN REGION

AGE			NAME	ROCK UNIT	THICKNESS (metres)	LITHOLOGY	STRATIGRAPHIC RELATIONS	EXPRESSION
CAINOZOIC	QUARTERNARY	Pleistocene		Bridgewater Formation	30m	Sand, off-white cemented calcareous, clay interbeds	Uppermost unit in sequence	Outcrops west of Lock and in cliffs Drill Holes
		?		Undifferentiated	6-7m	Clay, vari-coloured, calcareous	Underlies Bridgewater Formation	
	TERTIARY	Middle Miocene		Undifferentiated	70m	Green to grey clay & carbonaceous clays. Grey poorly sorted coarse sand & carbonaceous sand	Relationships unknown. Correlated with Munno Para Clay	Many holes in Polda Trough
		Middle Eocene		Poelpena Formation	Greater than 200m	Grey, dark grey & brown coarse sand & lignite. Very carbonaceous	Unconformably on Jurassic. Overlain unconformably by ?Miocene Quaternary.	Many holes in Polda Trough - absent on southern edge. 81L41C cored hole.
MESOZOIC	Upper Jurassic			Polda Formation	Greater than 130m	Dark grey to black very carbonaceous fine sand, silt & lignite and very coarse grey sands	Unconformably on Permian & pre-Cambrian. Unconformably overlain by Tertiary in Polda Basin, conformably by Cretaceous on Ceduna Terrace	Many drill holes in Polda Trough
PALAEOZOIC	Permian			Boorthanna Formation	150m	Pyritic diamictite & clay	Unconformably on Archean & Proterozoic. Unconformably overlain by Jurassic	Polda No. 1 Stratigraphic drill hole. Tuckey No. 1 Stratigraphic drill hole 80L30C cored hole.
PROTEROZOIC	Adelaidean			Corunna Conglomerate	Exceed 200m	Conglomerate, sandstone & Shale	Unconformably on Lincoln Complex. Unconformably overlain by Permian, Jurassic & Tertiary	
	Carpentarian		Lincoln Complex			Granite, gneiss, migmatite, granulite augen gneiss, quartzo-feldspathic gneiss. Synkimban Orogeny granites. Basic intrusives.	Overlain unconformably Corunna Conglomerate. Underlain by Hutchison Group	Southeast and northeast of Lock
	Nullaginian		Hutchison Group	Middleback Formation Warrow Quartzite		Metasiltstone, schist, iron formation, marble & quartzite	Overlain by Lincoln complex & underlain unconformably by Sleaford Complex	Outcrops southeast of Lock. May occur in drill holes.
	Lower Proterozoic & Archean		Sleaford Complex	Widbey Granite Kiana Granite	?	Granite, granite gneiss schist, granulite, metasediments, basic intrusives	Overlain unconformably by Hutchison Group	Outcrops north & south of Lock. May occur in drill holes

Table 6.1.4 - Summary of Coal Seam Intersections.

HOLE NUMBER	DEPTH (M)		INTERVAL	COAL THICKNESS	NO. OF SEAMS
	FROM	TO			
81LRM41C	221.38	236.75	15.37	* 15.37	1
81LRM43	50.74	52.87	2.13	2.130	1
81LRM46	24.10	26.00	1.9	1.9	1
81LRM51	61.52	64.36	2.84	2.32	2
81LRM51	74.9	75.3	0.4	0.4	1
81LRM56	46.56	51.13	4.57	3.48	3
81LRM56	107.08	107.85	0.77	0.77	1
81LRM57	34.64	35.28	0.64	0.64	1
81LRM57	53.35	54.58	1.23	1.23	1
81LRM59	62.5	62.96	0.46	0.46	1
81LRM59	76.3	77.89	1.59	1.19	2
81LRM59	85.55	90.95	3.86	3.24	3
81LRM59	119.27	121.20	1.93	1.93	1
81LRM59	129.35	131.40	2.05	0.70	3
81LRM60	134.36	134.91	0.55	0.55	1
81LRM60	151.32	152.71	1.39	1.39	1
81LRM60	198.93	199.35	0.42	0.42	1
81LRM60	202.74	207.97	5.23	5.23	1
81LRM60	227.15	243.45	16.3	* 13.82	2
81LRM60	250.5	251.0	0.5	1.5	1
81LRM63	32.98	34.20	1.22	1.22	1
81LRM64	157.89	160.18	2.29	1.82	1
81LRM64	165.	165.78	0.78	0.78	1
81LRM64	185.79	186.62	0.83	0.83	1

6.1.5 Coal occurence

0314

Within the Polda Basin, drilling has revealed the existence of numerous coal horizons, both in the Eocene Poelpena Formation and the Jurassic "Polda Formation".

Coal occurrence and proposed correlations are shown in a series of approximately north south and east west cross sections (Plans SAa 1356 to 1365).

Table 6.1.4. summarizes coal intersection information.

Tertiary coal appears to have accumulated over a large area, however, for the most part, the seams are thin and do not appear to be laterally extensive. The number of seams may vary from one to seven as in 81LRM60 where the greatest aggregate thickness of Eocene lignite occurs. The greatest thickness of Jurassic coal was intersected in the area immediately west of E.T.S.A. E.L. 434.

The preliminary feasibility study on the E.T.S.A.'s Jurassic, Lock coal deposit indicated that the complexities of beneficiating coal from the interseam sediments preclude development of the Jurassic coal in this area. Eocene lignite appears more favourable.

For ease of discussion the Polda Basin has been subdivided into five main areas of coal occurrence, which are:

1. Sheringa and western McLachlan area - comprising Sheringa E.L. 688 and that portion of McLachlan E.L. 670 west of Bascombe Well Conservation Park.

2. Northern McLachlan area - comprising the northern area of McLachlan E.L. 670 bounded by E.T.S.A. E.L. 434 to the south and Hambidge Conservation Park in the east.

3. Area west of E.T.S.A. E.L. 434 - small portion of McLachlan west of E.T.S.A. E.L. 434 which includes holes 80LRM30,31, 81LRM56,57,58 and 59.

4. Southern Polda Basin area - comprising an elongate area along the southern margin of the basin in both Tuckey E.L. 687 and McLachlan E.L. 670.

5. Tuckey area - comprises the northern area of the central Polda Basin and includes the main coal deposit in Tuckey E.L. 687.

6.1.5.1 Sheringa and Western McLachlan Area

Carbonaceous Jurassic sediments are present in the area to the north of Sheringa E.L. and the adjoining western McLachlan E.L. area.

Jurassic carbonaceous and lignitic sands and clays are thinly developed in a slightly elongated depression into which hole 80LRM35 was drilled (Plan SAa 1286). These sediments onlap onto Pre-cambrian basement.

Few coal seams are developed and these are very clayey and of poor quality. The seams are thin (between 0.5m and 1m) and are not laterally consistent. No Eocene lignite was intersected.

Potential for development of a significant economic deposit of Jurassic coal in this area is limited. The nature of Jurassic coal in this area and its problems of recovery as determined by E.T.S.A. (Owens, pers. com.) further downgrade the area. No further drilling is recommended.

6.1.5.2 Northern McLachlan Area

Intersections of thin lignite seams and lignitic sands in holes 80LRM28 and 29 (Plan SAa 1357, 1362) in the 1980 scout drilling programme indicated potential for the development of coal in the north-north west sloping shelf environment in this area. Subsequent drilling intersected carbonaceous and lignitic units,however no thickening of the coal was indicated.

An isopach map of the Eocene carbonaceous interval has been prepared (Plan SAa1368).

Coal seam development in this region appears to be confined to areas of deeper basement in the north west corner of the McLachlan E.L. 670. The thickest intersection of 2.84m was recorded in hole 81LRM51.

Two seams (2.35m and 1.2m thick) were intersected in hole 80LRM29.

These seams thicken slightly as the basement deepens to the north west (Plan SAa1357), but thin and grade laterally into lignitic and carbonaceous clays updip in 81LRM49. The quality of the lignite in these seams is poor. An isolated lignite intersection in 81LRM46 in the north east is not persistent over a large area.

Considering the nature of deposition of Eocene lignite in this region, improved development of the seams is not expected.

With regard to the above discussion, the maximum potential tonnage within this area is of the order of 80 million tonnes; assuming a coal thickness of 2 metres over an area ten kilometres by four kilometres around holes 81LRM49,51 and 80LRM29.

Further drilling is not recommended in view of the high ash content, rapid facies variations, thickness of the seams and small potential tonnage.

6.1.5.3 Area west of E.T.S.A. E.L. 434

Both Jurassic and Eocene coals were intersected in this area. They represent the westerly extension of the E.T.S.A.'s Lock coal deposit.

Four holes 81LRM56,57,58 and 59 were drilled to follow-up intersections in holes 80LRM30 and 31. Individual seams do not correlate well, however the Jurassic and Eocene carbonaceous zones are consistent throughout the area (Plan SAa 1358).

Depth to the top of the main Jurassic seam varies from approximately 60 metres in 80LRM30, to more than 80 metres in 80LRM31. Seam splitting is common. The seams are mostly thin and multi-stacked with abundant clay partings. Coal quality is variable. The thickness of seams is a function of ash content.

Significant lignite intersections near the base of the Poelpena Formation were made in holes 80LRM30 and 81LRM56. One seam was intersected in 80LRM30. Seam splitting is observed in 81LRM56. Coal quality appears good from the geophysical logs. The seam does not continue to the south and was not intersected in 81LRM55 four kilometres to the north.

A potential tonnage of only 20 million tonnes of Eocene lignite exists in this area, surrounding holes 81LRM56 and 80LRM30. A two metre seam thickness is assumed.

Potential tonnage of Jurassic coal in this area is only 60 million tonnes assuming a three metre coal thickness. Seam thickness is variable. Strip ratios will be greater than 15 to 1.

6.1.5.4 Southern Polda Area

Coal and carbonaceous sediments of Jurassic age were intersected along the poorly defined southern margin of the basin in holes 80LRM18,20, 81LRM63. The seams are thin (one metre or less) and grade vertically into lignitic clay. Interseam partings are common and are relatively thick. Coal quality, as inferred from the geophysical logs, is poor. The seams have high ash contents, which is to be expected of Jurassic coal.

Depth to the top of the main coal bearing zone is 77 metres at its shallowest intersection in hole 80LRM20 and is greater than 90 metres in holes 80LRM19 and 81LRM63.

Individual seams are discontinuous between boreholes. Carbonaceous bands as well as coal seams disappear abruptly in a north east,"basin ward" direction, between 80LRM20 and 19.

This phenomenon is most likely a factor of the rapid facies variations typical of fluvial deposition in the Polda Basin.

Major coal accumulations were not intersected in any of the holes drilled in the central portion of the basin (viz. 80LRM15,14,13,12,11,23). The sandy facies recognised here (Plan SAa 490) may represent the main channel axis.

Jurassic coal in this southern area occurs largely in a north-west - south-east trending zone which appears to flank the higher basement areas along the poorly defined southern basin margin. The limit of coal development south of holes 80LRM18 and 20 has not been tested. However the area in which a potentially economic deposit of coal may be developed is limited by shallowing basement. (Plan SAa 491).

Thin (less than 1.3 metre) Eocene lignite seams were intersected in holes 80LRM19, 81LRM61 and 63. The quality of the lignite varies.

From the limited drilling data available it appears that the Eocene lignite in this area was deposited as a thin blanket type deposit during short periods of relative stability. Coal accumulation does not appear to have been influenced by basement proximity as in the norther McLachlan area.

Assuming a coal thickness of 2 metres, a potential tonnage of only 72 million tonnes of Jurassic coal is indicated in a strip 12 kilometres long by 2 kilometres wide, centred on holes 80LRM18 and 20, below 77 metres depth.

The potential for economic accumulations of either Jurassic or Eocene coals in this area is restricted. Kerogen potential has not been tested.

6.1.5.5. Tuckey Area

The most substantial of the Eocene coal occurrences discovered by CRAE in the Polda Basin is located in the north of Tuckey E.L. and is centred on holes 80LRM5 and 81LRM41C.

Lignite occurs within a long,relatively narrow,approximately east-west trending body,roughly parallel to the strike of the northern basement fault.

Lignite was accumulated in a number of horizons within two main zones, the shallower of which occurs at less than 70 metres depth (80LRM5) and the other below 200 metres (81LRM41). Strip ratios of these two zones are approximately 7.5:1 and 14:1 respectively.

To date only five holes (80LRM5,8 81LRM41,43,60) have penetrated these zones. Holes drilled in the 1980 drilling programme were halted at 150 metres by economic considerations.

Boreholes 80LRM5,8 81LRM42,43,65 and 66 were all drilled on the upthrown side of the northern basin margin fault as interpreted by Bubner in the fourth quarterly report.

The largest Eocene aggregate coal thickness of 21.91 metres occurs in seven seams in 81LRM60, below 134 metres of cover. The thickest individual seam of 15.37 metres occurs in 81L41C, 1.5 kilometres west of 81LRM60 at more than 220 metres depth.

The main seam in 80LRM5 thins rapidly to the west and is represented in 81LRM43 by a seam 0.65m thick grading into a lignitic clay beneath. The seam lenses out in 81LRM42 to the north. This rapid facies variation typifies the style of lignite deposition in the deposit.

Further coal development within this same lignite/clay unit was intersected in 81LRM43 and 80LRM8. In 80LRM8 a 2.5 metre seam is developed at the base of this unit. (Plan SAa1359).

No follow-up drilling has been done to the east of 80LRM5 to test continuation of the seam in this direction.

Hole 81LRM41 drilled 900 metres south of 80LRM5 did not intersect a continuation of the seam in hole 80LRM5, a previously unknown seam was intersected at greater depth.

81LRM60 and 64 were drilled 1.5 kilometres to the east and south of 81LRM41 respectively. The seam thins slightly in 81LRM60 and is overlain by a lignitic clay unit (Plan SAa1361). Six other seams were also intersected in this hole. Continuation of the seam to the east remains untested as 80LRM2 was stopped at 153 metres.

A thick sand sequence in 81LRM64 replaces the major lignite seam in hole 81LRM41. (Plan SAa1363). Occurrence of this sand presents an ambiguity which cannot be resolved without further drilling. The sand may be a lateral facies equivalent of the lignite or it may represent a wash-out. No distinctive marker units exist for correlation between the two holes. The deposit therefore remains open ended to the south.

0319

Hole 81LRM65, drilled to test the westerly extension of the lignite intersection in 81LRM41, terminated in basement at 106 metres. Regional gravity contours (Plan SAa 585) suggest north - north westerly faulting may have off set the major east-west fault.

To date only holes 80LRM6,7 and 9 have penetrated to a maximum of 156 metres in this area. A number of thinner seams were intersected in 81LRM64. Correlation with other holes (Plan SAa1361) shows these seams are continuous along strike but grade laterally into lignitic and carbonaceous clays in a north south direction and indicates a recurrence of swamp conditions along this edge of the basin. These seams were not intersected in holes 80LRM6 or 7.

A second thinner (5.23 metre) seam intersected in 81LRM60 was not intersected in 81LRM41 or 64 may continue to the east.

Coal deposition in the Eocene occurred in a non-marine environment alternating paludal and fluviatile. Where environmental conditions stabilized for an extended period, larger coal thicknesses accumulated as in holes 81LRM41, 60, however paludal environments were restricted in area.

It is not certain whether movement on the fault influences coal deposition although it appears the locus of major lignite deposition parallels this feature.

Inferred tonnages in three depth categories are shown below:

Depth (M)	Inferred Reserves (million tonnes)
0 - 100	30
100 - 200	46
> 200	144
TOTAL	220

further drilling to the east and south of hole 81LRM60 could possibly upgrade this 220 million tonne resource.

6.1.6 Coal Analyses

Coal quality information to date is sparse. Only three partially cored holes have been drilled by CRA Exploration Pty. Limited (CRAE). Two of these holes intersected Eocene lignites only (80L5C and 81L41C). One hole (80L30C) sampled Jurassic coal as well as the overlying Eocene coal sequence.

0320

Coal quality information has been obtained from the chemical analyses of drill core samples from the two programmes conducted in 1980 and 1981.

Sixteen samples of lignite and five samples of roof and floor sediments from 81LRM41C (1981) were submitted for total moisture, ash and Fischer carbonisation analyses. Results of lignite and sediment analyses are summarised in Tables 6.1.6.1 and 6.1.6.3 respectively.

Laboratory analysis sheets are presented in Appendix 5. Selected samples were composited for ultimate analysis. Results are presented in Appendix 5 and summarized in Table 6.1.6.1.

Fischer carbonisation assays were performed on the samples to provide an indication of their oil shale potential. Kerogen content in litres/tonne was calculated from the tar value using an S.G. of 0.92 g/cc, via the relationship Tar (% wt) x 0.92 x 10 = Kerogen (litres/tonne).

Six coal samples from the 1980 programme were submitted for proximate and ultimate analyses. These included three Eocene lignite samples from 80L5C and one Eocene and two Jurassic coal samples from 80L30C. The proximate analyses were reported in the 2nd Quarterly report, but are presented again with the ultimate analyses for completeness in Tables 6.1.6.1 and 6.1.6.2. Complete laboratory analysis sheets are presented in Appendix 5.

6.1.6.1 Eocene Lignite

Weighted averages of ash and kerogen have been calculated on values from hole 81L41C to maximize coal thickness with the best of these parameters.

The weighted average ash over the entire lignite seam (14.57m) in hole 81LRM41C is 10.52% (d.b.) with an average of 60.9 litres/tonne kerogen. It should be noted that 1.55 metres of core loss has been included in seam thickness. The intervals with lowest ash and highest kerogen yields are presented in Table 6.1.6.4.

The weighted average over the main seam in hole 80L5C was based on only three sample intervals. The weighted average ash over the whole seam is 14.72% (dry basis). This value is high however as the coal becomes very clayey towards the base. Considering the top 5.54m of the seam the weighted average ash is 12.44% (dry basis).

The ash values are on a par with other South Australian lignites. Ash values from about 8 to 10% in hole 81L41C may be considered good, in the South Australian context. Victorian lignites have ash values as much as 5% lower.

TABLE 6.1.6.1

EOCENE COAL ANALYSES (1980 and 1981 DRILLING PROGRAMS)

HOLE NUMBER	SAMPLE NUMBER	SAMPLE INTERVAL	FROM (M)	TO (M)	MOISTURE CONTENT	ASH % DRY BASIS	COAL COMPOSITION % (DRY BASIS)								KEROGEN ANALYSIS	
							VOLATILE MATTER	FIXED CARBON	C	H	N	S	Na	HEAT VALUE MJ/kg	TAR%	KEROGEN LITRES/T
80L30C	889301	2.86	48.16	51.02	51.44	14.25	45.84	39.91	56.60	3.75	0.55	5.16	0.47	21.90		
80L5C	889304	2.8	60.28	63.08	55.57	12.29	48.97	38.74	62.30	3.15	0.81	3.40	1.63	23.70		
80L5C	889305	2.74	63.08	65.82	53.46	12.60	47.76	39.64	60.86	3.71	1.04	3.20	1.46	23.20		
80L5C	889306	3.18	65.82	69.00	53.30	17.46	42.79	39.75	56.07	2.95	0.74	3.35	1.32	21.04		
80L5C*	WEIGHTED MEAN.	8.72	60.28	69.00	54.08	14.72	46.34	39.39	59.58	3.25	1.39	3.32	1.46	22.57		
81LRM41C	891348	0.31	223.08	223.39	49.6	11.4									10.5	96.6
81LRM41C	891349	0.80	223.39	224.19	50.1	9.1	50.7	39.7	63.39	4.95	0.49	2.81	1.41	25.26	11.9	109.5
81LRM41C	891350	0.81	224.19	225.00	50.6	9.6									9.8	90.2
81LRM41C	891351	1.00	225.00	226.00	53.7	10.5	48.3	40.8	61.51	4.66	0.54	2.67	1.36	24.58	9.2	84.6
81LRM41C	891352	1.00	226.00	227.00	52.2	10.7									8.3	76.4
81LRM41C	891353	1.00	227.00	228.00	52.8	8.3	48.7	43.0	63.22	4.55	0.57	2.20	1.45	24.98	8.0	73.6
81LRM41C	891354	0.80	228.00	228.80	52.6	10.0									9.4	86.5
81LRM41C	891355	0.40	228.80	229.20	50.9	8.2									9.8	90.2
81LRM41C	891356	0.25	229.20	229.45	54.9	8.9									7.5	69.0
81LRM41C	891357	1.00	229.45	230.45	52.0	8.1	49.2	42.3	63.21	4.78	0.61	1.82	1.54	24.72	7.7	70.8
81LRM41C	891358	1.00	230.45	231.45	52.7	9.6									8.3	76.4
81LRM41C	891359	1.00	231.45	232.45	52.9	8.9									8.3	76.4
	CORE LOSS	0.10	232.45	232.55	-										-	-
81LRM41C	891360	1.10	232.55	233.65	53.9	12.4	46.0	42.1	61.23	4.27	0.60	1.74	1.56	23.56	6.5	59.8
81LRM41C	891361	0.35	233.65	234.0	55.1	11.0									4.6	42.3
	CORE LOSS	1.45	234.0	235.45	-										-	-
81LRM41C	891362	1.20	235.45	236.65	52.6	12.1	44.6	41.3	59.87	4.2	0.64	1.93	1.70	22.84	3.5	32.2
81LRM41C	891363	1.00	236.65	237.65	52.2	14.8									7.1	65.3
81LRM41C*	WEIGHTED MEAN.	14.57	223.08	237.65	50.1	10.52									6.6	60.9

* WEIGHTED AVERAGE CALCULATED FOR EACH SEAM.

N.B. CORE LOSS INCLUDED IN SEAM THICKNESS. LIGNITE SAMPLES FROM HOLE 81LRM41C COMPOSITED FOR ULTIMATE ANALYSIS.

TABLE 6.1.6.2

JURASSIC COAL ANALYSES

0322

HOLE NUMBER							COAL COMPOSITION %(DRY BASIS)							
	SAMPLE NUMBER	SAMPLE INTERVAL	FROM (M)	TO (M)	MOISTURE CONTENT	ASH % DRY BASIS	VOLATILE MATTER	FIXED CARBON	C	H	N	S	Na	HEAT VALUE MJ/KG
80L30C	889302	1.31	58.49	59.8	26.42	45.20	36.19	18.61	35.57	3.69	0.49	2.91	0.38	15.2
80L30C	889303	2.68	60.12	62.80	26.93	34.86	43.03	22.11	43.59	4.48	0.76	2.82	0.35	18.96

TABLE 6.1.6.3

INTER SEAM SEDIMENT ANALYSES

0323

HOLE NUMBER	SAMPLE				PROXIMATE ANALYSIS		KEROGEN ANALYSIS		LITHOLOGY
	SAMPLE NUMBER	SAMPLE INTERVAL	FROM (M)	TO (M)	MOISTURE CONTENT	ASH % DRY BASIS	TAR %	KEROGEN	
81LRM41C	891345		221.76	222.46	-	82.1	2.4	22.1	Lignitic Clay
81LRM41C	891346		222.46	222.88	-	78.5	2.9	26.7	Laminated Lignite and Silt
81LRM41C	891347		222.88	223.08	-	74.7	3.7	34.0	Laminated Carb-onaceous Silt
	LIGNITE 891345 to 891363		SEE TABLE 6.1.6.1						Lignite
81LRM41C	891364		237.65	237.74	45.4	34.2	5.3	48.8	Carbonaceous Clay
81LRM41C	891365		237.74	238.09	-	82.9	0.6	5.5	Soft Leached Clay

Table 6.1.6.4 - Weighted Averages Hole 81L41C

SAMPLE NUMBER	COAL THICKNESS (M)	AVERAGE ASH % (dry basis)	AVERAGE KEROGEN (litres/tonne)
891349 - 891359	9.06	9.34	81.8
891348 - 891351	2.92	9.46	94.3
891348 - 891355	6.12	9.70	86.68

Best Kerogen - 94.25 litres/tonne over 2.92 metres from 221.38 - 224.30 m.

Best Ash - 9.34% (dry basis) over 9.06 metres from 221.69 - 230.75 m.

Lignite from the two major seams in holes 80L5C and 81L41C are very similar in hand specimen, variations in hardness, colour, and density can be observed in samples of the coal, and in hole 81LRM41C the ash values appear to correlate with these features. Minor amounts of sand and mineral particles have been found within the major coal seams. The roof and floor of the seams tend to grade into carbonaceous material with increasing ash content, reflecting changes in environment during deposition.

Chlorine, sodium and sulphur are all moderately high.

Kerogen values are elevated for coal in hole 81L41C but are negligible in the roof and floor sediments. Kerogen content of this seam, which ranges from 32.2 to 109.5 litres/tonne, is generally lower than similar lignite intersections in our Murray Basin areas. The best thickness with an average kerogen content greater than 90 litres/tonne (94 litres/tonne) is 2.92m.

The scant nature of detailed coal quality data prohibits accurate correlation of the main parameters, however from the limited data from hole 80L5C it appears that heat value is related to ash content but moisture and kerogen contents are not. Moreover the kerogen increase towards the roof of the seam in hole 81LRM41C reflects variation in the coal depositional environment.

Before a full evaluation of this coal deposit could be completed more analytical data must be obtained.

In summary, the Eocene lignite is low in rank with overall poor quality. It has high moisture, relatively low ash, moderately high sodium, sulphur and chlorine, moderate kerogen values, but heat values determined on 80L5C are low. The lignite is similar to the Tertiary coals of the Northern St. Vincent Basin and Kingston areas.

6.1.6.2 Jurassic Coal

Proximate and ultimate analyses of the Jurassic coal from hole 80L30C are presented in Table 6.1.6.2.

Only limited data was obtained on Jurassic coal. This reflects the limited tonnage of this coal as yet discovered by CRAE. However a large number of coal and ash analyses have been performed by the Electricity Trust of South Australia (E.T.S.A.) on samples from forty cored holes drilled in their largely Jurassic Lock coal deposit.

Coal was defined by the E.T.S.A. as that material with an ash content of less than 45% (d.b.) coal grades both laterally and vertically into carbonaceous clay, and presents significant mining difficulties. The coal generally is high in ash, sodium and sulphur and has a relatively low heat value.

6.1.7 Evaluation of Kerogen Potential

Only samples from hole 81LRM41C have been analysed for kerogen content. Elevated kerogen values were reported for the lignite however these values cannot be extrapolated to the other Eocene seams in the Polda Basin. Results of the modified Fischer analyses are presented in Table 6.1.6.1 and discussed in section 6.1.6.

No kerogen analyses have been carried out on the Jurassic coal and carbonaceous sediments. Further coring and analysis is required before the kerogen potential of the Polda Basin coal occurrences can be determined.

6.1.8 Geochemistry

Assay results for the 1980 and 1981 rotary mud drilling programs are presented in Appendix 6. Selected samples were analysed for uranium, copper, lead, zinc, cobalt, silver, molybdenum, gold, tin, tungsten and tantalum, which may have been present as either in-situ basement or placer concentrations.

No significant anomalies were determined.

With the exception of the base metals copper, lead and zinc, which returned background values, the majority of elements analysed were below detection. However, 25 p.p.m. tantalum was reported in holes 80LRM6 and 80LRM11 and 25 p.p.m. to 35 p.p.m. tungsten occurred in holes 80LRM39 and 81LRM67.

These results do not encourage further exploration.

7. FURTHER EXPLORATION

In view of the poor results obtained from Polda Basin drilling programmes to date it is recommended that any further exploration activity by confined to the deposit in the Tuckey E.L. around holes 80LRM5, 81LRM41 and 60.

The prohibitive factor for development of this deposit by CRAE is depth (Bone, 1981). No further work is recommended in the remainder of the tenements.

In the northern part of Tuckey E.L. 687 a programme of further drilling and gravity surveys would be warranted to determine the lateral extent & continuity of the lignite seam in 81LRM5. The limit of investigation would be 75 metres.

Coring of significant lignite intersections would be required to provide quantitative coal quality data.

At least two gravity lines would be required to resolve the problem of approximately north-south faulting in the vicinity of holes 81LRM65 and 66.

D.N. McBain

PP
M.J.N. FLITCROFT

MJNF/lmc

0328

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KEYWORDS

0329

Coal - sub-bituminous, Coal-lignite, Carbonaceous, Sandstone, Shale, Jurassic, Eocene, Analyses-coal, Analyses-Fischer, Drill-rotary, Geophys-borehole.

LOCATION

Kimba SI 53-7 1:250 000

LIST OF PLANS

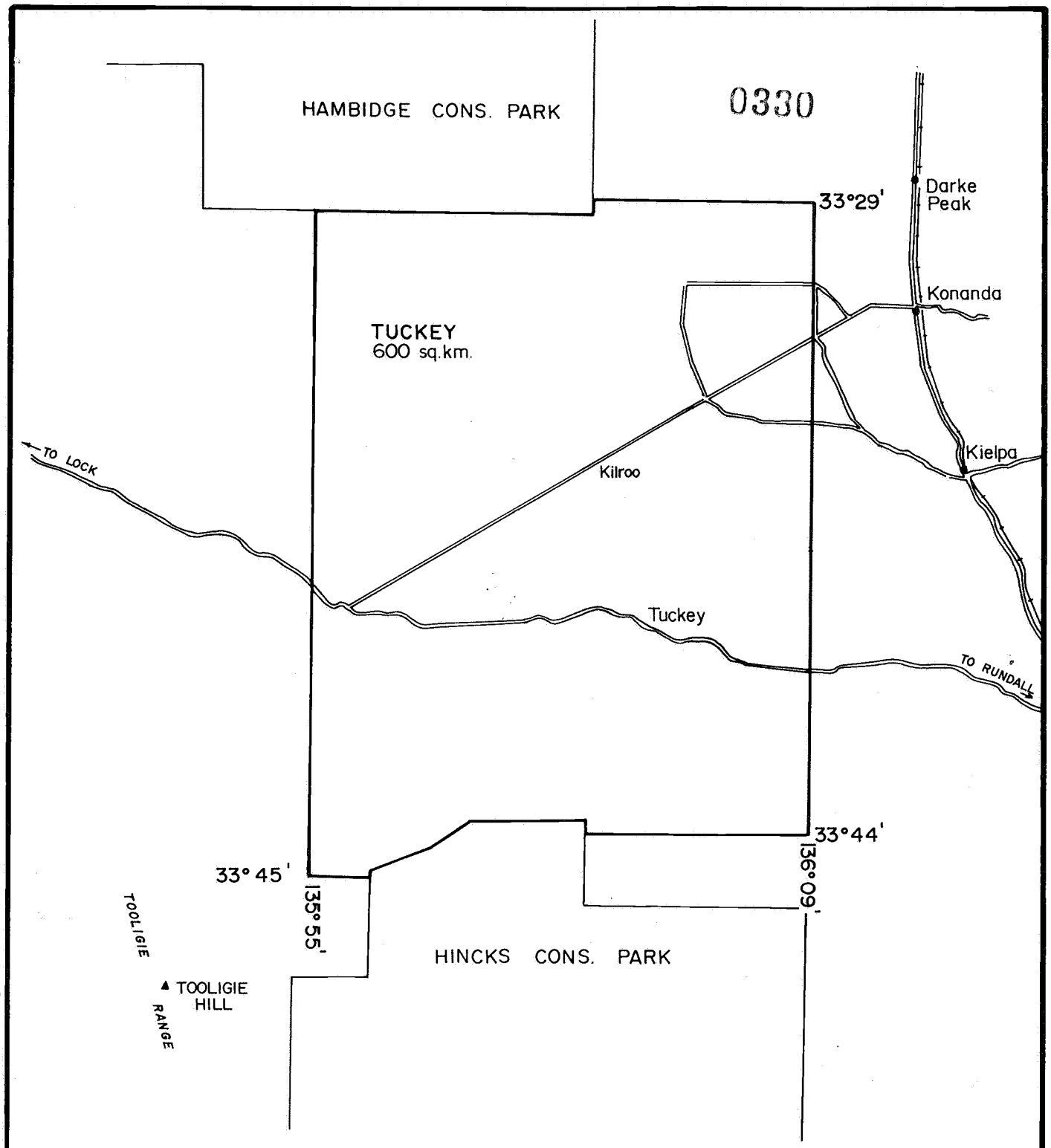
Plan No.	Title	Scale
SAa 381	Location map Tuckey E.L. 687	1:250 000
SAa 382	Location map Sheringa E.L. 688	1:250 000
SAa 472	Location map McLachlan E.L. 670	1:250 000
SAa 490	Polda Basin 1980 drillhole location plan	1:250 000
SAa 585	Bouger gravity data	1:250 000
SAa 491	Polda Basin structure contours on pre-Jurassic basement	1:250 000
SAa 1280	Polda Basin 1980-81 drill hole location plan	1:100 000
SAa 1285	Structure contours on basement - northern McLachlan area	1:100 000
SAa 1286	Structure contours on basement - Sheringa and western McLachlan area	1:100 000
SAa 1368	Isopach map Eocene carbonaceous sediments - northern McLachlan area	1:100 000
SAa 1361	Geological Section A-D	1:50 000
SAa 1363	" " E-F	1:20 000
SAa 1359	" " H-G	1:20 000
SAa 1365	" " H-J	1:50 000
SAa 1360	" " K-L	1:50 000
SAa 1364	" " C-L	1:50 000
SAa 1362	" " M-N	1:50 000
SAa 1357	" " O-Q	1:50 000
SAa 1356	" " T-U	1:50 000
SAa 1358	" " R-S	1:20 000

Not microfilmed

Missing

LIST OF APPENDICES

Appendix 1	Polda Basin geological borehole logs
Appendix 2	Polda Basin composite borehole logs
Appendix 3	Stratigraphic analysis
Appendix 4	Palynological report
Appendix 5	Analytical results for lignite seams 80L5C, 80L30C and 81L41C
Appendix 6	Geochemical analytical results



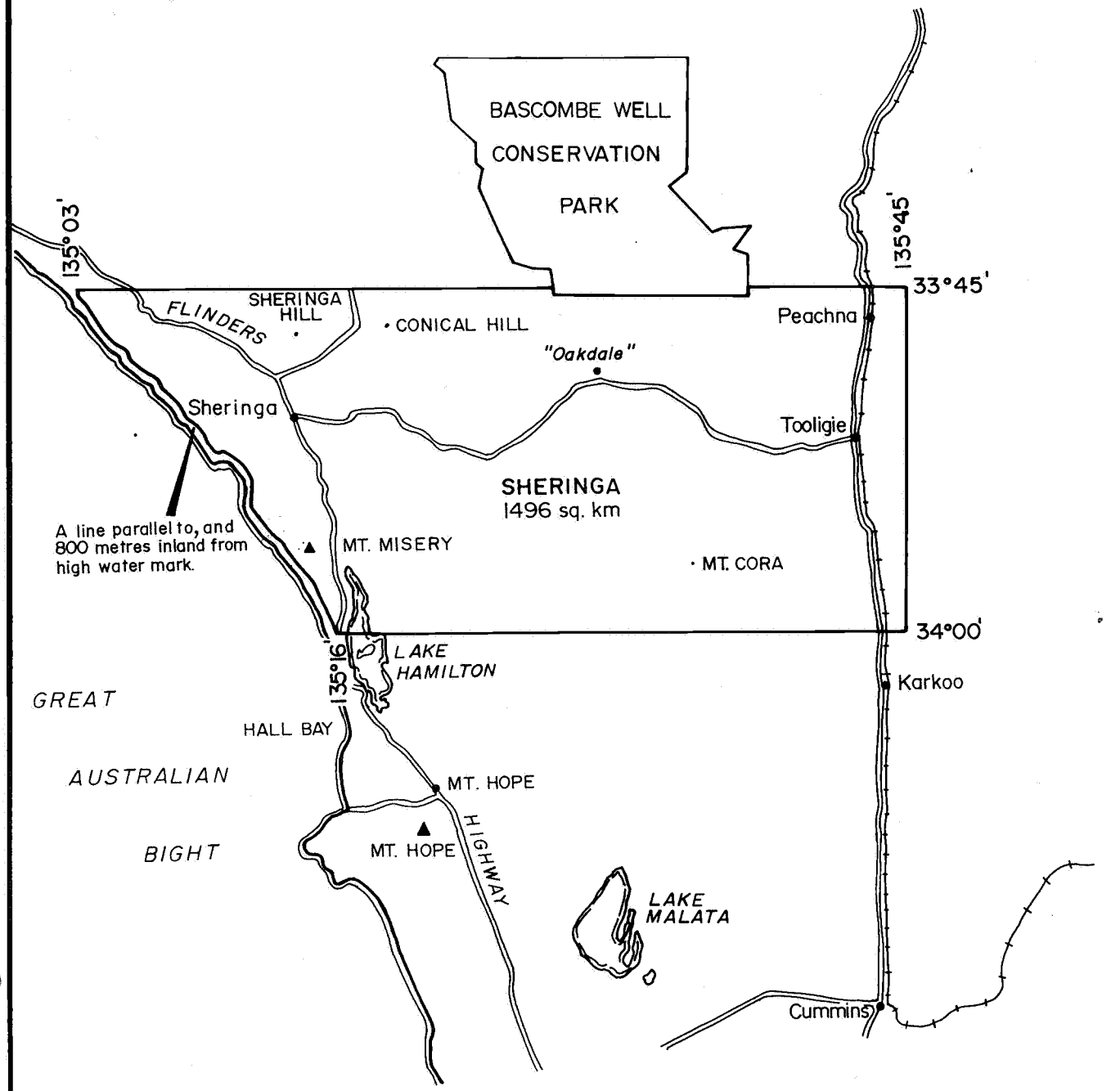
C.R.A. EXPLORATION PTY. LIMITED.

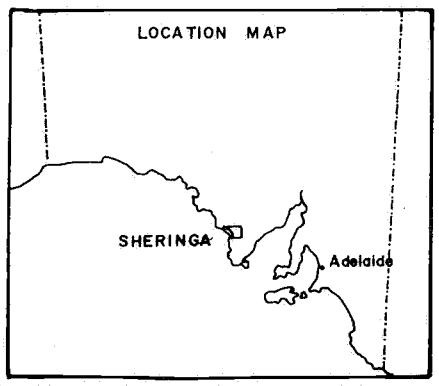
TUCKEY E.L. 687

LOCATION MAP

SHEET REF: KIMBA SI53-7

Geol.	Scale: 1:250,000	Report N°: 10307
Drawn: J.C.R.	Date: June 1980	Plan N°: SAa381



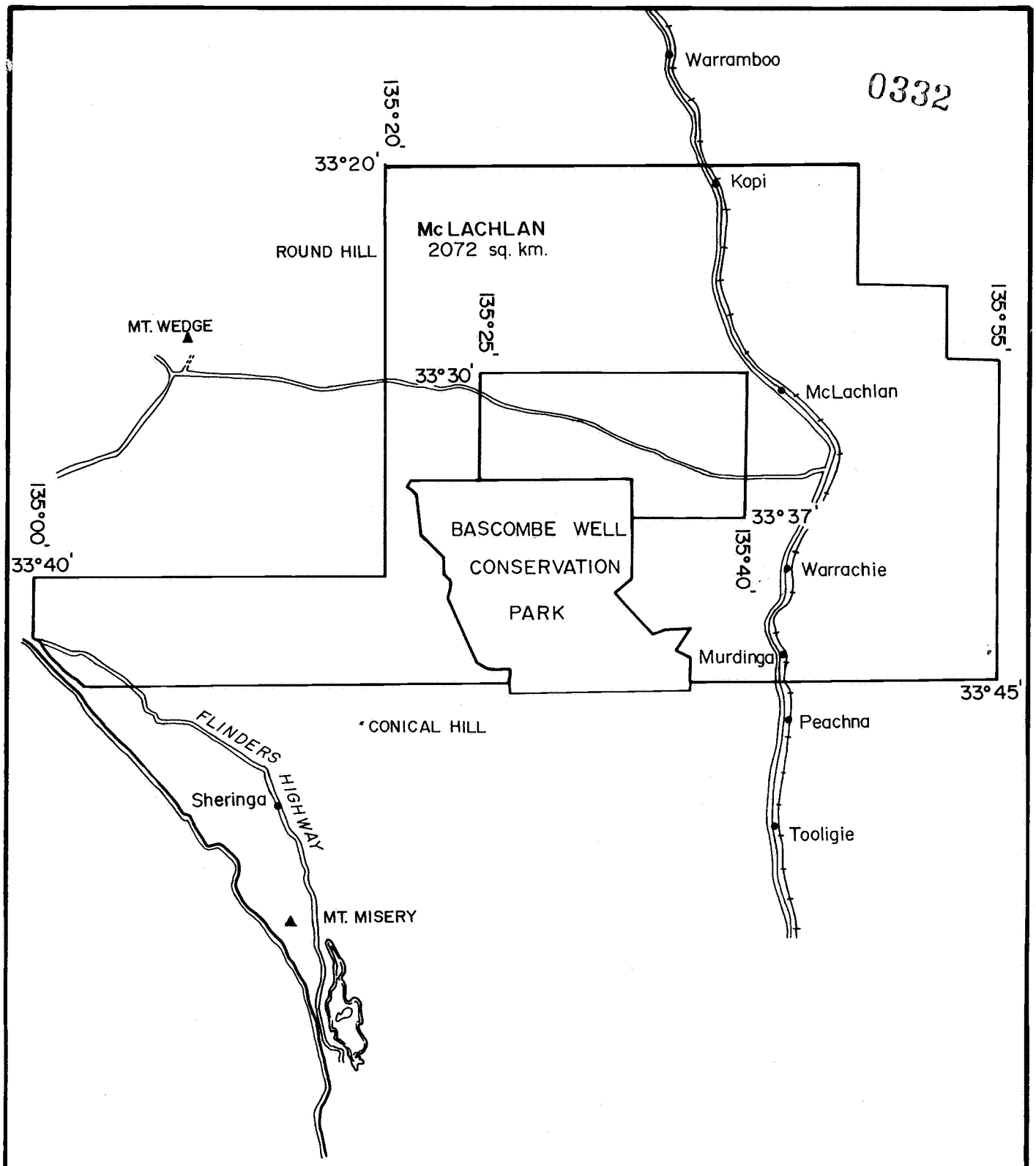


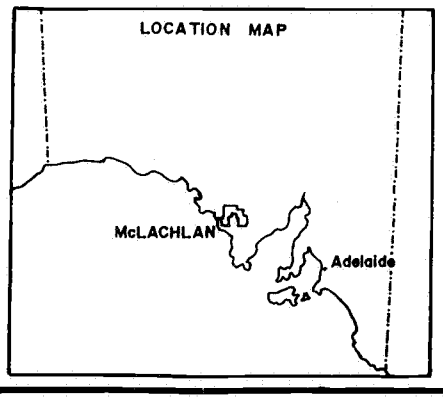
C.R.A. EXPLORATION PTY. LIMITED.

SHERINGA E.L.688
LOCATION MAP

SHEET REF: KIMBA SI53-7

Geol.	Scale : 1:500,000	Report N°10307
Drawn J.C.R.	Date : June 1980	Plan N°: SAa382





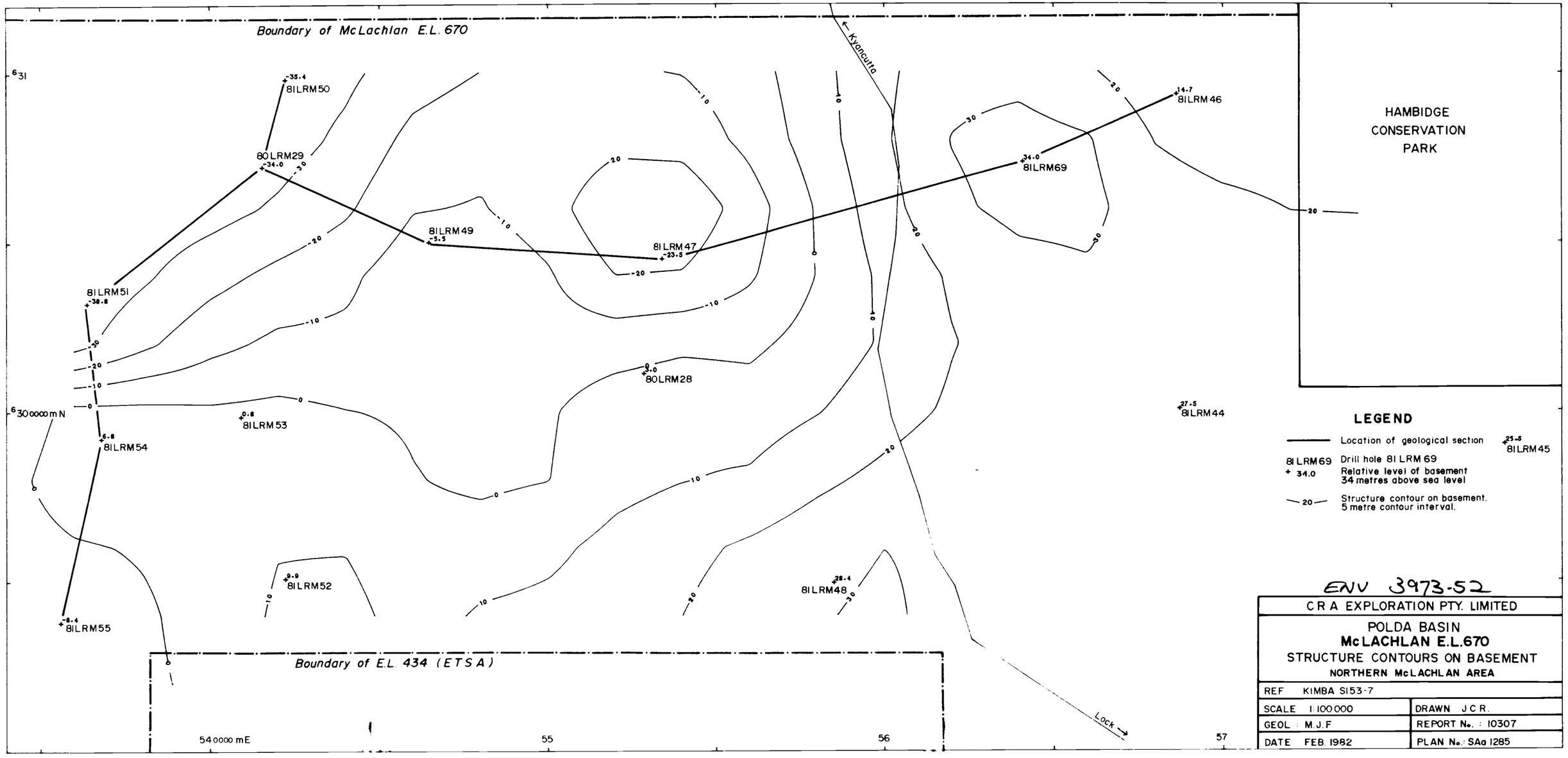
C.R.A. EXPLORATION PTY. LIMITED.

McLACHLAN E.L. 670

LOCATION MAP

SHEET REF: KIMBA SI53-7

Geol.	Scale: 1:500,000	Report N°: 10307
Drawn: J.C.R.	Date: June 1980	Plan N°: SAa 472



ENV 3973-52

CRA EXPLORATION PTY. LIMITED

POLDA BASIN
McLACHLAN E.L.670
STRUCTURE CONTOURS ON BASEMENT
NORTHERN McLACHLAN AREA

REF KIMBA S153-7	
SCALE 1:100000	DRAWN J.C.R.
GEOL : M.J.F	REPORT No. : 10307
DATE FEB. 1982	PLAN No.: SAa 1285

135°00' 15' 30' 45'

N

Boundary of McLachlan E.L.670

80LRM50 (95.4m)

80LRM29 (86m)

BILRM46 (61.3m)

BILRM49 (60.5m)

BILRM47 (94.5m)

BILRM5 (169.8m)

80LRM28 (86m)

BILRM53 (47m)

BILRM54 (44.4m)

BILRM44 (57.5m)

BILRM45 (80.8m)

HAMBRIDGE CONSERVATION PARK

PROMINENT HILL

MT WEDGE

BILRM52 (47.1m)

BILRM48 (46.8m)

BILRM55 (50.4m)

Boundary of Tuckey E.L.687

DARKE RANGE

Boundary of E.L.434 (ETSA)

McLACHLAN

80LRM30 (102m)

BILRM56 (122.5m)

BILRM57 (72.7m)

80LRM31 (138m)

BILRM58 (150m)

BILRM59

80LRM2 (120m)

80LRM27 (150m)

80LRM3 (124m)

BILRM67 (226m)

80LRM10 (120m)

80LRM25 (120m)

LOCK

BILRM68 (160m)

80LRM24 (120m)

80LRM23 (124m)

80LRM4 (124m)

80LRM12 (150m)

80LRM8 (153m)

80LRM5 (122m)

KAPPAWANTA HILL

BASCOMBE WELL CONSERVATION PARK

80LRM22 (68m)

80LRM21 (68m)

WARRACHIE

80LRM16 (124m)

80LRM17 (124m)

80LRM18 (124m)

80LRM19 (120m)

80LRM20 (122m)

BILRM62 (202m)

TUCKEY

BILRM61 (169m)

BILRM63 (170m)

80LRM39 (136m)

80LRM37 (154m)

80LRM21 (68m)

MURDINGA

Boundary of Sheringa E.L.688

TUNGKETTA HILL

80LRM36 (116m)

80LRM35 (129m)

80LRM32 (136m)

80LRM33 (16m)

SHERINGA HILL

CONTAIL HILL

PEACHNA

TOOLGIE RANGE

HINCKS CONSERVATION PARK

SHERINGA

GREAT AUSTRALIAN BIGHT

80LRM34 (16m)

"Nowhere Else"

Abandoned

Abandoned (16m) Due to covernous limestone

Abandoned

"OOLIGIE

BALD HILL

80LRM40 (18m)

MT. MISERY

MT. CORA

Lake Hamilton

COOMABA

BILRM42 (180.5m)

BILRM43 (100.8m)

80LRM5 80LRM5c (116m)

BILRM66 (106m)

BILRM60 (282m)

BILRM65 (18m)

BILRM41 BILRM1c (296.9m)

80LRM1 (158m)

80LRM9 (154m)

80LRM8 (102m)

80LRM6 (153m)

BILRM64 (282m)

80LRM7 (153m)

80LRM2 (153m)

80LRM3 (153m)

80LRM4 (150m)

LEGEND

Location of Geological Sections

80LRM61 (169m) Drill Hole Total Depth

0 1 2 3 4 5 6 7 8 9 10 Kilometres

ENV 3973-53.

CRA EXPLORATION PTY. LIMITED

POLDA BASIN

1980-81

DRILL HOLE LOCATION PLAN

Ref.: KIMBA SI53-7

Geol: M.J.F.	Date: JAN. 1982
Drawn: J.C.R.	Report N° 10307
Scale: 1:100000	Plan N° SAs 1243

6240000mN

34°00'

500000mE 135°00'

51 52 53 54 55 56 57 58

33°30'

510000 mE

52

53

54

Boundary of McLachlan E.L.670

80LRM39 +18.0

80LRM37 +8.0

BASCOME WELL CONSERVATION PARK

627

ELLISTON

Boundary of Sheringa E.L.688

80LRM32 +1.0

80LRM35 +28.0

80LRM36 +3.0

80LRM38 +9.0

FLINDERS HIGHWAY

626

SHERINGA

GREAT AUSTRALIAN BIGHT

80LRM34 +2.0

80LRM40 +2.0

PT LINCOLN

6250000 mN

0 1 2 3 4 5 Kms

LEGEND

Location of geological section

80 LRM 35 + 28.0m — Drill hole 80 LRM 35; Relative level of basement -28m above sea level

-20 — Structure contour on basement 5 metre contour interval.

ENV. 3973-54.

CRA EXPLORATION PTY. LIMITED

POLDA BASIN
SHERINGA E.L.688, McLACHLAN E.L.670
STRUCTURE CONTOURS ON BASEMENT
SHERINGA AND WESTERN McLACHLAN AREA

REF KIMBA S153-7	
SCALE : 1:100000	DRAWN: J.C.R.
GEOL : M.J.F.	REPORT No. : 10307
DATE : FEB. 1982	PLAN No.: SAa 1286

BOUNDARY OF McLACHLAN E.L. 670

6310000mN

69
81LRM50

80LRM29

70

81LRM51
71

81LRM49
10

81LRM47
55

30
80LRM28

28
81LRM46

0
81LRM69

HAMBIDGE

CONSERVATION

PARK

Kyancutta

18
81LRM53

16
81LRM54

6300000mN

8
81LRM52

9
81LRM55

0
81LRM48

0
81LRM44

BOUNDARY OF E.L. 434 (ET.S.A)

540000mN

550000mN

560000mN

570000mN

Lock

REFERENCE

+0 Thickness of carbonaceous facies in metres

—10— Isopach-carbonaceous facies in metres

81LRM69 Drillhole

0 2 4 6 8Km

Scale 1:100000

ENV 3973-55

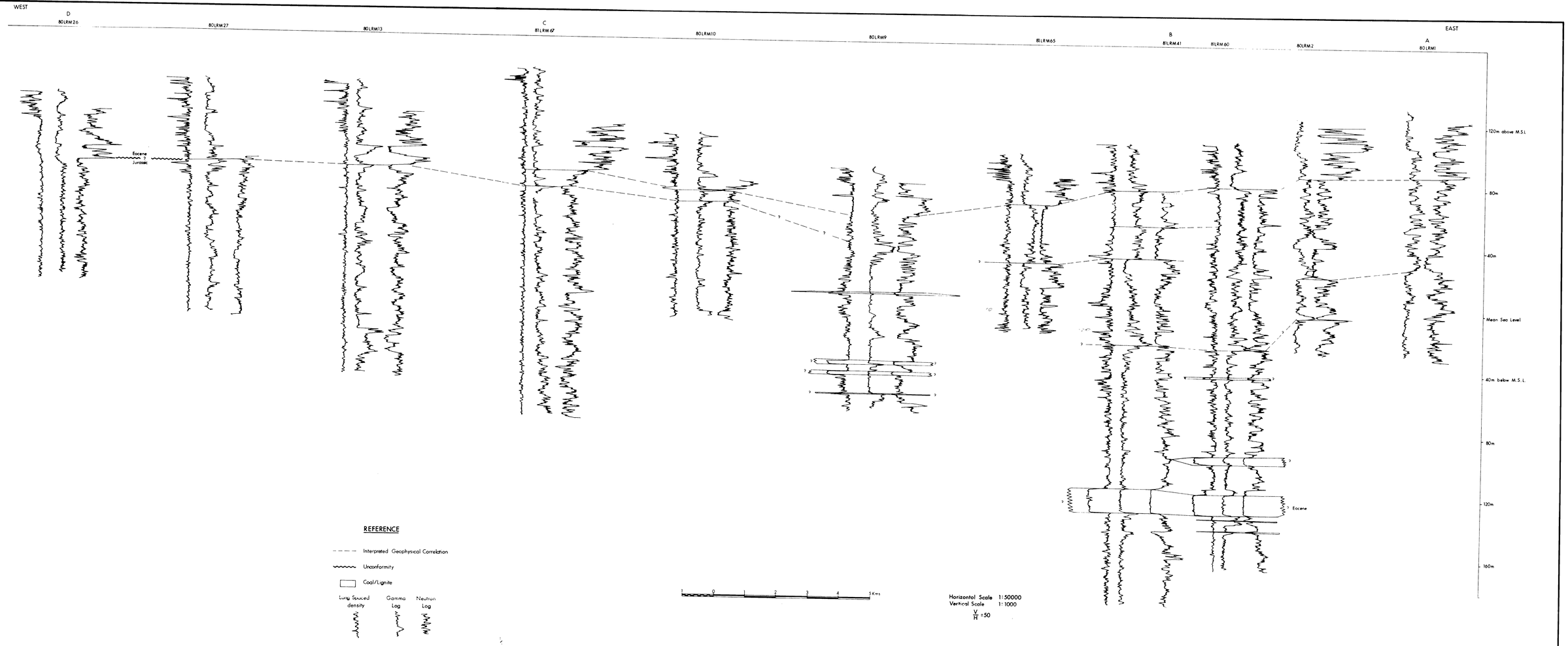
CRA EXPLORATION PTY LIMITED

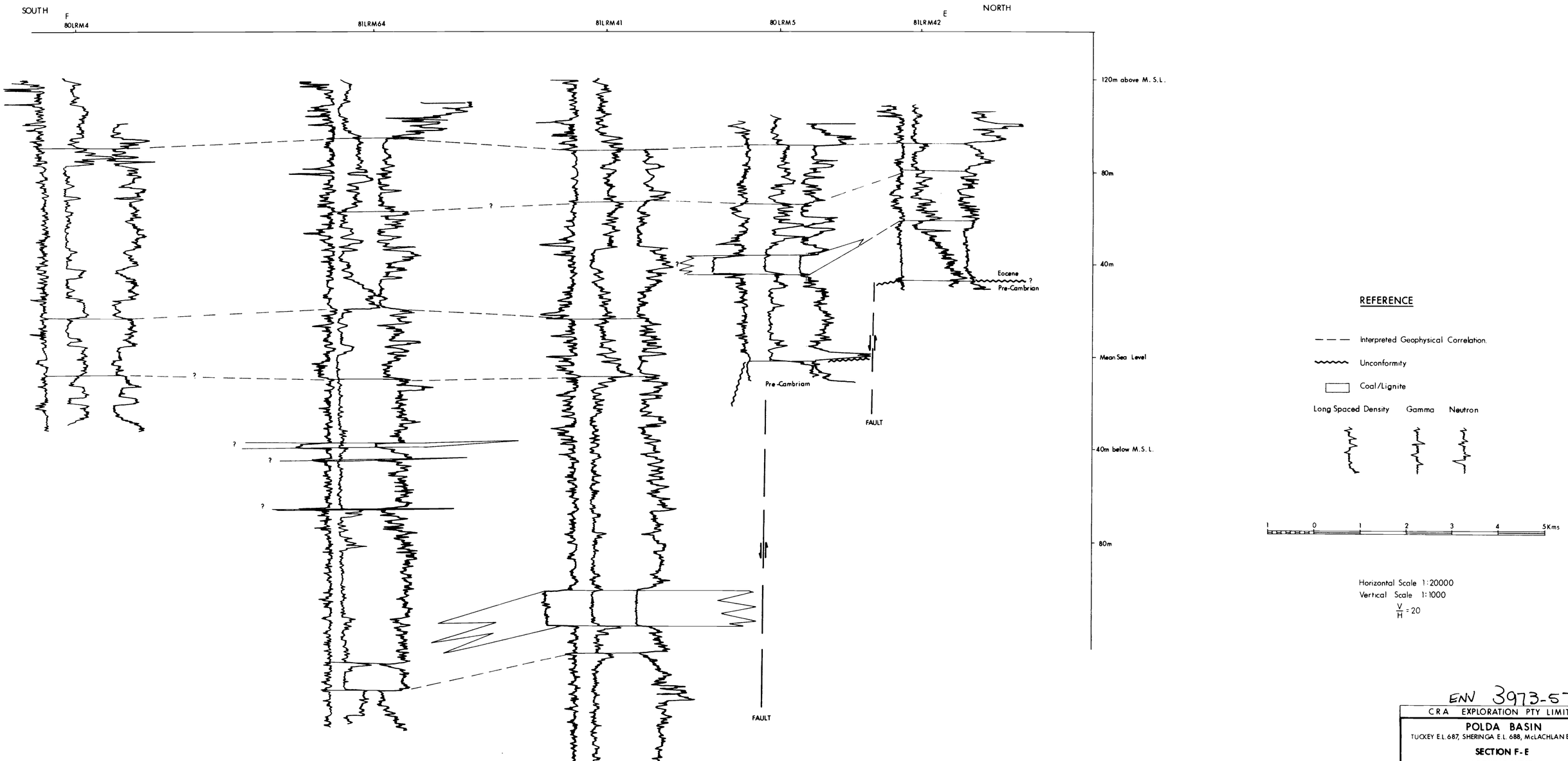
POLDA BASIN

McLACHLAN E.L. 670

ISOPACH MAP-CARBONACEOUS SEDIMENTS NORTHERN McLACHLAN AREA

REF. KIMBA SI53-7	
SCALE 1:100000	
AUTHOR M.J.F	REPORT 10307
DATE MARCH 1982	PLAN No SAa 1368


WEST
EAST
D
80LRM26
80LRM27
80LRM13
C
81LRM67
80LRM10
80LRM9
81LRM65
B
81LRM41
81LRM60
80LRM2
A
80LRM1
Eocene
?
Jurassic
?
?
?



ENV 3973-57

CRA EXPLORATION PTY LIMITED

POLDA BASIN

TUCKEY E.L. 687, SHERINGA E.L. 688, McLACHLAN E.L. 670

SECTION F-E

LOOKING WEST

REF KIMBA SI 53-7	
SCALE	
AUTHOR M.J.F	REPORT 10307
DATE MARCH 1982	PLAN No SAa 1363

W

G

80LRM8

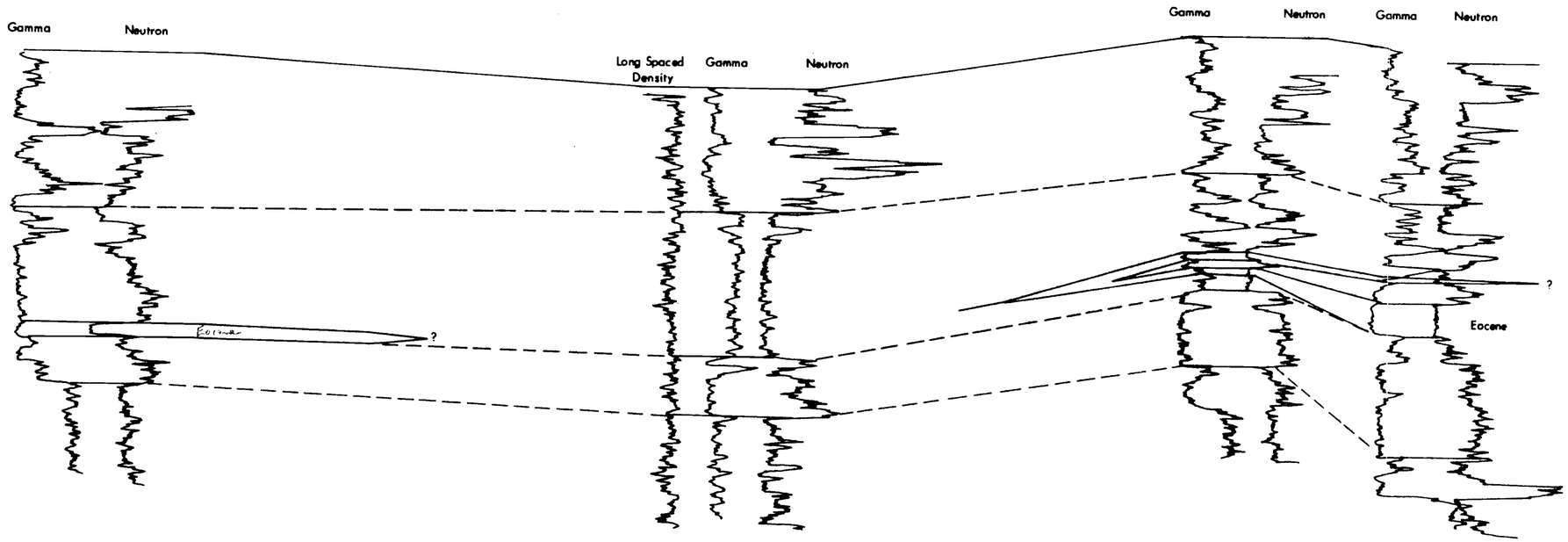
81LRM66

81LRM43

80LRM 5

H

E



- 120m above M.S.L.
- 80m
- 40m
- Mean Sea Level
- -40m below M.S.L.

REFERENCE

- Interpreted Geophysical Correlation
- Unconformity
- Coal/Lignite

200 0 200 400 600 800 1000m

Horizontal Scale 1:20000
Vertical Scale 1:1000
$\frac{V}{H} = 20$

ENV. 3973-58

POLDA BASIN
TUCKEY E.L 687, SHERINGA E.L 688, McLACHLAN E.L 670

SECTION G-H
LOOKING NORTH

KIMBA SHEET

MARCH 1982

SAG 1359

SOUTH

NORTH

J
80LRM20

80LRM19

I
81LRM61

81LRM62

80LRM7

H
80LRM8

80m above M.S.L

40m

M.S.L

40m below M.S.L

80m

Eocene

Jurassic

Eocene

Jurassic

Jurassic
Pre-Cambrian

REFERENCE

Interpreted Geophysical Correlation

Unconformity

Coal / Lignite

Long Spaced | Gamma | Neutron

1 0 1 2 3 4 5 Kms

Horizontal Scale 1:50000
Vertical Scale 1:1000
V/H = 50

ENV. 3973-59

C R A EXPLORATION PTY LIMITED

POLDA BASIN

TUCKEY E.L 687, SHERINGA E.L. 688, McLACHLAN E.L 670

SECTION H-J

LOOKING WEST

REF KIMBA SI 53-7	
SCALE	
AUTHOR M J.F	REPORT 10307
DATE MARCH 1982	PLAN No SAa 1365

W

L

80 LRM 16

80 LRM 17

80 LRM 18

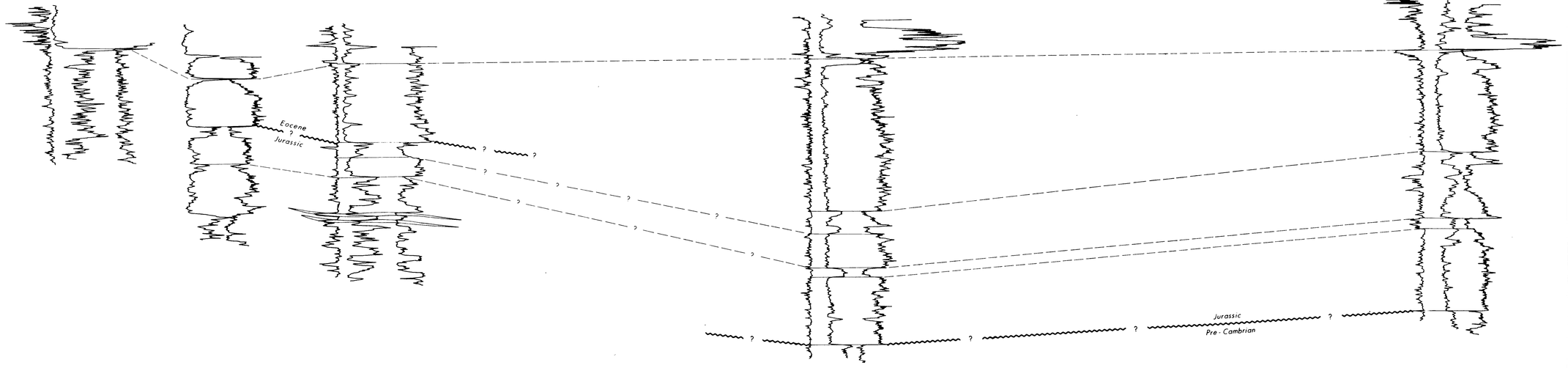
I

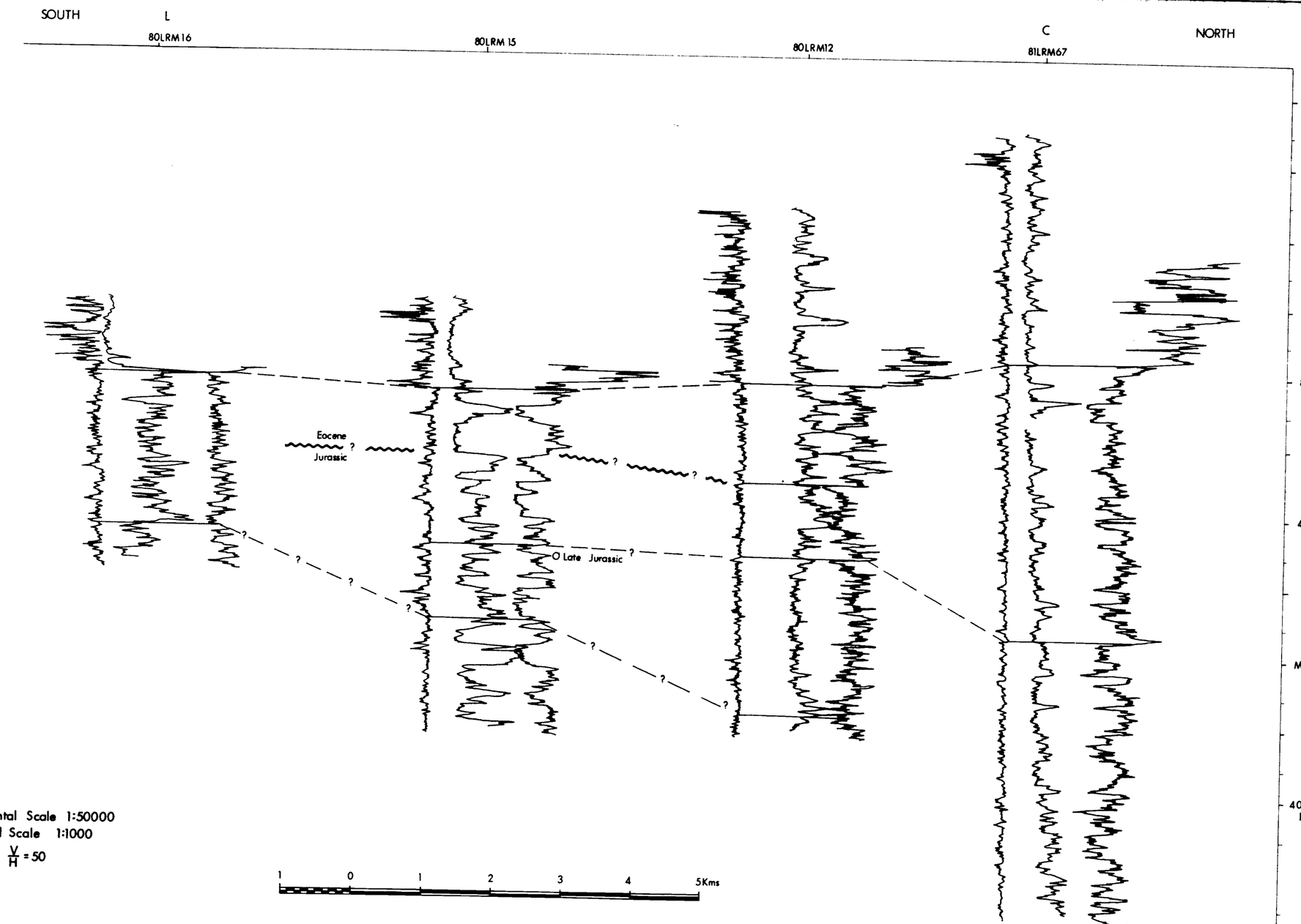
81 LRM 61

K

81 LRM 63

E


Eocene
?
Jurassic
?
?
?



REFERENCE

Interpreted Geophysical Correlation

Unconformity

O Palynological Sample

Long Spaced Density Gamma Neutron

Horizontal Scale 1:50000
Vertical Scale 1:1000
V/H = 50

1 0 1 2 3 4 5Kms

ENV. 3973-61

C R A EXPLORATION PTY LIMITED

POLDA BASIN

TUCKEY E.L. 687, SHERINGA E.L. 688, McLACHLAN E.L. 670

SECTION C-L

LOOKING WEST

REF KIMBA SI 53-7

DRAFT

AUTHOR M.J.F

DATE MARCH 1982

REPORT 10307

PLAN No SAa 1364

W

N

81 LRM 51

80

81 LRM 29

81 LRM 49

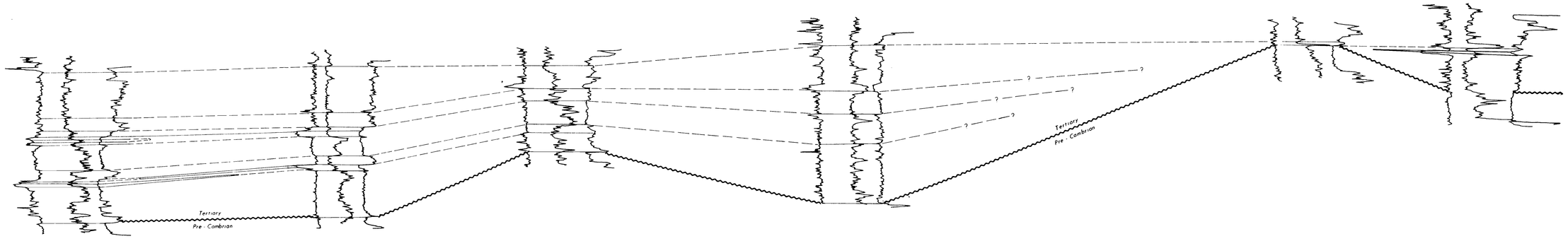
81 LRM 47

81 LRM 69

M

81 LRM 46

E



80 m above M.S.L.

40m

Mean Sea Level

40m

80 m below M.S.L

REFERENCE

Interpreted Geophysical Correlation

Unconformity

Coal / Lignite

Long Spaced Density | Gamma Log | Neutron Log

HORIZONTAL SCALE: 1:50,000

VERTICAL SCALE : 1:1,000

$\frac{V}{H} = 50$

SCALE

KILOMETRES 1 0 1 2 3 4 5 KILOMETRES

ENV. 3973-62

[illegible] EXPLORATION LIMITED

POLDA BASIN

TUCKEY EL 687, SHERINGA EL 688, McLACHLAN EL 670

SECTION M-N

LOOKING NORTH

[illegible] KIMBA SI53-7

[illegible] M J F

[illegible] FEBRUARY 1982

[illegible] No. 10307

PLAN No. SAa 1362

S

Q
81 LRM 55

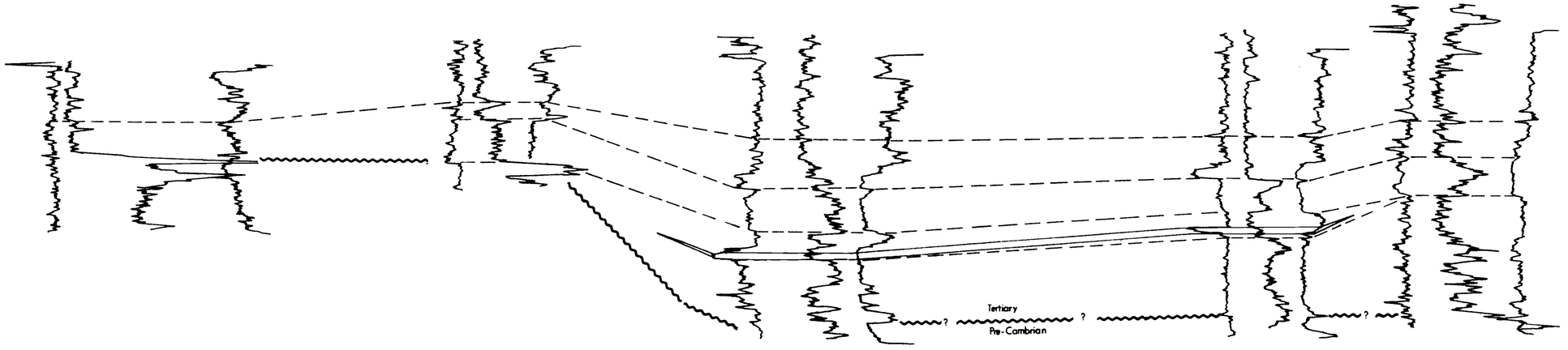
81 LRM 54

P
81 LRM 51

N
80 LRM 29

O
81 LRM 50

N



40m above M.S.L.

M.S.L.

40m below M.S.L.

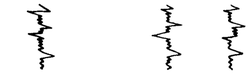
REFERENCE

Interpreted Geophysical Correlation

Unconformity

Coal/Lignite

Long Spaced Density Gamma Neutron



1 0 1 2 3 4 5Kms

Vertical Scale 1:50000
Horizontal Scale 1:1000
$\frac{V}{H} = 50$

ENV 3973-63

BHP PETROLEUM (AUSTRALIA) PTY. LIMITED

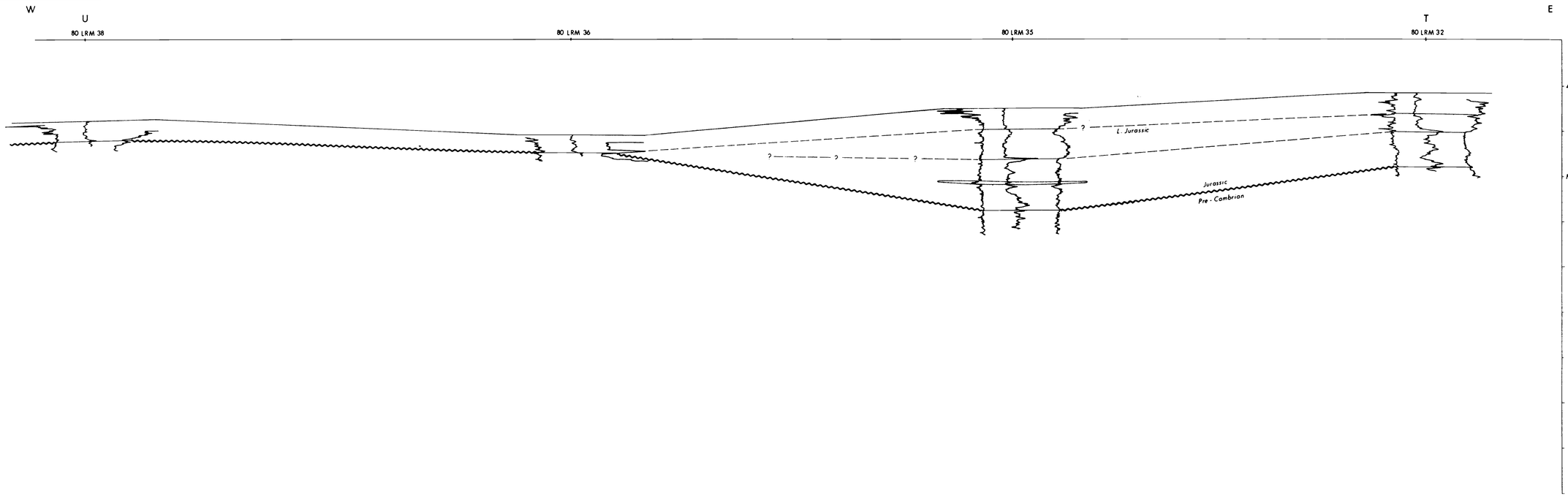
POLDA BASIN

TUCKEY E L 687, SHERINGA E L 688, McLACHLAN E L 670

SECTION O-Q

LOOKING WEST

KIMBA SI 53-7	
M J F	10307
MARCH 1982	SAa 1357



REFERENCE

- Interpreted Geophysical Correlation
- Unconformity
- Coal / Lignite

Long Spaced Density | Gamma Log | Neutron Log

SCALE

KILOMETRES 1 0 1 2 3 4 5 KILOMETRES

HORIZONTAL SCALE : 1:50,000
VERTICAL SCALE : 1:1,000
$\frac{V}{H} = 50$

ENV 3973-64.

C R A EXPLORATION PTY LIMITED

POLDA BASIN

TUCKEY E.L. 687, SHERINGA E.L. 688, McLACHLAN E.L. 670

SECTION T - U

LOOKING NORTH

REF KIMBA SI 53-7	
SCALE	
AUTHOR M. J. F	REPORT 10307
DATE MARCH 1982	PLAN No SAa 1356

SOUTH

S

81 LRM 59

80 LRM 31

R

80 LRM 30

NORTH

80m above M.S.L

40m

Eocene

Jurassic

Jurassic

Permo-Carboniferous

?

?

?

?

1 0·5 0 0·5 1 1·5 Kms

Horizontal Scale 1:20000

Vertical Scale 1:1000

$\frac{V}{H} = 20$

REFERENCE

Interpreted Geophysical Correlation

Unconformity

Coal/Lignite

M.S.L. Long Spaced Density Gamma Neutron

ENV. 3973-65

C.R.A. EXPLORATION PTY. LIMITED

POLDA BASIN

TUCKEY E.L. 687, SHERINGA E.L. 688, McLACHLAN E.L. 670

SECTION R-S

LOOKING WEST

REF. KIMBA SI 53-7

AUTHOR M.J.F.

DATE MARCH 1982

REPORT 10307

PLAN No. SAa 1358

0333

APPENDIX 1

POLDA BASIN GEOLOGICAL BOREHOLE LOGS

CRA

POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:107.000
NAME:LRM	SHEET REF:6130-4
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:41	TOTAL DEPTH:296.900
GRID TYPE:AMG	COMMENCED:05/05/81
EASTING:597100.000	COMPLETED:18/05/81
NORTHING:6285525.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	
PARISH:SMEAT	CORE SIZE:
HUNDRED:70	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:31.0
LOG ORGINSATION:CRA	DATE MEASURED:18/05/81
LOGGED BY:MJNF	PLUG DEPTHS:
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

EARTH SCIENCE COMPUTER SERVICES PAGE 2

LRM ROTARY OPEN HOLE 41

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 41 LISTED ON 20/10/81

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

EARTH SCIENCE COMPUTER SERVICES PAGE 3

LRM ROTARY OPEN HOLE 41

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 41 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0 TO 296.9M B.O.H HOLE STOPPED AS RAN OUT OF DRILL RODS NO SAMPLES TAKEN FOR ANALYSIS.		
6.000	6.000	CALCRETE AND CLAY	80:20. CALCRETE: CREAM, BROWN, SANDY, CONCRETIONARY, MODERATELY STRONG ROCK. CLAY: SANDY, SILTY, VERY SOFT CLAY. SANDY SOIL DARK BROWN.		
25.500	19.500	SAND AND CLAY	60:40. SAND: FINE TO COARSE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED. CLAY: MOTTLED, RED-BROWN, CREAM, SILTY, FIRM CLAY. UNIT BECOMES MORE SANDY TO BASE. SOME QUARTZITE FRAGMENTS.		
28.400	2.900	CLAY AND SAND	50:50. CLAY: MOTTLED, ORANGE BROWN, CREAM, SILTY, SOFT CLAY. SAND: FINE AND MEDIUM GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED.		
37.000	8.600	CLAY	MOTTLED, ORANGE BROWN, CREAM, SILTY, SOFT CLAY.		
39.500	2.500	SAND	COARSE TO VERY COARSE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED.		
49.000	9.500	CLAY AND SAND	60:40. CLAY: MOTTLED, ORANGE BROWN, CREAM, SILTY, SOFT CLAY. SAND: FINE TO COARSE GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED.		
53.000	4.000	SAND AND CLAY	80:20. SAND: FINE TO GRANULAR GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED. CLAY: MOTTLED, ORANGE BROWN, CREAM, SILTY, SOFT CLAY.		
73.000	20.000	CLAY AND CLAY	90:10. CLAY: GREY, STIFF CLAY. CLAY: GREEN-GREY, SILTY, FIRM CLAY.		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 41 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
92.000	19.000	SAND AND SILT	90:10. SAND: FINE TO GRANULAR GRAINED, SUBROUNDED GRAINS, WELL SORTED. SILT.		
103.800	11.800	CLAY AND CLAY	INTERBEDDED: 60:40. CLAY: GREY, GREY-BROWN, SLIGHTLY CARBONACEOUS, FIRM CLAY. CLAY: GREY, SILTY, SOFT CLAY. MORE SILTY TO TOP OF UNIT.		
120.000	16.200	CLAY, SAND	60:40. CLAY: GREY, SLIGHTLY, SILTY, SOFT CLAY. SAND: FINE TO COARSE GRAINED, SUBROUNDED GRAINS, WELL SORTED. ADDITIONAL FEATURES INCLUDE:VERY COARSE GRAINED. SAND GRAIN SIZE COARSENS TO BASE.		
128.600	8.600	CLAY	MOTTLED, GREY, GREEN-GREY, SOFT CLAY. SLIGHTLY SILTY IN PARTS.		
131.600	3.000	CLAY AND SAND	60:40. CLAY: GREY-BROWN, CARBONACEOUS, SOFT CLAY. SAND: OFF-WHITE, GREEN, FINE AND MEDIUM GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND. SILTY IN PARTS.		
138.600	7.000	SAND AND CLAY	UNIT COARSENS UPWARDS: 80:20. SAND: OFF-WHITE, MEDIUM TO GRANULAR GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. CLAY: GREY, SOFT CLAY. TO TOP UPWARD COARSENING CYCLE.		
146.500	7.900	CLAY AND CLAY	60:40. CLAY: BROWN, CARBONACEOUS, FIRM CLAY. CLAY: SILTY, FIRM CLAY.		
149.800	3.300	SAND	INTERBEDDED:. OFF-WHITE, MEDIUM AND VERY COARSE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
151.100	1.300	CLAY AND SAND	50:50. CLAY: GREY-BROWN, SILTY, FIRM CLAY. SAND: OFF-WHITE, MEDIUM AND COARSE		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 41 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
151.600	.500	LIGNITE	DARK, BROWN, CLAYEY, VERY WEAK ROCK.		
162.700	11.100	CLAY AND SAND	50:50, CLAY: GREY-BROWN, SLIGHTLY CARBONACEOUS, FIRM CLAY. SAND: OFF-WHITE, VERY FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. SILTY TO BASE.		
163.300	.600	LIGNITE	DARK, BROWN, CLAYEY, VERY WEAK ROCK.		
164.400	1.100	CLAY	GREY, SILTY, FIRM CLAY.		
181.600	17.200	SILT AND SAND	UNIT COARSENS UPWARDS: 60:40, SILT: GREEN-GREY, SLIGHTLY, CLAYEY, FIRM CLAY. SAND: OFF-WHITE, FINE TO GRANULAR GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
187.700	6.100	SAND	OFF-WHITE, FINE TO GRANULAR GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND. MAXIMUM GRAIN SIZE CYCLE.		
196.600	8.900	SAND AND SILT	90:10. SAND: VERY FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, WELL SORTED. SILT: SANDY. MAXIMUM GRAIN SIZE CYCLE.		
197.700	1.100	CLAY	BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
221.500	23.800	SAND	LIGHT GREY, VERY FINE GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:FINE TO GRANULAR GRAINED.		
236.800	15.300	LIGNITE	DARK, BROWN, VERY WEAK ROCK, PLANT		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 41 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			FRAGMENTS. FEW SANDY INTERBEDS. LIGNITE SAMPLE DATED AS EOCENE AGE.		
248.600	11.800	SAND	UNIT FINES UPWARDS:. LIGHT, GREY, VERY FINE AND FINE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:MEDIUM AND VERY COARSE GRAINED. MAXIMUM GRAIN SIZE CYCLES.		
251.200	2.600	CLAY	BROWN, SLIGHTLY CARBONACEOUS, FIRM CLAY.		
269.100	17.900	SAND	UNIT FINES UPWARDS:. LIGHT, GREY, FINE TO GRANULAR GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. ADDITIONAL FEATURES INCLUDE:PEBBLY.		
296.900	27.800	SAND	LIGHT, GREY, FINE TO COARSE GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND. UPWARD FINING CYCLES. **TOTAL DEPTH**		

END OF BORE AT 296.900 M.

Computer Resources Company

0341

CRA

POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:107.000
NAME:LRM	SHEET REF:6130-4
TYPE:ROTARY CORE (PARTLY)	INDEX:
HOLE NUMBER:41C	TOTAL DEPTH:240.850
GRID TYPE:AMG	COMMENCED:19/05/81
EASTING:597100.000	COMPLETED:14/07/81
NORTHING:6285525.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	

PARISH:SMEAT	CORE SIZE:HMLC
HUNDRED:70	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:14.2
LOG ORGINSATION:CRA	DATE MEASURED:14/07/81
LOGGED BY:MJNF	PLUG DEPTHS:
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.00 TO 85.30M 107.30 TO 120.00M 165.00 TO 210.00M CORED SECTIONS 85.30 TO 107.30M 120.00 TO 165.00M 210.00 TO 240.85M SAMPLES 891001 TO 891012 DESPATCHED ON D.P.O. NO. 80129. SAMPLES 891345 TO 891365 DESPATCHED ON D.P.O. NO. 80135..		
6.000	6.000	CALCRETE AND CLAY	80:20. CALCRETE: CREAM, BROWN, SANDY, CONCRETIONARY, MODERATELY STRONG ROCK. CLAY: SANDY, SILTY, VERY SOFT CLAY. SANDY SOIL, DARK BROWN AT TOP.		
24.000	18.000	CLAY	MOTTLED, RED-BROWN, CREAM, SANDY, SILTY, FIRM CLAY. SOME QUARTZ AND QUARTZITE FRAGMENTS.		
47.000	23.000	CLAY	MOTTLED, RED, BROWN, SANDY, FIRM CLAY. ADDITIONAL FEATURES INCLUDE:GREEN-GREY.		
54.000	7.000	SAND, CLAY	80:20. SAND: RED, GREY, FINE TO COARSE GRAINED, FELDSPATHIC-QUARTZOSE, PEBBLY, POORLY SORTED, VERY LOOSE SAND. ADDITIONAL FEATURES INCLUDE:ANGULAR GRAINS. CLAY: MOTTLED, RED, BROWN, SANDY, FIRM CLAY. ADDITIONAL FEATURES INCLUDE:GREEN-GREY. VERY IMMATURE, CONTAINS PEGMATITE AND FELDSPAR GRAINS.		
73.500	19.500	CLAY	GREEN, SANDY, FIRM CLAY.		
82.400	8.900	SAND	YELLOW, GREY, FINE AND MEDIUM GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND.		
85.300	2.900	CLAY AND SAND	70:30. CLAY: LIGHT, GREY-WHITE, SANDY, SILTY, FIRM CLAY. SAND: LIGHT, GREEN-GREY, FINE GRAINED, QUARTZOSE, CLAYEY, SUBANGULAR TO SUBROUNDED GRAINS,		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			MODERATELY SORTED, COMPACT SAND.		
85.950	.650	CLAY AND SAND	70:30. CLAY: LIGHT, GREY-WHITE, SANDY, CLAYEY, FIRM CLAY, IRREGULAR BEDDING, COMPACTION FEATURE, CORED INTERVAL. SAND: MOTTLED, GREEN-GREY, FINE AND MEDIUM GRAINED, CLAYEY, SUBANGULAR TO SUBROUNDED GRAINS, POORLY SORTED, COMPACT SAND, DISTURBED BEDDING.		
86.280	.330	CLAY	CORED INTERVAL, CORE LOSS.		
86.560	.280	CLAY	SANDY, CORED INTERVAL, CORE LOSS.		
86.810	.250	SAND	FINE AND MEDIUM GRAINED, CORED INTERVAL, CORE LOSS.		
88.000	1.190	CLAY AND SAND	50:50. CLAY: LIGHT GREY, SANDY, FIRM CLAY, INTERMIXED BEDDING, COHERENT, CORED INTERVAL. SAND: MOTTLED, GREEN-GREY, FINE AND MEDIUM GRAINED, CLAYEY, SUBANGULAR TO SUBROUNDED GRAINS, POORLY SORTED, COMPACT SAND, FINE BEDDING, FRIABLE.		
88.350	.350	SAND	FINE AND MEDIUM GRAINED, CORED INTERVAL, CORE LOSS.		
88.760	.410	CLAY	SANDY, CORED INTERVAL, CORE LOSS.		
89.180	.420	SILT	CLAYEY, BANDS, CORED INTERVAL, CORE LOSS.		
89.380	.200	SILT	LIGHT GREY, SLIGHTLY, CLAYEY, GRITTY, FIRM CLAY, CORED INTERVAL.		
89.680	.300	SAND	GREEN-GREY, VERY FINE AND MEDIUM GRAINED, SILTY, CLAYEY, MODERATELY SORTED, GRADATIONAL BASE, COMPACT SAND, CORED INTERVAL.		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
90.290	.610	CLAY	MOTTLED, GREY, SLIGHTLY, SILTY, GRADATIONAL BASE, FIRM CLAY, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, SANDY.		
90.410	.120	SILT	GREEN-GREY, CLAYEY, DISTINCT BASE, FIRM CLAY, CORED INTERVAL.		
90.720	.310	SILT	OFF-WHITE, SLIGHTLY, SANDY, GRADATIONAL BASE, FIRM CLAY, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:BANDS.		
90.940	.220	SILT	OFF-WHITE, LIGHT GREY, CLAYEY, GRADATIONAL BASE, FIRM CLAY, CORED INTERVAL.		
91.110	.170	SAND	LIGHT, GREEN-GREY, VERY FINE AND MEDIUM GRAINED, SILTY, CLAYEY, MODERATELY SORTED, GRADATIONAL BASE, COMPACT SAND, CORED INTERVAL.		
91.260	.150	SAND	VERY FINE AND MEDIUM GRAINED, SILTY, CLAYEY, GRADATIONAL BASE, COMPACT SAND, CORED INTERVAL, CORE LOSS.		
91.630	.370	CLAY	SILTY, SANDY, COARSENING UPWARDS, CORED INTERVAL, CORE LOSS.		
91.800	.170	CLAY	MOTTLED, LIGHT GREY, GREEN-GREY, SLIGHTLY, SILTY, FIRM CLAY, CORED INTERVAL.		
92.170	.370	SAND	MOTTLED, GREEN-GREY, FINE TO COARSE GRAINED, CLAYEY, SUBROUNDED GRAINS, POORLY SORTED, GRADATIONAL BASE, COMPACT SAND, CORED INTERVAL. OCCASIONAL THIN CLAY LAMINAE ESPECIALLY TO BASE.		
92.720	.550	MUDSTONE	DARK, GREY, GRADATIONAL BASE, WEAK ROCK, LAMINATED, SHEARED, CORED INTERVAL.		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
92.850	.130	CLAY	MOTTLED, GREEN-GREY, GREY, SLIGHTLY, SILTY, FIRM CLAY. CORED INTERVAL.		
94.290	1.440	CLAY	MOTTLED, OFF-WHITE, GREY, KAOLINITIC, FIRM CLAY, CORED INTERVAL.		
94.700	.410	MUDSTONE	DARK, GREY, SANDY, SLIGHTLY CARBONACEOUS, GRADATIONAL BASE, STIFF CLAY, SUB-FISSILE. CORED INTERVAL.		
95.090	.390	CLAY AND CLAY	70:30. CLAY: LIGHT GREY, SILTY, GRADATIONAL BASE, FIRM CLAY, FINELY LAMINATED, COALY FRAGMENTS, SPARSE, CORED INTERVAL. CLAY: DARK, GREY, SLIGHTLY, SANDY, FIRM CLAY. THIN SANDY LAMINAE.		
95.900	.810	CLAY AND SAND	90:10. CLAY: DARK, GREY, CARBONACEOUS, SLIGHTLY, GRADATIONAL BASE, FIRM CLAY, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:LIGNITIC, BANDS. SAND: GREY, FINE TO COARSE GRAINED, CLAYEY, POORLY SORTED, COMPACT SAND.		891001
96.590	.690	CLAY	GREEN, SILTY, GRADATIONAL BASE, FIRM CLAY, COALY FRAGMENTS, SPARSE, COHERENT, CORED INTERVAL.		
97.130	.540	CLAY	GREEN-GREY, SANDY, GRADATIONAL BASE, FIRM CLAY, CORED INTERVAL. SANDY BANDS MAINLY TO TOP.		
97.860	.730	CLAY	DARK, GREY, SLIGHTLY, SILTY, GRADATIONAL BASE, STIFF CLAY, BANDED, COHERENT, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:CARBONACEOUS.		
98.480	.620	SILT	CORED INTERVAL, CORE LOSS.		
99.440	.960	CLAY	GREEN-GREY, SILTY, SANDY, COHERENT, CORED		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			INTERVAL.		
99.610	.170	CLAY	GREEN-GREY, SILTY, SANDY, CORED INTERVAL, CORE LOSS.		
100.150	.540	SILT	CLAYEY, CORED INTERVAL, CORE LOSS.		
100.470	.320	CLAY	DARK, GREY-BROWN, CARBONACEOUS, GRADATIONAL BASE, SOFT CLAY, COALY FRAGMENTS, SPARSE, FRIABLE, CORED INTERVAL.		891002
100.750	.280	CLAY	GREY, SANDY, GRADATIONAL BASE, FIRM CLAY, COHERENT, CORED INTERVAL.		
101.270	.520	CLAY	GREEN, GRADATIONAL BASE, SOFT CLAY, CORED INTERVAL.		
101.480	.210	CLAY	DARK, GREY, SLIGHTLY CARBONACEOUS, GRADATIONAL BASE, SOFT CLAY, LAMINATED, SUB-FISSILE, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:SHEARED.		
101.610	.130	CLAY AND SAND	90:10. CLAY: GREY, SANDY, POORLY SORTED, GRADATIONAL BASE, FIRM CLAY, COHERENT, CORED INTERVAL. SAND: LIGHT GREY, FINE AND MEDIUM GRAINED, QUARTZO-FELDSPATHIC, CLAYEY, LOOSE SAND.		
101.890	.280	CLAY	GREEN-GREY, SLIGHTLY, SILTY, GRADATIONAL BASE, FIRM CLAY, COHERENT, CORED INTERVAL.		
102.190	.300	CLAY	DARK, GREY, SLIGHTLY CARBONACEOUS, GRADATIONAL BASE, FIRM CLAY, SUB-FISSILE, CORED INTERVAL.		
102.870	.680	SAND	LIGHT GREY, FINE AND MEDIUM GRAINED, CLAYEY, CORED INTERVAL, CORE LOSS.		

Computer Resources Company

POLOA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
103.380	.510	CLAY AND SAND	70:30. CLAY: GREY, SANOY, GRADATIONAL BASE, FIRM CLAY, CORED INTERVAL. SAND: LIGHT GREY, FINE TO COARSE GRAINED, POORLY SORTED, LOOSE SAND, OISTURBED BEDDING.		
105.310	1.930	CLAY AND SAND	60:40. CLAY: GREEN-GREY, SANDY, GRADATIONAL BASE, FIRM CLAY, CORED INTERVAL. SAND: LIGHT, GREEN-GREY, FINE TO COARSE GRAINEO, CLAYEY, POORLY SORTED, COMPACT SAND.		
105.550	.240	CLAY	GREEN-GREY, SILTY, GRADATIONAL BASE, SOFT CLAY, COREO INTERVAL. CARBONACEOUS BAND IN MIDDLE.		
105.780	.230	SILT	CORED INTERVAL, CORE LOSS.		
106.800	1.020	SANO	FINE TO COARSE GRAINED, CORED INTERVAL, CORE LOSS.		
107.300	.500	CLAY	GREEN-GREY, SANDY, FIRM CLAY, CORED INTERVAL.		
107.700	.400	CLAY	GREEN-GREY, SANOY, SILTY, FIRM CLAY, CUTTINGS.		
108.700	1.000	SAND	FINE ANO MEDIUM GRAINED, CUTTINGS.		
109.400	.700	CLAY	GREY, FIRM CLAY, CUTTINGS.		
109.900	.500	SAND	FINE TO COARSE GRAINED, CUTTINGS.		
111.400	1.500	CLAY	SILTY, CUTTINGS.		
112.800	1.400	SILT AND SAND	70:30. SILT: GREEN-GREY, CLAYEY, FIRM CLAY, CUTTINGS. SAND: GREY, FINE AND MEDIUM GRAINED, LOOSE SANO.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
114.800	2.000	CLAY AND SILT	85:15. CLAY: DARK, GREY, FIRM CLAY, CUTTINGS. SILT: GREY, FIRM CLAY.		
116.400	1.600	SAND	GREY, VERY FINE AND MEDIUM GRAINED, WELL SORTED, LOOSE SAND, FINING UPWARDS, CUTTINGS.		
117.400	1.000	CLAY	DARK, GREY, FIRM CLAY, CUTTINGS.		
118.300	.900	SILT	GREEN-GREY, SLIGHTLY, SANDY, COMPACT SAND, CUTTINGS.		
119.600	1.300	SAND	GREY, FINE AND MEDIUM GRAINED, LOOSE SAND, CUTTINGS.		
120.000	.400	SILT	GREEN-GREY, SLIGHTLY, CLAYEY, LOOSE SAND, CUTTINGS.		
120.250	.250	CLAY	DARK, GREEN-GREY, SLIGHTLY, SILTY, SOFT CLAY, PUGGY, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:CARBONACEOUS. PLASTIC CLAY.		
120.720	.470	SILT	SANDY, CORED INTERVAL, CORE LOSS.		
121.840	1.120	CLAY AND CLAY	60:40. CLAY: SLIGHTLY, SILTY, CORED INTERVAL, CORE LOSS. ADDITIONAL FEATURES INCLUDE:CARBONACEOUS. CLAY: SLIGHTLY, SILTY.		
122.360	.520	SILT	SANDY, CORED INTERVAL, CORE LOSS.		
123.000	.640	CLAY	CARBONACEOUS, SILTY, CORED INTERVAL, CORE LOSS.		
123.260	.260	CLAY AND SILT	80:20. CLAY: DARK, BROWN, SLIGHTLY CARBONACEOUS, SILTY, FIRM CLAY, COALY FRAGMENTS, COMMON, CORED INTERVAL. SILT: GREY-BROWN, MICACEOUS, CLAYEY, COMPACT		891003

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			SAND.		
123.720	.460	CLAY	SLIGHTLY CARBONACEOUS, SILTY, CORED INTERVAL, CORE LOSS.		
124.360	.640	CLAY	CARBONACEOUS, SILTY, CORED INTERVAL, CORE LOSS.		
124.720	.360	CLAY	SILTY, CORED INTERVAL, CORE LOSS.		
125.000	.280	CLAY	SLIGHTLY CARBONACEOUS, CORED INTERVAL, CORE LOSS.		
125.330	.330	CLAY	GREY, FIRM CLAY, CARBONACEOUS LAMINAE, COMMON, PUGGY, CORED INTERVAL, PLASTIC CLAY.		
125.600	.270	CLAY	CARBONACEOUS, CORED INTERVAL, CORE LOSS.		
126.310	.710	CLAY	SLIGHTLY CARBONACEOUS, SILTY, CORED INTERVAL, CORE LOSS.		
127.240	.930	CLAY	SLIGHTLY, SILTY, CORED INTERVAL, CORE LOSS.		
127.600	.360	CLAY	SILTY, CORED INTERVAL, CORE LOSS.		
127.840	.240	CLAY	LIGHT GREY, FIRM CLAY, CARBONACEOUS LAMINAE, COMMON, CORED INTERVAL.		
128.340	.500	CLAY	LIGHT GREY, SILTY, FIRM CLAY, COHERENT, CORED INTERVAL.		
129.090	.750	SILT	LIGHT GREY, SANDY, GRITTY, GRADATIONAL BASE, LOOSE SAND, SECONDARY PYRITE, SPARSE, CORED INTERVAL.		
129.300	.210	SILT	LIGHT GREY, CLAYEY, LOOSE SAND, CORED INTERVAL.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
129.930	.630	SAND	LIGHT GREY, VERY FINE AND FINE GRAINED, LOOSE SAND, CORED INTERVAL.		
130.580	.650	CLAY	LIGHT GREY, SILTY, SANDY, GRITTY, GRADATIONAL BASE, FIRM CLAY, COHERENT, CORED INTERVAL.		
130.700	.120	SAND	GREY, FINE TO CDARSE GRAINED, SILTY, SUBROUNDED GRAINS, PODRLY SORTED, COMPACT SAND, CDRED INTERVAL.		
132.700	2.000	SAND	FINE TD COARSE GRAINED, SILTY, POORLY SDRTED, CORED INTERVAL, CORE LOSS.		
133.240	.540	SAND	DARK, BROWN, FINE TD COARSE GRAINED, SILTY, CARBONACEOUS, SUBANGULAR TO SUBROUNDED GRAINS, LOOSE SAND, CORED INTERVAL.		
133.320	.080	SAND	FINE TO CDARSE GRAINED, SILTY, CARBONACEOUS, CORED INTERVAL, CORE LOSS.		
133.800	.480	SAND	FINE TO COARSE GRAINED, SILTY, CORED INTERVAL, CORE LOSS.		
134.140	.340	SAND	VERY FINE AND MEDIUM GRAINED, SILTY, CORED INTERVAL, CORE LOSS.		
135.310	1.170	SILTSTONE	SANDY, CORED INTERVAL, CORE LOSS.		
136.660	1.350	CLAY AND SAND	50:50. CLAY: DARK, BROWN, COALY, SILTY, FIRM CLAY, CORED INTERVAL. SAND: BROWN, VERY FINE AND MEDIUM GRAINED, CARBONACEOUS, SILTY, SUBANGULAR TO SUBROUNDED GRAINS, POORLY SORTED, COMPACT SAND, FINE BEDDING, COALY FRAGMENTS, COMMON. THIN LIGNITE BANDS.		891004

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
136.780	.120	CLAY	SILTY, CORED INTERVAL, CORE LOSS.		
137.180	.400	CLAY	LIGNITIC, CORED INTERVAL, CORE LOSS.		
137.800	.620	LIGNITE	CLAYEY, CORED INTERVAL, CORE LOSS.		
138.310	.510	CLAY AND SAND	60:40, CLAY: SILTY, CORED INTERVAL, CORE LOSS. SAND: VERY FINE AND FINE GRAINED.		
138.940	.630	CLAY AND SAND	85:15, CLAY: DARK, BROWN, COALY, SILTY, FIRM CLAY, CORED INTERVAL. SAND: BROWN, VERY FINE AND MEDIUM GRAINED, CARBONACEOUS, SILTY, SUBANGULAR TO SUBROUNDED GRAINS, POORLY SORTED, COMPACT SAND, FINE BEDDING, COALY FRAGMENTS, COMMON. THIN LIGNITE BANDS.		
139.560	.620	SAND	BROWN, DARK BROWN, CARBONACEOUS, SILTY, SUBANGULAR TO SUBROUNDED GRAINS, POORLY SORTED, COMPACT SAND, LENTICULAR BEDDING, CORED INTERVAL.		891005
140.440	.880	SAND	FINE TO COARSE GRAINED, MODERATELY SORTED, CORED INTERVAL, CORE LOSS.		
141.070	.630	SAND AND CLAY	70:30, SAND: DARK, BROWN, FINE AND MEDIUM GRAINED, SLIGHTLY CARBONACEOUS, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, GRADATIONAL BASE, LOOSE SAND, CORED INTERVAL, CLAY: DARK, BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY, CARBONACEOUS ROOT TRACES, COMMON.		
141.960	.890	SILT	DARK, BROWN, SLIGHTLY CARBONACEOUS, SANDY, LOOSE SAND, VERY FINE BEDDING, COALY FRAGMENTS, COMMON, CORED INTERVAL, ADDITIONAL FEATURES INCLUDE:ROOT TRACES, COMMON.		891006

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WQR SAMP NO SEC NUMB
144.260	2.300	CLAY	SILTY, CARBONACEOUS, CORED INTERVAL, CORE LOSS.		
144.510	.250	SAND	VERY FINE AND MEDIUM GRAINED, SLIGHTLY CARBONACEOUS, SILTY, CORED INTERVAL, CORE LOSS.		
145.080	.570	SAND	DARK, BROWN, FINE TO GRANULAR GRAINED, SILTY, GRITTY, POORLY SORTED, COMPACT SAND, IRREGULAR BEDDING, COALY FRAGMENTS, COMMON, SECONDARY PYRITE, SPARSE, CONCRETIONS, CORED INTERVAL.		
146.300	1.220	SAND	BROWN, FINE AND MEDIUM GRAINED, SLIGHTLY CARBONACEOUS, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, GRADATIONAL BASE, LOOSE SAND, LENTICULAR BEDDING, LAMINAE OF CARBONACEOUS FRAGMENTS, SPARSE, CORED INTERVAL.		
147.000	.700	SAND AND CLAY	FINELY INTERBEDDED: 55:45. SAND: BROWN, VERY FINE AND FINE GRAINED, CARBONACEOUS, MICACEOUS, SILTY, MODERATELY SORTED, GRADATIONAL BASE, COMPACT SAND, CORED INTERVAL. CLAY: DARK, BROWN, LIGNITIC, STIFF CLAY, LENTICULAR BEDDING, SECONDARY PYRITE, COMMON.		891007
148.270	1.270	SAND	FINE AND MEDIUM GRAINED, CLAYEY, CORED INTERVAL, CORE LOSS.		
148.600	.330	SAND	UNIT COARSENS UPWARDS:. DARK, BROWN, FINE TO GRANULAR GRAINED, SLIGHTLY CARBONACEOUS, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, GRADATIONAL BASE, COMPACT SAND, IRREGULAR BEDDING, COALY LAMELLAE, SPARSE, SECONDARY PYRITE, SPARSE, CONCRETIONS, CORED INTERVAL.		891008

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
149.490	.890	SAND	FINE TO GRANULAR GRAINED, SLIGHTLY CARBONACEOUS, CORED INTERVAL, CORE LOSS.		
150.070	.580	CLAY	DARK, BROWN, COAL,BANDED, LIGNITIC, STIFF CLAY, PLANT FRAGMENTS, COMMON, CORED INTERVAL.		891009
150.600	.530	CARBONACEOUS SILTSTONE AND CLAY	90:10, CARBONACEOUS SILTSTONE: BROWN, SANDY, CLAYEY, GRITTY, POORLY SORTED, COMPACT SAND, FINELY LAMINATED, PLANT FRAGMENTS, COMMON, SECONDARY WHITE MICA, COMMON, DISSEMINATED, CORED INTERVAL. CLAY: DARK, BROWN, SILTY, SLIGHTLY CARBONACEOUS, FIRM CLAY, FINELY LAMINATED, COALY FRAGMENTS, ABUNDANT.		
150.790	.190	CLAY	DARK, BROWN, SANDY, LIGNITIC, STIFF CLAY, CORED INTERVAL, ADDITIONAL FEATURES INCLUDE:SOOTY.		891010
151.180	.390	CLAY	SANDY, LIGNITIC, CORED INTERVAL, CORE LOSS.		
151.570	.390	SAND	VERY FINE AND FINE GRAINED, CARBONACEOUS, CORED INTERVAL, CORE LOSS.		
152.440	.870	CARBONACEOUS SILTSTONE, SAND	80:20, CARBONACEOUS SILTSTONE: BROWN, SLIGHTLY, LIGNITIC, MODERATELY SORTED, COMPACT SAND, COALY FRAGMENTS, COMMON, CORED INTERVAL, ADDITIONAL FEATURES INCLUDE:SANDY, CLAYEY, SAND: BROWN, FINE GRAINED, SILTY, CLAYEY, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND, ADDITIONAL FEATURES INCLUDE:SLIGHTLY, LIGNITIC.		
153.070	.630	SAND	DARK, BROWN, VERY FINE AND FINE GRAINED, SLIGHTLY, LIGNITIC, SUBANGULAR TO		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			SUBROUNDED GRAINS, POORLY SORTED, COMPACT SAND, SECONDARY PYRITE, SPARSE, CONCRETIONS, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:CLAYEY, QUARTZOSE.		
153.700	.630	SILT	DARK, BROWN, SLIGHTLY, COALY, COMPACT SAND, BANDED, COALY FRAGMENTS, COMMON, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:STRINGERS OF COAL, SANDY, CLAYEY.		891011
154.370	.670	SAND	BROWN, FINE AND MEDIUM GRAINED, CARBONACEOUS, QUARTZOSE, PEBBLY, MODERATELY SORTED, LOOSE SAND, COALY FRAGMENTS, COMMON, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:SUBROUNDED GRAINS.		
155.310	.940	SAND	FINE TO COARSE GRAINED, CARBONACEOUS, CORED INTERVAL, CORE LOSS.		
155.830	.520	SAND	BROWN, FINE TO COARSE GRAINED, SILTY, QUARTZOSE, POORLY SORTED, LOOSE SAND, COALY FRAGMENTS, COMMON, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, LIGNITIC.		
156.340	.510	SAND	FINE AND MEDIUM GRAINED, SILTY, SLIGHTLY CARBONACEOUS, CORED INTERVAL, CORE LOSS.		
157.000	.660	SAND	BROWN, FINE AND MEDIUM GRAINED, SLIGHTLY, SILTY, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND, COALY FRAGMENTS, SPARSE, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:CARBONACEOUS.		
158.050	1.050	SAND	FINE AND MEDIUM GRAINED, CORED INTERVAL, CORE LOSS.		
158.370	.320	SAND	BROWN, FINE GRAINED, CARBONACEOUS,		

Computer Processes Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, GRADATIONAL BASE, LOOSE SAND, CORED INTERVAL.		
158.640	.270	SAND	MOTTLED, LIGHT GREY, BROWN, FINE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, GRADATIONAL BASE, VERY LOOSE SAND, CORED INTERVAL.		
158.740	.100	SAND	BROWN, FINE GRAINED, CARBONACEOUS, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, SHARP BASE, LOOSE SAND, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:SILTY.		
158.950	.210	SAND	FINE GRAINED, SILTY, CARBONACEOUS, CORED INTERVAL, CORE LOSS.		
159.670	.720	SAND	LIGHT, GREY, BROWN, FINE TO COARSE GRAINED, QUARTZOSE, CARBONACEOUS, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND, COALY FRAGMENTS, SPARSE, ACCESSORY WHITE MICA, SPARSE, GRAINS, CORED INTERVAL. SOME COALY FRAGMENTS.		
160.120	.450	SAND	LIGHT, YELLOW, BROWN, MEDIUM AND COARSE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND, BANDED, COALY FRAGMENTS, SPARSE, CORED INTERVAL.		
160.740	.620	SAND	UNIT COARSENS UPWARDS:, DARK, BROWN, FINE AND MEDIUM GRAINED, SILTY, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND, COALY FRAGMENTS, SPARSE, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, LIGNITIC.		
160.970	.230	SAND	FINE AND MEDIUM GRAINED, SILTY, CARBONACEOUS, CORED INTERVAL, CORE LOSS.		

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POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C

LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
162.340	1.370	SAND	FINE TO COARSE GRAINED, SILTY, CORED INTERVAL, CORE LOSS.		
162.600	.260	SILT	SLIGHTLY CARBONACEOUS, CORED INTERVAL, CORE LOSS.		
164.210	1.610	CLAY	DARK, BROWN, SILTY, SANDY, FIRM CLAY, COALY LAMELLAE, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:CARBONACEOUS.		891012
164.820	.610	SAND	LIGHT, GREY, BROWN, FINE TO COARSE GRAINED, SLIGHTLY, CLAYEY, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, DISTINCT BASE, VERY LOOSE SAND, BANDED, GRADED BEDDING, COALY FRAGMENTS, SPARSE, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:CARBONACEOUS, QUARTZOSE.		
165.000	.180	SAND	FINE TO GRANULAR GRAINED, SLIGHTLY, SILTY, CORED INTERVAL, CORE LOSS.		
186.000	21.000	SAND AND CLAY	70:30. SAND: OFF-WHITE, MEDIUM TO GRANULAR GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND, CUTTINGS. CLAY: GREEN-GREY, FIRM CLAY.		
202.000	16.000	CLAY AND CLAY	90:10. CLAY: DARK, GREY, SLIGHTLY, SANDY, SOFT CLAY, CUTTINGS. CLAY: DARK, BROWN, SLIGHTLY, LIGNITIC, SOFT CLAY.		
210.000	8.000	SAND AND CLAY	80:20. SAND: LIGHT GREY, FINE TO GRANULAR GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND, CUTTINGS. CLAY: LIGHT GREY, SLIGHTLY, SANDY, SOFT CLAY.		
211.380	1.380	SAND	LIGHT GREY, MEDIUM AND COARSE GRAINED, SLIGHTLY, CLAYEY, SUBANGULAR TO SUBROUNDED		

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POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			GRAINS, MODERATELY SORTED, GRADATIONAL BASE, VERY LOOSE SAND, CORED INTERVAL.		
213.220	1.840	SAND	LIGHT GREY, WHITE, FINE AND MEDIUM GRAINED, QUARTZOSE, MICACEOUS, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND, CARBONACEOUS LAMINAE, SPARSE, ACCESSORY WHITE MICA, SPARSE, GRAINS, CORED INTERVAL.		
213.300	.080	LIGNITE	DARK, BROWN, WOODY, VERY WEAK ROCK, CORED INTERVAL.		
213.830	.530	SAND	MOTTLED, LIGHT GREY, BROWN, FINE GRAINED, CARBONACEOUS, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND, BANDED, CARBONACEOUS ROOT TRACES, COMMON, ACCESSORY WHITE MICA, SPARSE, GRAINS, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:SILTY, CARBONACEOUS LAMELLAE, COMMON.		
214.500	.670	SAND	LIGHT GREY, WHITE, MEDIUM AND COARSE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND.		
215.300	.800	SAND	FINE AND MEDIUM GRAINED, CORED INTERVAL, CORE LOSS.		
215.540	.240	SAND	LIGHT, BROWN, FINE GRAINED, QUARTZOSE, SILTY, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:CLAYEY.		
216.300	.760	SAND	LIGHT GREY, WHITE, FINE AND MEDIUM GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND, DIFFUSE BEDDING, ACCESSORY WHITE MICA, SPARSE, GRAINS, CORED INTERVAL.		

Computer Resource Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C

LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
216.400	.100	SAND AND LIGNITE	70:30. SAND: BROWN, FINE AND MEDIUM GRAINED, LIGNITIC, COALY, SUBROUNDED GRAINS, POORLY SORTED, VERY LOOSE SAND, CORED INTERVAL. LIGNITE: DARK, BROWN, WOODY, GRADATIONAL BASE, VERY WEAK ROCK.		
217.190	.790	SAND	LIGHT GREY, WHITE, FINE AND MEDIUM GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND, CORED INTERVAL. COALY BANDS UP TO 5CM AT 216.8M AND 216.92M.		
217.660	.470	SAND	LIGHT, YELLOW, BROWN, MEDIUM TO GRANULAR GRAINED, QUARTZOSE, FELDSPATHIC, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND, CORED INTERVAL.		
218.460	.800	SAND	LIGHT, BROWN, FINE GRAINED, QUARTZOSE, SLIGHTLY CARBONACEOUS, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND, FINELY LAMINATED, CARBONACEOUS LAMINAE, SPARSE, CORED INTERVAL.		
218.930	.470	SAND	LIGHT, BROWN, GREY, FINE TO GRANULAR GRAINED, QUARTZOSE, MICACEOUS, SUBROUNDED GRAINS, POORLY SORTED, VERY LOOSE SAND, FINING UPWARDS, ACCESSORY WHITE MICA, SPARSE, GRAINS, CORED INTERVAL.		
219.550	.620	SAND	LIGHT, BROWN, FINE GRAINED, MICACEOUS, VERY LOOSE SAND, CROSS BEDDING, ACCESSORY WHITE MICA, SPARSE, GRAINS, CORED INTERVAL. FINE LIGNITIC SILT LAMINAE.		
220.060	.510	GRIT	GREY-BROWN, FINE TO GRANULAR GRAINED, QUARTZOSE, MICACEOUS, PEBBLY, POORLY SORTED, LOOSE SAND, DIFFUSE BEDDING,		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			ACCESSORY WHITE MICA, ABUNDANT, GRAINS, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:SLIGHTLY CARBONACEOUS, ANGULAR TO SUBROUNDED GRAINS.		
220.760	.700	CLAY AND SILT	80:20. CLAY: DARK, BROWN, LIGNITIC, FINELY LAMINATED, PLANT FRAGMENTS, COMMON, ACCESSORY WHITE MICA, ABUNDANT, GRAINS, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:CARBONACEOUS REMAINS, COMMON. SILT: YELLOW, FINELY LAMINATED. UNIT CONTAINS HARD WOODY LIGNITE FRAGMENTS.		891345
221.180	.420	SILT	LIGHT, BROWN, SLIGHTLY CARBONACEOUS, LAMINATED, LOAD CAST, CARBONACEOUS LAMINAE, COMMON, SECONDARY PYRITE, SPARSE, CONCRETIONS, ACCESSORY WHITE MICA, ABUNDANT, GRAINS, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:DARK, BROWN, FINE CROSS BEDDING, COALY FRAGMENTS, SPARSE, FINE GRAINED SAND INTERLAMINAE. LENSOID LIGNITIC LAMINAE.		891346
221.380	.200	SILT	DARK, RED-BROWN, CARBONACEOUS, LAMINATED, LOAD CAST, CARBONACEOUS LAMINAE, COMMON, SECONDARY PYRITE, SPARSE, CONCRETIONS, ACCESSORY WHITE MICA, ABUNDANT, GRAINS, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:FINE CROSS BEDDING, COALY FRAGMENTS, SPARSE. LIGNITE LAMINAE 15-20 PERCENT.		891347
221.690	.310	LIGNITE	CORED INTERVAL. EARTHY COFFEE BROWN, YELLOW CUTINITE ABUNDANT. FINE PYRITE LAMINAE. -TOP 31CM PARTIALLY DRIED-..		891348
222.490	.800	LIGNITE	CORED INTERVAL. EARTHY COFFEE BROWN, YELLOW CUTINITE ABUNDANT. FINE PYRITE LAMINAE..		891349

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
223.300	.810	LIGNITE	CORED INTERVAL. EARTHY COFFEE BROWN. YELLOW CUTINITE ABUNDANT. FINE PYRITE LAMINAE..		891350
224.300	1.000	LIGNITE	CORED INTERVAL. DARK REDDISH BROWN. HARD, BRITTLE, VERY WOODY. FINELY DIVIDED PYRITE COMMON THROUGHOUT. SHEARED IN PARTS.		891351
225.300	1.000	LIGNITE	CORED INTERVAL. DARK REDDISH BROWN. HARD, BRITTLE, VERY WOODY. FINELY DIVIDED PYRITE COMMON THROUGHOUT. SHEARED IN PARTS.		891352
226.300	1.000	LIGNITE	CORED INTERVAL. DARK REDDISH BROWN. HARD, BRITTLE, VERY WOODY. FINELY DIVIDED PYRITE COMMON THROUGHOUT. SHEARED IN PARTS.		891353
227.100	.800	LIGNITE	CORED INTERVAL. DARK REDDISH BROWN. HARD, BRITTLE, VERY WOODY. FINELY DIVIDED PYRITE COMMON THROUGHOUT. SHEARED IN PARTS.		891354
227.500	.400	LIGNITE	CORED INTERVAL. COFFEE BROWN. YELLOW CUTINITE ABUNDANT, VERY WOODY AT TOP..		891355
227.750	.250	LIGNITE	PLANT IMPRESSIONS, ABUNDANT, CORED INTERVAL. BLACKISH BROWN. FRIABLE, EARTHY.		891356
228.750	1.000	LIGNITE	DARK, RED, BROWN, CORED INTERVAL. HARD, BRITTLE, SPARSE WOODY RESIN GLOBULES..		891357
229.750	1.000	LIGNITE	DARK, RED, BROWN, CORED INTERVAL. HARD, BRITTLE, SPARSE WOODY RESIN GLOBULES. SHEARED 229.07 TO 229.75M..		891358

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
230.750	1.000	LIGNITE	DARK, RED, BROWN, CORED INTERVAL, HARD, BRITTLE, SPARSE WOODY RESIN GLOBULES. SHEARED 229.75 TO 230.20M.		891359
231.550	.800	LIGNITE	CORED INTERVAL, CORE LOSS.		
232.750	1.200	LIGNITE	DARK, RED, BROWN, PLANT IMPRESSIONS, ABUNDANT, CORED INTERVAL, HARD, BRITTLE. ABUNDANT WOODY LIGNITE, HEAVILY SHEARED..		891360
233.100	.350	LIGNITE	DARK, RED, BROWN, PLANT IMPRESSIONS, ABUNDANT, CORED INTERVAL, HARD, BRITTLE. ABUNDANT WOODY LIGNITE, HEAVILY SHEARED..		891361
234.550	1.450	LIGNITE	CORED INTERVAL, CORE LOSS.		
235.750	1.200	LIGNITE	DARK, RED, BROWN, PLANT IMPRESSIONS, ABUNDANT, CORED INTERVAL, HARD, BRITTLE. ABUNDANT WOODY LIGNITE, HEAVILY SHEARED..		891362
236.750	1.000	LIGNITE	DARK, RED, BROWN, PLANT IMPRESSIONS, ABUNDANT, CORED INTERVAL, HARD, BRITTLE. ABUNDANT WOODY LIGNITE, HEAVILY SHEARED..		891363
236.840	.090	CLAY	BROWN, LIGNITIC, FIRM CLAY, COALY FRAGMENTS, COMMON, ACCESSORY WHITE MICA, COMMON, CORED INTERVAL, HEAVILY SHEARED.		891364
237.190	.350	CLAY	CREAM, BUFF, FIRM CLAY, COALY FRAGMENTS, SPARSE, ACCESSORY WHITE MICA, COMMON, CORED INTERVAL, ADDITIONAL FEATURES INCLUDE:CARBONACEOUS ROOT TRACES, COMMON. HEAVILY SHEARED.		891365
237.850	.660	SILT	BUFF, CLAYEY, MICACEOUS, PLANT FRAGMENTS,		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY CORE (PARTLY) 41C

LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			COMMON, ACCESSORY WHITE MICA, ABUNDANT, CORED INTERVAL.		
238.100	.250	SAND	BUFF, VERY FINE AND MEDIUM GRAINED, SILTY, MICACEOUS, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND, ACCESSORY WHITE MICA, ABUNDANT, CORED INTERVAL. OCCASIONAL LIGNITE FRAGMENTS. MICA FLAKES UP TO 3 IMM..		
239.750	1.650	CORE LOSS	CORED INTERVAL.		
239.830	.080	SAND	BROWN, VERY FINE AND MEDIUM GRAINED, SILTY, MICACEOUS, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND, ACCESSORY WHITE MICA, COMMON, CORED INTERVAL. ADDITIONAL FEATURES INCLUDE:DARK, BROWN. OCCASIONAL LIGNITE FRAGMENTS.		
240.760	.930	SILT	DARK, BROWN, GREY, MICACEOUS, COMPACT SAND, CORED INTERVAL. LIGNITE FRAGMENTS TO TOP.		
240.850	.090	SAND	BUFF, VERY FINE AND MEDIUM GRAINED, MICACEOUS, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND, CROSS BEDDING, DISTURBED BEDDING, CORED INTERVAL. LIGNITE LAMINAE. PYRITIC LENSES.		

END OF BORE AT 240.850 M.

0364

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:116.000
NAME:LRM	SHEET REF:6130-4
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:42	TOTAL DEPTH:80.470
GRID TYPE:AMG	COMMENCED:09/06/81
EASTING:597200.000	COMPLETED:09/06/81
NORTHING:6287950.000	INCL:90
ACCURACY:SURVEYED	AZIM:
DATUM:AHD	
PARISH:SMEAT	CORE SIZE:
HUNDRED:1	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:3.5
LOG ORGINSATION:CRA	DATE MEASURED:09/06/81
LOGGED BY:MJNF	PLUG DEPTHS:
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 42 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0 TO 80.47M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
4.000	4.000	CLAY	MOTTLED, YELLOW, SANDY, SILTY, MODERATELY WEATHERED, SOFT CLAY.		
7.100	3.100	CLAYSTONE AND SAND	60:40. CLAYSTONE: RED-BROWN, SANDY, GRITTY, STIFF CLAY. SAND: MOTTLED, ORANGE, WHITE, VERY FINE AND FINE GRAINED, SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND.		
17.300	10.200	SAND AND SILT	90:10. SAND: MOTTLED, ORANGE, WHITE, FINE TO GRANULAR GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND. SILT: MOTTLED, ORANGE, WHITE, COMPACT SAND. THIN PEBBLE BAND TO TOP..		
20.400	3.100	CLAY	MOTTLED, ORANGE, WHITE, SLIGHTLY, SILTY, FIRM CLAY. INCREASINGLY SILTY TO THE BASE.		
27.600	7.200	SAND	MOTTLED, ORANGE, WHITE, VERY FINE AND MEDIUM GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND. MAXIMUM GRAIN SIZE CYCLE AT TOP.		
32.000	4.400	CLAY AND SAND	60:40. CLAY: MOTTLED, ORANGE, WHITE, SLIGHTLY, SILTY, FIRM CLAY. SAND: OFF-WHITE, VERY FINE GRAINED, SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND.		
37.000	5.000	CLAY AND SAND	80:20. CLAY: MOTTLED, GREEN, YELLOW, SLIGHTLY, SILTY, FIRM CLAY. SAND: OFF-WHITE, VERY FINE GRAINED, SILTY, SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND.		
44.700	7.700	CLAY AND CLAY	80:20. CLAY: OFF-WHITE, BROWN, SLIGHTLY		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 42 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			CARBONACEOUS, SOFT CLAY. CLAY: MOTTLED, GREEN, YELLOW, SILTY, STIFF CLAY.		
49.600	4.900	CLAY, SAND	50:50. CLAY: GREY-BROWN, SLIGHTLY, SILTY, SOFT CLAY. ADDITIONAL FEATURES INCLUDE:SLIGHTLY CARBONACEOUS. SAND: OFF-WHITE, BROWN, FINE TO COARSE GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, LIGNITIC.		
54.500	4.900	SILT	BROWN, CARBONACEOUS, MICACEOUS, COMPACT SAND, FINELY LAMINATED, CARBONACEOUS WISPS, SPARSE. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, SILTY.		
78.000	23.500	CLAY AND SAND	90:10. CLAY: BUFF, BROWN, MICACEOUS, SANDY, GRITTY, VERY WEATHERED, SOFT CLAY, SECONDARY CHLORITE, COMMON, DISSEMINATED, ACCESSORY BLACK MICA, SPARSE, DISSEMINATED. SAND: GREY, BROWN, FINE TO GRANULAR GRAINED, QUARTZOSE, MICACEOUS, ANGULAR GRAINS, POORLY SORTED, LOOSE SAND, ACCESSORY BLACK MICA, COMMON, GRAINS. WEATHERED BASEMENT.		
80.470	2.470	POSSIBLY METAMORPHIC	MOTTLED, BLACK, WHITE, MEDIUM GRAINED, QUARTZOSE, MICACEOUS, CRYSTALINE, STRONG ROCK, SECONDARY CHLORITE, COMMON, DISSEMINATED, ACCESSORY BLACK MICA, COMMON, GRAINS. ADDITIONAL FEATURES INCLUDE:ACCESSORY WHITE MICA, SPARSE, GRAINS. BASEMENT - BIOTITE GRANITIC GNEISS?.		

END OF BORE AT 80.470 M.

0368

LRM ROTARY OPEN HOLE 42

Computer Resources Company

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN

BORELOGS

ORGN:81	COLLAR RL:108.000
NAME:LRM	SHEET REF:6130-4
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:43	TOTAL DEPTH:100.800
GRID TYPE:AMG	COMMENCED:09/06/81
EASTING:496225.000	COMPLETED:10/06/81
NORTHING:6286750.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	
PARISH:BOONE	CORE SIZE:
HUNDRED:22	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:9.0
LOG ORGINSATION:CRA	DATE MEASURED:09/06/81
LOGGED BY:MJNF	PLUG DEPTHS:
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 43 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0 TO 100.8M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
1.500	1.500	SAND	BROWN, GREY, FINE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. SOME CALCRETE NODULES.		
4.000	2.500	CLAY	LIGHT, CREAM, PINK, SILTY, VERY WEATHERED, VERY SOFT CLAY.		
9.000	5.000	CLAY	MOTTLED, ORANGE, WHITE, SANDY, SOFT CLAY.		
21.000	12.000	CLAY AND SAND	70:30. CLAY: MOTTLED, ORANGE, WHITE, SILTY, FIRM CLAY. SAND: ORANGE, FINE TO GRANULAR GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND. CLAY TO BASE.		
27.800	6.800	CLAY	LIGHT, GREEN, SOFT CLAY.		
30.400	2.600	CLAY AND SAND	70:30. CLAY: LIGHT, GREEN, SOFT CLAY. SAND: WHITE, VERY FINE AND FINE GRAINED, ROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
32.700	2.300	SAND	UNIT FINES UPWARDS:. WHITE, MEDIUM AND COARSE GRAINED, ROUNDED GRAINS, WELL SORTED, LOOSE SAND.		
36.800	4.100	CLAY AND CLAY	90:10. CLAY: OFF-WHITE, SOFT CLAY. CLAY: MOTTLED, YELLOW, GREEN, SILTY, FIRM CLAY. PLASTIC CLAY.		
40.700	3.900	CLAY	GREY-BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
50.740	10.040	SAND AND CLAY	80:20. SAND: GREY, FINE TO GRANULAR GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND. CLAY: GREY,		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 43 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			SLIGHTLY CARBONACEOUS, VERY SOFT CLAY.		
52.870	2.130	LIGNITE	DARK, BROWN, SLIGHTLY, CLAYEY, VERY WEAK ROCK.		
53.830	.960	SILT	GREY, LOOSE SAND.		
54.220	.390	CLAY	GREY-BROWN, CARBONACEOUS, SOFT CLAY.		
54.830	.610	SAND	BROWN, FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
55.420	.590	CLAY	DARK, BROWN, SLIGHTLY, LIGNITIC, SOFT CLAY.		
56.160	.740	CLAY	DARK, BROWN, LIGNITIC, VERY SOFT CLAY, COALY FRAGMENTS, ABUNDANT.		
60.540	4.380	CLAY	DARK, BROWN, SLIGHTLY, LIGNITIC, SOFT CLAY.		
63.500	2.960	SAND	GREY, WHITE, FINE AND MEDIUM GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
65.000	1.500	MUDSTONE	DARK, GREY, SLIGHTLY, SILTY, WEAK ROCK. ADDITIONAL FEATURES INCLUDE:CARBONACEOUS.		
78.000	13.000	SAND	GREY, WHITE, FINE TO COARSE GRAINED, QUARTZOSE, ANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND, ACCESSORY WHITE MICA, SPARSE.		
81.500	3.500	CLAY AND CLAY	60:40. CLAY: GREY, SILTY, SOFT CLAY. CLAY: GREY-BROWN, SLIGHTLY CARBONACEOUS, VERY SOFT CLAY.		
87.500	6.000	SAND	GREY, WHITE, FINE TO COARSE GRAINED.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 43 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:VERY COARSE GRAINED.		
100.800	13.300	CLAY AND SAND	80:20. CLAY: LIGHT, GREY-BROWN, KAOLINITIC, MICACEOUS, GRITTY, COMPLETELY WEATHERED, VERY SOFT CLAY, SECONDARY CHLORITE, ABUNDANT, ACCESSORY BLACK MICA, ABUNDANT. SAND: FINE AND MEDIUM GRAINED, FELDSPATHIC-QUARTZOSE, VERY LOOSE SAND, ACCESSORY BLACK MICA, ABUNDANT. VERY WEATHERED BASEMENT. BIOTITE GNEISS?.		

END OF BORE AT 100.800 M.

0374

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN | BORELOGS

ORGN:81	COLLAR RL:85.000
NAME:LRM	SHEET REF:6031-3
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:44	TOTAL DEPTH:57.540
GRID TYPE:AMG	COMMENCED:10/06/81
EASTING:568725.000	COMPLETED:11/06/81
NORTHING:6300050.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	
PARISH:ULYER	CORE SIZE:
HUNDRED:23	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:RR	WATER LEVEL:10.0
LOG ORGINSATION:CRA	DATE MEASURED:11/06/81
LOGGED BY:MJNF	PLUG DEPTHS:
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

LRM ROTARY OPEN HOLE 44

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 44 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0 TO 57.54M B.O.H. SAMPLES 891013 TO 891020 DESPATCHED ON D.P.O. NO. B 0130 TAKEN OVER INTERVALS 22-26, 28-30, 34-36, Y40-42, 46-48, 52-54 , 58-60M DRILL DEPTH CORRECTED DEPTH FOR TOP OF SAMPLE 891013 IS 22.0M.		
6.300	6.300	CLAY AND SAND	60:40, CLAY: MOTTLED, YELLOW, RED-BROWN, SILTY, SOFT CLAY, SECONDARY IRON OXIDE, COMMON, STAINING. SAND: YELLOW, FINE AND MEDIUM GRAINED, CALCAREOUS, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND, SECONDARY IRON OXIDE, COMMON, STAINING.		
9.000	2.700	CLAY	MOTTLED, RED-BROWN, CREAM, SILTY, FIRM CLAY, SECONDARY IRON OXIDE, COMMON, STAINING.		
15.000	6.000	SAND	MOTTLED, WHITE, YELLOW, MEDIUM TO GRANULAR GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND, SECONDARY IRON OXIDE, COMMON, STAINING. ADDITIONAL FEATURES INCLUDE:RED.		
16.000	1.000	SANDSTONE	MOTTLED, WHITE, PINK, FINE AND MEDIUM GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, MODERATELY WEAK ROCK.		
22.000	6.000	SAND	MOTTLED, OFF-WHITE, PINK, MEDIUM TO GRANULAR GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND, SECONDARY IRON OXIDE, COMMON, STAINING. MACRO UPWARD COARSENING CYCLE.		
28.700	6.700	SAND	RED, FINE TO GRANULAR GRAINED, FERRUGINOUS, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND, SECONDARY IRON OXIDE, ABUNDANT, STAINING. HEMATITE, QUARTZ SAND. MACRO UPWARD		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 44 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			COARSENING CYCLE.		
36.000	7.300	CLAY	LIGHT, GREY, BUFF, SILTY, MICACEOUS, SOFT CLAY. SLIGHTLY CARBONACEOUS TO TOP.		
54.900	18.900	CLAY	LIGHT, GREEN, OFF-WHITE, SILTY, SANDY, GRITTY, COMPLETELY WEATHERED, VERY SOFT CLAY, SECONDARY CHLORITE, ABUNDANT, DISSEMINATED, STICKY CLAY. ADDITIONAL FEATURES INCLUDE:MICACEOUS, KAOLINITIC. ANGULAR QUARTZ FRAGMENTS TO BASE. VERY WEATHERED BASEMENT.		
57.540	2.640	SCHIST	GREEN, MICACEOUS, QUARTZOSE, CRYSTALINE, VERY WEATHERED, MODERATELY STRONG ROCK, SECONDARY CHLORITE, ABUNDANT, DISSEMINATED, ACCESSORY WHITE MICA, ABUNDANT, GRAINS. QUARTZ MUSCOVITE CHLORITE SCHIST.		

END OF BORE AT 57.540 M.

0378

CRA

POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN

BORELOGS

ORGN:81
NAME:LRM
TYPE:ROTARY OPEN HOLE
HOLE NUMBER:45
GRID TYPE:AMG
EASTING:578325.000
NORTHING:6299000.000
ACCURACY:APPROXIMATE
DATUM:AHD

COLLAR RL:98.000
SHEET REF:6031-2
INDEX:
TOTAL DEPTH:80.820
COMMENCED:11/06/81
COMPLETED:11/06/81
INCL:90
AZIM:

PARISH:HAMBI
HUNDRED:4
SECTION:
LOG ORGINSATION:CRA
LOGGED BY:MJNF
DRLL CNTRCTR:SIDES
DRILL TYPE:MAYHEW 1000
TECHNIQUE:MUD

CORE SIZE:
GEOPHYS CONTR:GEOEX PTY LTD
WATER LEVEL:14.3
DATE MEASURED:11/06/81
PLUG DEPTHS:
CASED DEPTH:
UNITS:

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 45 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
.000			OPEN HOLE 0.0 TO 80.82M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
2.000	2.000	CLAY AND CALCRETE	90:10. CLAY: LIGHT, ORANGE, YELLOW, SLIGHTLY, SANDY, SOFT CLAY. CALCRETE: CREAM, SANDY, MODERATELY STRONG ROCK.		
10.600	8.600	SILT AND SAND	60:40. SILT: MOTTLED, RED-BROWN, GREY, SANDY, COMPACT SAND. SAND: FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND.		
13.200	2.600	CLAY	MOTTLED, RED-BROWN, GREY, SILTY, FIRM CLAY.		
15.100	1.900	CLAY	GREY-BROWN, SILTY, VERY SOFT CLAY. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, LIGNITIC.		
17.400	2.300	SAND	COARSE GRAINED AND GRANULAR, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, SLIGHTLY LIGNITIC IN MIDDLE.		
17.900	.500	CLAY	GREY-BROWN, SLIGHTLY, LIGNITIC, VERY SOFT CLAY.		
30.600	12.700	SAND	YELLOW, RED, VERY FINE GRAINED, QUARTZOSE. SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:FINE TO GRANULAR GRAINED. THREE PEBBLE BANDS. MACRO UPWARD COARSENING CYCLES.		
32.400	1.800	CLAY	BROWN, LIGNITIC, FIRM CLAY, PLANT FRAGMENTS, SPARSE. GAMMA PEAK.		
64.900	32.500	CLAY	LIGHT, GREY, BUFF, SILTY, SOFT CLAY. ACCESSORY WHITE MICA, COMMON, GRAINS. COMMON ANGULAR BROKEN QUARTZ FRAGMENTS.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 45 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
72.500	7.600	CLAY	LIGHT, GREY, BUFF, SILTY, MICACEOUS, VERY WEATHERED, SOFT CLAY, SECONDARY CHLORITE, ABUNDANT, DISSEMINATED, ACCESSORY WHITE MICA, ABUNDANT, GRAINS, ABUNDANT ANGULAR QUARTZ FRAGMENTS. VERY WEATHERED BASEMENT.		
80.820	8.320	SCHIST	LIGHT, GREY, MICACEOUS, QUARTZOSE, MODERATELY WEATHERED, MODERATELY STRONG ROCK, SECONDARY CHLORITE, ABUNDANT, DISSEMINATED, ACCESSORY WHITE MICA, ABUNDANT, GRAINS. ADDITIONAL FEATURES INCLUDE:ACCESSORY BLACK MICA, ABUNDANT, GRAINS. WEATHERED CHLORITE MICA SCHIST BASEMENT.		

END OF BORE AT 80.820 M.

0382

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:76.000
NAME:LRM	SHEET REF:6031-3
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:46	TOTAL DEPTH:61.310
GRID TYPE:AMG	COMMENCED:12/06/81
EASTING:568630.000	COMPLETED:12/06/81
NORTHING:6309330.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	
PARISH:ULYER	CORE SIZE:
HUNDRED:41	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:6.0
LOG ORGINSATION:CKA	DATE MEASURED:12/06/81
LOGGED BY:MJNF	PLUG DEPTHS:
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 46 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0 TO 61.31M B.O.H. SAMPLES 891021 TO 891036 DESPATCHED ON O.P.O. NO. B 0130 TAKEN OVER INTERVAL 32 TO 64M DRILL DEPTH. ACORRECTED DEPTH FOR TOP OF SAMPLE 891021 IS 30.2M FGAMMA LOG ON GEOEX LOG IS DISPLACED 1.2 TO 1.4M UPWARDS.		
4.900	4.900	SAND AND CALCRETE	60:40. SAND: OFF-WHITE, FINE AND MEDIUM GRAINED, CLAYEY, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND. CALCRETE: CREAM, SANDY, CONCRETIONARY, MODERATELY WEAK ROCK.		
8.700	3.800	CLAY	MOTTLED, RED-BROWN, GREEN, SILTY, SLIGHTLY CARBONACEOUS, FIRM CLAY.		
16.600	7.900	SAND	WHITE, PINK, FINE TO GRANULAR GRAINED, SLIGHTLY CARBONACEOUS, SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND. PEBBLE BAND IN MIDDLE. SOME RED AND YELLOW MOTTLING.		
17.500	.900	SAND	GREY-BROWN, FINE AND MEDIUM GRAINED, LIGNITIC, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND. SPARSE ROOT TRACES IN CLAYEY LIGNITIC MATERIAL.		
20.800	3.300	SAND	GREY, FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. UPWARD COARSENING CYCLE.		
22.200	1.400	CLAY	DARK, BROWN, LIGNITIC, VERY SOFT CLAY.		
24.100	1.900	SAND	GREY, BROWN, FINE AND MEDIUM GRAINED, SLIGHTLY CARBONACEOUS, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
26.000	1.900	LIGNITE	DARK, BROWN, SLIGHTLY, CLAYEY, VERY WEAK ROCK, CARBONACEOUS ROOT TRACES, ABUNDANT.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 46 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
39.800	13.800	SAND	GREY, BROWN, FINE TO COARSE GRAINED, SLIGHTLY CARBONACEOUS, ANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND. THIN LIGNITIC SAND BAND 40CM AT 33.50M. MACRO UPWARD COARSENING CYCLE.		
44.500	4.700	SAND	GREY-BROWN, VERY FINE AND MEDIUM GRAINED, LIGNITIC, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND. LIGNITIC MATERIAL CONCENTRATED MAINLY TO TOP AND WBOTTOM.		
47.000	2.500	SILT	OFF-WHITE, BUFF, CLAYEY, SOFT CLAY.		
53.600	6.600	CLAY	OFF-WHITE, BUFF, SOFT CLAY, STICKY CLAY.		
60.600	7.000	CLAY AND SAND	60:40. CLAY: OFF-WHITE, BUFF, VERY SOFT CLAY, SECONDARY CHLORITE, COMMON, DISSEMINATED, ACCESSORY BLACK MICA, SPARSE, GRAINS. SAND: GREY, VERY FINE AND FINE GRAINED, FELDSPATHIC-QUARTZOSE, ANGULAR GRAINS, POORLY SORTED, LOOSE SAND.		
61.310	.710	SAND AND CLAY	70:30. SAND: GREY, FINE AND MEDIUM GRAINED, FELDSPATHIC-QUARTZOSE, ANGULAR GRAINS, POORLY SORTED, LOOSE SAND. CLAY: LIGHT, GREEN, GREY, MICACEOUS, VERY SOFT CLAY, SECONDARY CHLORITE, ABUNDANT.		

END OF BORE AT 61.310 M.

0386

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN

BORELOGS

ORGN:81
NAME:LRM
TYPE:ROTARY OPEN HOLE
HOLE NUMBER:47
GRID TYPE:AMG
EASTING:553400.000
NORTHING:6304500.000
ACCURACY:APPROXIMATE
DATUM:AHD

COLLAR RL:69.000
SHEET REF:6031-4
INDEX:
TOTAL DEPTH:94.530
COMMENCED:12/06/81
COMPLETED:13/06/81
INCL:90
AZIM:

PARISH:MCINT
HUNDRED:1
SECTION:
LOG ORGINSATION:CRA
LOGGED BY:MJNT
DRLL CNTRCTR:SIDES
DRILL TYPE:MAYHEW 1000
TECHNIQUE:MUD

CORE SIZE:
GEOPHYS CONTR:GEOEX PTY LTD
WATER LEVEL:7.8
DATE MEASURED:13/06/81
PLUG DEPTHS:
CASED DEPTH:
UNITS:

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

0388

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 47 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
.000			OPEN HOLE 0.0 TO 94.53M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
9.400	9.400	SAND	BUFF, GREY, FINE AND MEDIUM GRAINED, QUARTZOSE, SUBANGULAR GRAINS, MODERATELY SORTED, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:RED. CALCRETE TO TOP.		
14.000	4.600	CLAY AND CLAY	80:20. CLAY: SILTY. CLAY.		
16.500	2.500	SAND AND CLAY	70:30. SAND: YELLOW, OFF-WHITE, VERY FINE AND FINE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, LOOSE SAND. CLAY: SILTY.		
20.000	3.500	CLAY AND CLAY	85:15. CLAY. CLAY: SILTY.		
33.400	13.400	CLAY	SLIGHTLY, SILTY.		
37.600	4.200	CLAY	DARK, BROWN, CARBONACEOUS, MICACEOUS.		
48.500	10.900	CLAY	SLIGHTLY, SILTY.		
52.000	3.500	CLAY	DARK, BROWN, SLIGHTLY CARBONACEOUS, MICACEOUS, FIRM CLAY.		
89.700	37.700	CLAY AND CLAY	50:50. CLAY: SILTY. CLAY: LIGHT, GREY-BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
92.500	2.800	CLAY	LIGHT, GREY-BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
94.530	2.030	GRANITE	LIGHT, GREY, OFF-WHITE, FINE GRAINED, QUARTZ-LITHIC, SUBANGULAR TO SUBROUNDED GRAINS, POORLY SORTED, VERY LOOSE SAND, ACCESSORY WHITE MICA, COMMON, GRAINS. GREEN LITHIC AND QUARTZITE FRAGMENTS - QUARTZITE OBASEMENT?.		

END OF BORE AT 94.530 M.

EARTH SCIENCE COMPUTER SERVICES PAGE 54

LRM ROTARY OPEN HOLE 47

0390

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:70.000
NAME:LRM	SHEET REF:6031-3
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:48	TOTAL DEPTH:41.560
GRID TYPE:AMG	COMMENCED:13/06/81
EASTING:558500.000	COMPLETED:13/06/81
NORTHING:6294950.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	
PARISH:SQUIR	CORE SIZE:
HUNDRED:26	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:2.0
LOG ORGINSATION:CRA	DATE MEASURED:13/06/81
LOGGED BY:MJNF	PLUG DEPTHS:
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 48 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
.000			OPEN HOLE 0.0 TO 41.56M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
2.000	2.000	CLAY AND CALCRETE	70:30, CLAY: CREAM, BUFF, SILTY, SLIGHTLY WEATHERED, VERY SOFT CLAY, CALCRETE: CREAM, PINK, SANDY, CONCRETIONARY, MODERATELY STRONG ROCK.		
4.000	2.000	CLAY	RED-BROWN, SILTY, MODERATELY WEATHERED, FIRM CLAY.		
10.000	6.000	SAND	MOTTLED, RED, WHITE, FINE TO COARSE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND.		
10.800	.800	SANDSTONE	WHITE, PINK, MEDIUM AND COARSE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, MODERATELY WEAK ROCK.		
21.700	10.900	SAND	MOTTLED, RED, WHITE, COARSE GRAINED AND GRANULAR, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
28.100	6.400	SANDSTONE	WHITE, PINK, MEDIUM TO GRANULAR GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, MODERATELY WEAK ROCK. CEMENTED SANDSTONE.		
30.900	2.800	CLAY AND SAND	90:10, CLAY: WHITE, SILTY, VERY SOFT CLAY, SAND: YELLOW, PINK, VERY FINE AND FINE GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
33.800	2.900	CLAY	LIGHT, GREEN, MICACEOUS, VERY SOFT CLAY.		
38.000	4.200	SAND	GREEN, VERY FINE AND MEDIUM GRAINED, QUARTZ-LITHIC, MICACEOUS, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. UPWARD FINING CYCLE.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 48 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
40.000	2.000	CLAY AND CLAY	50:50. CLAY: LIGHT, GREEN, SILTY, VERY SOFT CLAY. CLAY: LIGHT, GREEN, VERY SOFT CLAY, SECONDARY CHLORITE, COMMON, DISSEMINATED, ACCESSORY WHITE MICA, COMMON, DISSEMINATED.		
41.560	1.560	SAND AND CLAY	80:20. SAND: GREEN, COARSE GRAINED AND GRANULAR, QUARTZ-LITHIC, MICACEOUS, ANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND. CLAY: GREEN, MICACEOUS, SANDY, GRITTY, VERY SOFT CLAY, SECONDARY CHLORITE, ABUNDANT, DISSEMINATED, ACCESSORY WHITE MICA, ABUNDANT, DISSEMINATED. WEATHERED BASEMENT - CHLORITIC MICA GNEISS?.		

END OF BORE AT 41.560 M.

0394

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:55.000
NAME:LRM	SHEET REF:5931-2
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:49	TOTAL DEPTH:60.490
GRID TYPE:AMG	COMMENCED:13/06/81
EASTING:546450.000	COMPLETED:14/06/81
NORTHING:6305000.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	
PARISH:SQUIR	CORE SIZE:
HUNDRED:63	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:1.9
LOG ORGINSATION:CRA	DATE MEASURED:14/06/81
LOGGED BY:MJNF	PLUG DEPTHS:
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 49 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0 TO 60.49M B.O.H. SAMPLES 891037 TO 891043 DESPATCHED ON D.P.O. NO. RB 0103 TAKEN OVER INTERVALS 28-30, 34-36, 40-42, .46-48, 52-54, 58-60.49M DRILL DEPTH CORRECTED DEPTH FOR TOP OF SAMPLE 891037 IS 27.1M.		
5.500	5.500	SAND AND CALCRETE	70:30. SAND: CREAM, BUFF, FINE TO GRANULAR GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND. CALCRETE: CREAM, BUFF, SANDY, MODERATELY STRONG ROCK.		
10.000	4.500	CLAY AND CLAY	TOWARDS TOP AND BASE OF UNIT: 70:30. CLAY: LIGHT, GREEN-GREY, YELLOW, SILTY, SOFT CLAY. CLAY: LIGHT, GREEN-GREY, GREY-BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY. PLASTIC CLAY.		
15.100	5.100	SAND AND CLAY	85:15. SAND: CREAM, GREY-BROWN, VERY FINE AND FINE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND. CLAY: LIGHT, GREEN-GREY, SILTY, SOFT CLAY. TRACE OF LIGNITIC SAND.		
15.600	.500	CLAY	GREY-BROWN, SILTY, CARBONACEOUS, SOFT CLAY.		
18.700	3.100	SAND	WHITE, GREY-BROWN, VERY FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND. MACRO UPWARD COARSENING CYCLE.		
21.000	2.300	CLAY	BROWN, SLIGHTLY, SILTY, FIRM CLAY. ADDITIONAL FEATURES INCLUDE:LIGNITIC. MORE LIGNITIC TO BASE.		
27.100	6.100	SAND	GREY, VERY FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, WEAKLY CEMENTED SAND. SAND CEMENTED.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 49 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
29.500	2.400	SANDSTONE	GREY, VERY FINE GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, MODERATELY WEAK ROCK. ADDITIONAL FEATURES INCLUDE:FINE TO COARSE GRAINED. CEMENTED SANDSTONE.		
39.100	9.600	CLAY	GREEN, BUFF, SLIGHTLY, SILTY, COMPLETELY WEATHERED, SOFT CLAY, SECONDARY CHLORITE, ABUNDANT, DISSEMINATED, ACCESSORY WHITE MICA, COMMON.		
52.500	13.400	SAND AND CLAY	80:20. SAND: GREY, VERY FINE GRAINED, FELDSPATHIC-QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND. ADDITIONAL FEATURES INCLUDE:FINE TO GRANULAR GRAINED. CLAY: GREEN, BUFF, SILTY, MICACEOUS, COMPLETELY WEATHERED, SOFT CLAY, SECONDARY CHLORITE, ABUNDANT, DISSEMINATED. UPWARD FINING CYCLE TO BASE OF UNIT AND AN UPWARD COARSENING CYCLE IN MIDDLE OF UNIT.		
57.500	5.000	CLAY AND SAND	80:20. CLAY: GREEN-GREY, BUFF, SILTY, MICACEOUS, VERY WEATHERED, VERY SOFT CLAY, SECONDARY CHLORITE, ABUNDANT, DISSEMINATED, ACCESSORY WHITE MICA, ABUNDANT, DISSEMINATED, STICKY CLAY. SAND: GREY, VERY FINE AND FINE GRAINED, FELDSPATHIC-QUARTZOSE, SUBANGULAR GRAINS, MODERATELY SORTED, LOOSE SAND.		
60.490	2.990	GRANITE	GREY, FINE GRAINED, FELDSPATHIC-QUARTZOSE, ANGULAR GRAINS, POORLY SORTED, COMPACT SAND, SECONDARY CHLORITE, COMMON. ABUNDANT CHLORITE SCHIST AND BROKEN ANGULAR QUARTZ FRAGMENTS.		

END OF BORE AT 60.490 M.

EARTH SCIENCE COMPUTER SERVICES

LRM ROTARY OPEN HOLE 49

0399

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

Computer Resources Company

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:60.000
NAME:LRM	SHEET REF:5931-2
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:50	TOTAL DEPTH:95.440
GRID TYPE:AMG	COMMENCED:14/06/81
EASTING:542225.000	COMPLETED:14/06/81
NORTHING:6309800.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	
PARISH:SQUIR	CORE SIZE:
HUNDRED:25	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:7.5
LOG ORGINSATION:CRA	DATE MEASURED:14/06/81
LOGGED BY:MJNF	PLUG DEPTHS:
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 50 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
.000			OPEN HOLE 0.0 TO 95.44M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
3.000	3.000	CLAY AND CALCRETE	70:30. CLAY: CREAM, OFF-WHITE, SILTY, VERY SOFT CLAY. CALCRETE: CREAM, OFF-WHITE, MODERATELY STRONG ROCK.		
5.800	2.800	CLAY	MOTTLED, RED, GREEN, FIRM CLAY.		
39.000	33.200	SAND	WHITE, BROWN, FINE TO COARSE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND. LIGNITIC SAND 40CM AT 31.3M AND 20CM AT 34.3M. MACRO UPWARD FINING CYCLE. CEMENTED TO BASE.		
45.900	6.900	SANDSTONE	OFF-WHITE, BROWN, FINE TO GRANULAR GRAINED, SLIGHTLY, LIGNITIC, SUBROUNDED GRAINS, MODERATELY SORTED, MODERATELY WEAK ROCK. LIGNITIC IN PARTS. CEMENTED.		
55.000	9.100	CLAY	MOTTLED, GREEN, BROWN, SILTY, CARBONACEOUS, FIRM CLAY. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, LIGNITIC. INCREASINGLY LIGNITIC TO BASE.		
67.600	12.600	SAND	GREY, FINE TO GRANULAR GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, WEAKLY CEMENTED SAND. SLIGHTLY CEMENTED.		
74.700	7.100	CLAY AND SAND	70:30. CLAY: BROWN, SILTY, SLIGHTLY CARBONACEOUS, FIRM CLAY. ADDITIONAL FEATURES INCLUDE:MICACEOUS. SAND: GREY, VERY FINE AND MEDIUM GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
91.500	16.800	SAND AND CLAY	90:10. SAND: GREY, FINE TO GRANULAR GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, WEAKLY CEMENTED SAND.		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 50 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			CLAY: LIGHT, GREEN-GREY, SILTY, MICACEOUS, VERY SOFT CLAY. SLIGHTLY CEMENTED.		
95.400	3.900	SAND AND CLAY	70:30. SAND: GREY, MEDIUM TO GRANULAR GRAINED, LITHIC-QUARTZ, SUBANGULAR GRAINS, POORLY SORTED, WEAKLY CEMENTED SAND. CLAY: LIGHT, GREEN-GREY, MICACEOUS, COMPLETELY WEATHERED, VERY SOFT CLAY. GAMMA PEAK - 168CPS - TO BASE.		
95.440	.040	QUARTZITE	VERY STRONG ROCK. BASEMENT.		

END OF BORE AT 95.440 M.

Computer Resources Company

0403

CRA

POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:50.000
NAME:LRM	SHEET REF:5931-2
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:51	TOTAL DEPTH:88.840
GRID TYPE:AMG	COMMENCED:15/06/81
EASTING:536375.000	COMPLETED:15/06/81
NORTHING:6303200.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	
PARISH:SQUIR	CORE SIZE:
HUNDRED:8	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:5.8
LOG ORGINSATION:CRA	DATE MEASURED:15/06/81
LOGGED BY:MJNF	PLUG DEPTHS:0.0 - 88.84M
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 51 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
.000			OPEN HOLE 0.0 TO 88.84M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
4.400	4.400	CLAY AND CALCRETE	70:30. CLAY: LIGHT, PINK, OFF-WHITE, SILTY, VERY SOFT CLAY. CALCRETE: CREAM, PINK, CONCRETIONARY, MODERATELY STRONG ROCK.		
12.400	8.000	SAND	PINK, WHITE, VERY FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND.		
40.400	28.000	SAND	WHITE, BROWN, FINE TO GRANULAR GRAINED, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. FEW SLIGHTLY LIGNITIC BANDS. TWO MACRO UPWARD COARSENING CYCLES.		
41.400	1.000	CLAY	DARK, BROWN, CARBONACEOUS, FIRM CLAY. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, LIGNITIC.		
43.500	2.100	CLAY	BROWN, SLIGHTLY CARBONACEOUS, FIRM CLAY.		
44.300	.800	CLAY	DARK, BROWN, CARBONACEOUS, FIRM CLAY. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, LIGNITIC.		
46.800	2.500	CLAY AND SAND	TOWARDS BASE OF UNIT: 60:40. CLAY: BROWN, GREEN, SLIGHTLY, SILTY, FIRM CLAY. SAND: BROWN, GREY, VERY FINE AND FINE GRAINED, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. SILTY TO TOP UNIT COARSENS TO TOP.		
56.200	9.400	CLAY	BROWN, GREY, MICACEOUS, FIRM CLAY. BECOMES INCREASING SILTY TO BASE.		
61.520	5.320	SAND	BROWN, GREY, VERY FINE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND. ADDITIONAL FEATURES		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 51 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			INCLUDE:FINE TO COARSE GRAINED.		
61.760	.240	LIGNITE	DARK, BROWN, CLAYEY.		
62.280	.520	CLAY	BROWN, CARBONACEOUS.		
63.130	.850	LIGNITE	DARK, BROWN, CLAYEY.		
64.360	1.230	LIGNITE	DARK, BROWN.		
66.520	2.160	CLAY	BROWN, CARBONACEOUS. SLIGHTLY LIGNITIC TO TOP OF UNIT.		
71.900	5.380	CLAY	GREEN, BROWN, SLIGHTLY CARBONACEOUS, FIRM CLAY.		
73.100	1.200	SAND	BROWN, GREY, VERY FINE AND FINE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
73.900	.800	SILT	BROWN, SLIGHTLY CARBONACEOUS, FIRM CLAY.		
74.500	.600	SAND	BROWN, GREY, FINE AND MEDIUM GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
74.900	.400	CLAY	BROWN, SLIGHTLY CARBONACEOUS, FIRM CLAY.		
75.300	.400	LIGNITE	DARK, BROWN, CLAYEY.		
77.200	1.900	CLAY	BROWN, SLIGHTLY CARBONACEOUS, FIRM CLAY.		
78.000	.800	SAND	BROWN, GREY, FINE AND MEDIUM GRAINED, LIGNITIC, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
79.400	1.400	CLAY	BROWN, SLIGHTLY CARBONACEOUS, FIRM CLAY.		
83.000	3.600	SAND	GREY, COARSE TO VERY COARSE GRAINED.		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 51 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
88.840	5.840	SAND AND CLAY	60:40, SAND: GREY, LITHIC-QUARTZ, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND, CLAY: GREEN, MEDIUM TO GRANULAR GRAINED, MICACEOUS, COMPLETELY WEATHERED, VERY SOFT CLAY, SECONDARY CHLORITE, ABUNDANT, DISSEMINATED, ACCESSORY WHITE MICA, ABUNDANT, GRAINS.		

END OF BORE AT 88.840 M.

Computer Resources Company

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:57.000
NAME:LRM	SHEET REF:5931-2
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:52	TOTAL DEPTH:47.120
GRID TYPE:AMG	COMMENCED:16/06/81
EASTING:542225.000	COMPLETED:17/06/81
NORTHING:6295080.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	
PARISH:SQUIR	CORE SIZE:
HUNDRED:18	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:5.5
LOG ORGINSATION:CRA	DATE MEASURED:17/06/81
LOGGED BY:MJNF	PLUG DEPTHS:0.0 - 47.12M
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 52 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
.000			OPEN HOLE 0.0M TO 47.12M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
2.800	2.800	CALCRETE	CREAM, PINK, SANDY, MODERATELY STRONG ROCK.		
6.800	4.000	SAND	ORANGE, CREAM, MEDIUM AND COARSE GRAINED, SILTY, CLAYEY, COMPACT SAND.		
11.400	4.600	SAND	RED, CREAM, FINE TO COARSE GRAINED, SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND. ADDITIONAL FEATURES INCLUDE:YELLOW, WHITE.		
12.100	.700	SILT	YELLOW, GREY, SLIGHTLY, SANDY, COMPACT SAND.		
14.400	2.300	SAND	RED, YELLOW, MEDIUM TO GRANULAR GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:GREY. PEBBLE BAND TO BASE.		
22.700	8.300	SAND	BROWN, MEDIUM TO GRANULAR GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, WEAKLY CEMENTED SAND.		
23.500	.800	SILT	DARK, BROWN, CLAYEY, CARBONACEOUS, SOFT CLAY.		
30.000	6.500	SAND	BROWN, FINE TO GRANULAR GRAINED, SLIGHTLY CARBONACEOUS, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, WEAKLY CEMENTED SAND, UPWARD FINING CYCLE.		
33.900	3.900	CLAY	GREEN-GREY, BUFF, SECONDARY CHLORITE, COMMON, DISSEMINATED.		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 52 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
40.000	6.100	SAND	GREY, VERY FINE AND MEDIUM GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. UPWARD FINING CYCLE.		
42.300	2.300	SILT	GREEN-GREY, BUFF, CLAYEY.		
47.120	4.820	SAND	GREY, FINE TO GRANULAR GRAINED, LITHIC-QUARTZ, FELDSPATHIC, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND. PEBBLE BAND IN MIDDLE.		

END OF BORE AT 47.120 M.

Computer Resources Company

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN

BORELOGS

ORGN:81	COLLAR RL:48.000
NAME:LRM	SHEET REF:5931-2
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:53	TOTAL DEPTH:47.180
GRID TYPE:AMG	COMMENCED:17/06/81
EASTING:540920.000	COMPLETED:17/06/81
NORTHING:6299850.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	

PARISH:SQUIR	CORE SIZE:
HUNDRED:8	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:4.0
LOG ORGINSATION:CRA	DATE MEASURED:17/06/81
LOGGED BY:MJNF	PLUG DEPTHS:0.0 - 47.18M
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 53 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0M TO 47.18M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS HOLE OEFLECTED ON ENTERING HARD BASEMENT DENSITY PROBE COULD NOT PENETRATE BELOW 33M.		
5.100	5.100	CALCRETE AND CLAY	80:20. CALCRETE: LIGHT, GREEN, BROWN, SANDY, CONCRETIONARY, STRONG ROCK. CLAY: LIGHT, GREEN, BROWN, SLIGHTLY, SANDY, SOFT CLAY.		
9.200	4.100	CLAY	GREEN, FIRM CLAY. SLIGHT YELLOW MOTTLING. SLIGHTLY SILTY IN PARTS.		
15.000	5.800	SAND AND CLAY	60:40. SAND: WHITE, GREY, FINE AND MEDIUM GRAINEO, MODERATELY SORTED, COMPACT SAND. AOOITIONAL FEATURES INCLUOE:COARSE TO VERY COARSE GRAINED. CLAY. SLIGHTLY SILTY TO BASE.		
25.100	10.100	SAND, SILT	80:20. SAND: LIGHT, GREY, BROWN, FINE TO GRANULAR GRAINED, QUARTZOSE, SLIGHTLY CARBONACEOUS, ROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND. SILT: DARK, BROWN, CARBONACEOUS, CLAYEY, FIRM CLAY, ROOT TRACES, COMMON. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, LIGNITIC.		
31.300	6.200	SAND AND CLAY	60:40. SANO: LIGHT, BROWN, VERY FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. CLAY: BROWN, FIRM CLAY. SILTY TO BASE.		
33.700	2.400	SAND AND SILT	50:50. SANO: LIGHT, BROWN, FINE TO COARSE GRAINED, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. SILT: BROWN, MICACEOUS, FIRM CLAY. FEW PEBBLES TO BASE.		
47.180	13.480	CLAY ANO SAND	80:20. CLAY: GREEN-GREY, SANDY, GRITTY, COMPLETELY WEATHERED, FIRM CLAY, SECONDARY CHLORITE, COMMON, DISSEMINATEO. SAND: GREY, FINE TO GRANULAR GRAINED, FELDSPATHIC-QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, VERY LOOSE SAND. WEATHERED BASEMENT. UNIT FINES UPWARDS.		

Computer Resources Company

END OF BORE AT 47.180 M.

EARTH SCIENCE COMPUTER SERVICES

LRM ROTARY OPEN HOLE 53

Computer Resources Company

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN

BORELOGS

ORGN:81
NAME:LRM
TYPE:ROTARY OPEN HOLE
HOLE NUMBER:54
GRID TYPE:AMG
EASTING:536800.000
NORTHING:6299210.000
ACCURACY:APPROXIMATE
DATUM:AHD

COLLAR RL:49.000
SHEET REF:5931-2
INDEX:
TOTAL DEPTH:44.390
COMMENCED:18/06/81
COMPLETED:18/06/81
INCL:90
AZIM:

PARISH:SQUIR
HUNDRED:8
SECTION:
LOG ORGINSATION:CRA
LOGGED BY:MJNF
DRLL CNTRCTR:SIDES
DRILL TYPE:MAYHEW 1000
TECHNIQUE:MUD

CORE SIZE:
GEOPHYS CONTR:GEOEX PTY LTD
WATER LEVEL:2.2
DATE MEASURED:18/06/81
PLUG DEPTHS:0.0 - 44.39M
CASED DEPTH:
UNITS:

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 54 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0 TO 44.39M B.O.H. SAMPLES 891044 TO 891045 DESPATCHED ON D.P.O. NO. T0130 TAKEN OVER INTERVALS 38-40M AND 40-42M DRILL LDEPTH CORRECTED DEPTH FOR TOP OF SAMPLE 891044 IS 36.0M.		
3.000	3.000	CALCRETE	ORANGE, PINK, SANDY, PORCELLANOUS, STRONG ROCK.		
7.000	4.000	SAND AND SILT	80:20. SAND: VERY FINE AND MEDIUM GRAINED. SILT: LIGHT, GREEN, OFF-WHITE, SANDY, LOOSE SAND.		
9.800	2.800	CLAY	MOTTLED, GREEN, YELLOW, SILTY, FIRM CLAY.		
12.600	2.800	SAND AND CLAY	70:30. SAND: MOTTLED, GREEN, YELLOW, VERY FINE AND FINE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND. CLAY: MOTTLED, GREEN, YELLOW, SILTY, FIRM CLAY.		
18.400	5.800	SAND	YELLOW, RED, FINE TO COARSE GRAINED, MICACEOUS, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:OFF-WHITE. UPWARD COARSENING CYCLE TO BASE OF UNIT.		
20.100	1.700	SILT	YELLOW, GREY, SANDY, COMPACT SAND, FINELY LAMINATED. ADDITIONAL FEATURES INCLUDE:RED.		
22.200	2.100	SAND	GREY-BROWN, VERY FINE AND FINE GRAINED, SLIGHTLY, LIGNITIC, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:QUARTZOSE. UPWARD COARSENING CYCLE TO BASE OF UNIT.		
23.000	.800	PEBBLE CONGLOMERATE	YELLOW, GREY, PEBBLY, QUARTZOSE, ROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 54 LISTED ON 20/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
36.000	13.000	CLAY	DARK, BROWN, MICACEOUS, CARBONACEOUS, FIRM CLAY. SLIGHTLY LIGNITIC IN PARTS.		
39.600	3.600	SILT	LIGHT, CREAM, GREEN, CLAYEY, MICACEOUS, FIRM CLAY.		
42.200	2.600	CLAY	LIGHT, BUFF, GREEN, MICACEOUS, VERY WEATHERED, FIRM CLAY, SECONDARY CHLORITE, COMMON.		
44.390	2.190	SAND	GREY, FINE TO COARSE GRAINED, LITHIC-QUARTZ, FELDSPATHIC, COMPLETELY WEATHERED, VERY LOOSE SAND. AODITIONAL FEATURES INCLUDE:SLIGHTLY, CLAYEY, MICACEOUS.		

Computer Resources Company

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EARTH SCIENCE COMPUTER SERVICES

Computer Resources Company

END OF OUTPUT

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:42.000
NAME:LRM	SHEET REF:5931-2
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:55	TOTAL DEPTH:50.360
GRID TYPE:AMG	COMMENCED:18/06/81
EASTING:535600.000	COMPLETED:18/06/81
NORTHING:6293800.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	
PARISH:SQUIR	CORE SIZE:
HUNDRED:4	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:3.0
LOG ORGINSATION:CRA	DATE MEASURED:18/06/81
LOGGED BY:MJNF	PLUG DEPTHS:0.0 - 50.05M
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 55 LISTED ON 16/10/81

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

LRM ROTARY OPEN HOLE 55

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 55 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0 TO 50.36M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
3.300	3.300	CALCRETE	CREAM, PINK, SANDY, MODERATELY STRONG ROCK.		
7.300	4.000	CLAY	MOTTLED, ORANGE, CREAM, SILTY, SOFT CLAY.		
10.800	3.500	SAND	MOTTLED, RED, CREAM, VERY FINE AND MEDIUM GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. MACRO UPWARD FINING CYCLE.		
11.800	1.000	SILT AND SAND	50:50. SILT: MOTTLED, RED, CREAM, LOOSE SAND. SAND: MOTTLED, RED, CREAM, VERY FINE GRAINED, MODERATELY SORTED, LOOSE SAND.		
17.600	5.800	SAND	DARK, BROWN, OFF-WHITE, FINE TO COARSE GRAINED, CARBONACEOUS, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, LIGNITIC. UPWARD COARSENING CYCLE.		
26.800	9.200	SAND	DARK, BROWN, FINE TO COARSE GRAINED, CARBONACEOUS, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, LIGNITIC. UPWARD FINING CYCLE. SILTSTONE BAND AT TOP.		
27.600	.800	SILT			
30.000	2.400	SAND	DARK, BROWN, VERY FINE AND MEDIUM GRAINED, CARBONACEOUS, LIGNITIC, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. UPWARD COARSENING CYCLE. GAMMA PEAK BETWEEN 28.6 LAND 29.9M OF GREATER THAN 350 C.P.S..		
34.400	4.400	SILT	GREY, BUFF, SANDY, MICACEOUS, LOOSE SAND.		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 55 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
50.360	15.960	SAND	LIGHT, GREEN-GREY, BUFF, FINE TO COARSE GRAINED, MICACEOUS, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, COMPLETELY WEATHERED, LOOSE SAND, SECONDARY CHLORITE, ABUNDANT, DISSEMINATED, ACCESSORY WHITE MICA, ABUNDANT, GRAINS. UNIT FINES TO TOP. WEATHERED BASEMENT..		

END OF BORE AT 50.360 M.

Computer Processed Company

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:47.000
NAME:LRM	SHEET REF:5930-1
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:56	TOTAL DEPTH:122.500
GRID TYPE:TRANSVERSE MECATOR	COMMENCED:23/06/81
EASTING:533830.000	COMPLETED:27/06/81
NORTHING:857370.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:MSL	
PARISH:SQUIR	CORE SIZE:
HUNDRED:19	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:5.4
LOG ORGINSATION:CRA	DATE MEASURED:27/06/81
LOGGED BY:MJNF	PLUG DEPTHS:0.0-120.29M
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

PDLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 56 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0M TO 120.50M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
5.000	5.000	CALCRETE	PINK, BUFF, SANDY, MODERATELY STRONG ROCK. CALCARENITE.		
7.200	2.200	CALCRETE AND CLAY	80:20. CALCRETE: CREAM, OFF-WHITE, SANDY, MODERATELY STRONG ROCK. CLAY: CREAM, OFF-WHITE, SILTY, SOFT CLAY.		
10.800	3.600	SAND	MOTTLED, CREAM, GREEN, VERY FINE AND MEDIUM GRAINED, CLAYEY, VERY LOOSE SAND. ADDITIONAL FEATURES INCLUDE:RED, YELLOW. CLAY MATRIX.		
15.600	4.800	SAND	RED, YELLOW, FINE TO COARSE GRAINED, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:GREEN, PURPLE, VERY COARSE GRAINED. UPWARD COARSENING CYCLE.		
17.300	1.700	CLAY	GREEN, BLUE, SOFT CLAY.		
29.600	12.300	SAND	DARK, BROWN, VERY FINE AND MEDIUM GRAINED, SLIGHTLY CARBONACEOUS, SUBRDUNDED GRAINS, WELL SORTED, LOOSE SAND. SLIGHTLY LIGNITIC BANDS. MACRO UPWARDS COARSENING NCYCLE TO MIDDLE.		
35.900	6.300	SAND	BUFF, GREY, FINE TO COARSE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND. MACRO UPWARD FINING CYCLE TO TOP.		
46.560	10.660	SAND	BUFF, GREY, VERY FINE AND MEDIUM GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND.		
48.680	2.120	LIGNITE	DARK, BROWN, SOFT CLAY.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 56 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
49.030	.350	CLAY	DARK, BROWN, LIGNITIC, SILTY, FIRM CLAY.		
49.330	.300	LIGNITE	DARK, BROWN, SLIGHTLY, SILTY, SOFT CLAY.		
50.070	.740	SAND	BROWN, FINE TO COARSE GRAINED, SLIGHTLY CARBONACEOUS, SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND.		
51.130	1.060	LIGNITE	DARK, BROWN, SOFT CLAY.		
58.000	6.870	SAND	BROWN, VERY FINE AND FINE GRAINED, SLIGHTLY CARBONACEOUS, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
61.300	3.300	SAND	GREY, MEDIUM TO GRANULAR GRAINED, LITHIC-QUARTZ, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. TWO PEBBLE BANDS.		
62.600	1.300	SAND	GREY, VERY FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
65.800	3.200	CLAY	BROWN, FIRM CLAY. CARBONACEOUS BANDS TO TOP AND MIDDLE.		
68.200	2.400	SILT AND SAND	60:40. SILT: SANDY. SAND: GREY, VERY FINE GRAINED, QUARTZOSE, MODERATELY SORTED, LOOSE SAND.		
71.670	3.470	CLAY	BROWN, SILTY, FIRM CLAY, COARSENING UPWARDS. SLIGHTLY CARBONACEOUS BANDS.		
72.770	1.100	CLAY	DARK, BROWN, CARBONACEOUS, SOFT CLAY. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, LIGNITIC.		
73.460	.690	CLAY	DARK, BROWN, LIGNITIC, SOFT CLAY.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 56 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
73.940	.480	CLAY	DARK, BROWN, SLIGHTLY, LIGNITIC, SOFT CLAY.		
74.220	.280	CLAY	DARK, BROWN, LIGNITIC, SOFT CLAY.		
74.740	.520	CLAY	DARK, BROWN, CARBONACEOUS, SOFT CLAY. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, LIGNITIC.		
89.600	14.860	SAND AND SILT	90:10. SAND: GREY, VERY FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND. SILT: LIGHT, GREY, BUFF, SANDY, LOOSE SAND.		
94.800	5.200	CLAY AND SILT	80:20. CLAY: BROWN, SOFT CLAY. CARBONACEOUS BANDS. SILT: BROWN, CLAYEY, SOFT CLAY.		
97.200	2.400	SAND AND CLAY	60:40. SAND: LIGHT, GREY-BROWN, VERY FINE AND FINE GRAINED, QUARTZO-FELDSPATHIC, SUBANGULAR GRAINS, VERY LOOSE SAND. CLAY: BROWN, CARBONACEOUS, SOFT CLAY.		
100.300	3.100	SAND	LIGHT, GREY-BROWN, MEDIUM AND COARSE GRAINED, QUARTZO-FELDSPATHIC, SUBANGULAR GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
101.560	1.260	CLAY	BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
102.500	.940	SAND	LIGHT, GREY-BROWN, MEDIUM GRAINED, SUBANGULAR GRAINS, WELL SORTED, VERY LOOSE SAND.		
103.620	1.120	CLAY	BROWN, CARBONACEOUS, SOFT CLAY.		
105.340	1.720	CLAY	BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY.		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 56 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
107.080	1.740	SAND	LIGHT, GREY-BROWN, MEDIUM AND COARSE GRAINED, SUBANGULAR GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
107.850	.770	LIGNITE	DARK, BROWN, SOFT CLAY.		
108.240	.390	CLAY	BROWN, CARBONACEOUS, SOFT CLAY.		
110.600	2.360	SAND	LIGHT, GREY-BROWN, FINE TO COARSE GRAINED, SUBANGULAR GRAINS, WELL SORTED, VERY LOOSE SAND.		
112.100	1.500	CLAY AND CLAY	70:30. CLAY: BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY. CLAY: LIGHT, BROWN, SOFT CLAY.		
113.200	1.100	SAND AND CLAY	50:50. SAND: FINE TO COARSE GRAINED, WELL SORTED. CLAY.		
			---TOP OF BOORTHANA FORMATION 113.200 M--		
120.500	7.300	SAND	GREEN, FINE TO GRANULAR GRAINED, CLAYEY, FELDSPATHIC-QUARTZOSE, ANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED. WEATHERED FELDSPAR GRANITE AND METAMORPHIC FRAGMENTS. CLAYEY MATRIX..	BOORTHANA FORMATION	
			---BASE OF BOORTHANA FORMATION 120.500 M--		
			-------GEOLOGICAL THICKNESS 7.300 M-----		

END OF BORE AT 120.500 M.

Computer Resources Company

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:66.000
NAME:LRM	SHEET REF:5930-1
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:57	TOTAL DEPTH:72.720
GRID TYPE:TRANSVERSE MECATOR	COMMENCED:28/06/81
EASTING:333800.000	COMPLETED:29/06/81
NORTHING:854050.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:MSL	
PARISH:SQUIR	CORE SIZE:
HUNDRED:1	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:11.0
LOG ORGINSATION:CRA	DATE MEASURED:29/06/81
LOGGED BY:MJNF	PLUG DEPTHS:0.0 - 72.72M
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 57 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0M TO 72.72M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
2.000	2.000	CALCRETE	CREAM, PINK.		
16.800	14.800	SAND	RED, CREAM, FINE TO GRANULAR GRAINED, QUARTZOSE, FELDSPATHIC, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:YELLOW, ANGULAR GRAINS, SLIGHTLY CLAYEY MATRIX ESPECIALLY TO TOP, ANGULAR FELDSPAR GRAINS, SUB-ROUNDED TO ROUNDED QUARTZ PEBBLES.		
21.400	4.600	CLAY	GREY-BROWN, BUFF, SLIGHTLY, MICACEOUS, SOFT CLAY. ADDITIONAL FEATURES INCLUDE:WHITE, PLASTIC CLAY. SLIGHTLY SILTY IN PARTS.		
33.080	11.680	SAND	YELLOW, GREY, MEDIUM TO GRANULAR GRAINED, LITHIC-QUARTZ, FELDSPATHIC-QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
34.640	1.560	CLAY	GREY-BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, MICACEOUS.		
35.280	.640	LIGNITE	BROWN, SOFT CLAY.		
35.700	.420	CLAY	GREY, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
35.960	.260	CLAY	GREY-BROWN, CARBONACEOUS, SOFT CLAY.		
36.540	.580	CLAY	GREY, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
47.500	10.960	SILT AND SILT	70:30, SILT: GREY-BROWN, SLIGHTLY, SANDY, LOOSE SAND, SECONDARY CHLORITE, COMMON, DISSEMINATED, ACCESSORY WHITE MICA.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 57 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			COMMON, GRAINS. ADDITIONAL FEATURES INCLUDE:MICACEOUS. SILT: BROWN, GREY-BROWN, CLAYEY, MICACEOUS, SOFT CLAY.		
50.770	3.270	SAND	GREY, MEDIUM AND VERY COARSE GRAINED, QUARTZOSE, MICACEOUS, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
53.350	2.580	CLAY	GREY-BROWN, MICACEOUS, FIRM CLAY, CARBONACEOUS FLECKS, COMMON. CARBONACEOUS BANDS AND SLIGHTLY SILTY BANDS.		
54.580	1.230	LIGNITE	DARK, BROWN, CLAYEY, SOFT CLAY.		
57.290	2.710	SAND	BROWN, GREY, FINE TO GRANULAR GRAINED, QUARTZOSE, SLIGHTLY CARBONACEOUS, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. UPWARD FINING CYCLE.		
57.630	.340	SILT	BROWN, CARBONACEOUS, SOFT CLAY.		
60.660	3.030	SAND	GREY, MEDIUM TO GRANULAR GRAINED, QUARTZO-FELDSPATHIC, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. UPWARD FINING CYCLE.		
61.240	.580	CLAY	DARK, BROWN, LIGNITIC, SOFT CLAY.		
72.200	10.960	SAND	GREY, VERY FINE AND FINE GRAINED, QUARTZO-FELDSPATHIC, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND, FINING UPWARDS. ADDITIONAL FEATURES INCLUDE:FINE TO COARSE GRAINED. ? BASEMENT GRAVEL.		
72.720	.520	CLAY	LIGHT, GREEN, WHITE, SANDY, FELDSPATHIC-QUARTZOSE, STIFF CLAY. PERMIAN BASEMENT.		

END OF BORE AT 72.720 M.

Computer Resource Company

EARTH SCIENCE COMPUTER SERVICES

LRM ROTARY OPEN HOLE 57

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:89.000
NAME:LRM	SHEET REF:5930-1
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:58	TOTAL DEPTH:50.050
GRID TYPE:TRANSVERSE MECATOR	COMMENCED:30/06/81
EASTING:333767.000	COMPLETED:30/06/81
NORTHING:851000.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:MSL	
PARISH:SQUIR	CORE SIZE:
HUNDRED:1	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:1.4
LOG ORGINSATION:CRA	DATE MEASURED:30/06/81
LOGGED BY:MJNF	PLUG DEPTHS:0.0 - 50.05M
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 58 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
.000			OPEN HOLE 0.0M TO 50.05M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
3.500	3.500	CALCRETE	PINK, CREAM, SANDY, MODERATELY STRONG ROCK.		
7.400	3.900	SAND	PINK, CREAM, FINE TO COARSE GRAINED, WELL SORTED, COMPACT SAND. CLAYEY MATRIX. MACRO UPWARD COARSENING CYCLE.		
10.200	2.800	SILT	MOTTLED, GREEN, RED, CLAYEY, FIRM CLAY.		
12.500	2.300	SILT	MOTTLED, RED, CREAM, SANDY, COMPACT SAND, FINING UPWARDS.		
14.200	1.700	CLAY	MOTTLED, RED, GREEN, FIRM CLAY.		
26.800	12.600	SAND	PINK, RED, MEDIUM TO GRANULAR GRAINED, FERRUGINOUS, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, WEAKLY CEMENTED SAND, SECONDARY IRON OXIDE, COMMON, STAINING. PEBBLE BANDS.		
34.300	7.500	SANDSTONE	OFF-WHITE, PINK, MEDIUM TO GRANULAR GRAINED, FERRUGINOUS, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, MODERATELY WEAK ROCK, SECONDARY IRON OXIDE, COMMON, STAINING. PEBBLE BANDS.		
38.300	4.000	SILT	OFF-WHITE, YELLOW, CLAYEY, FIRM CLAY.		
50.050	11.750	CLAY	GREEN-GREY, BROWN, MICACEOUS, FIRM CLAY, SECONDARY CHLORITE, COMMON, DISSEMINATED, ACCESSORY WHITE MICA, COMMON, GRAINS. SILTY IN PARTS. FEW QUARTZ AND FELDSPAR GRAINS.		

END OF BORE AT 50.050 M.

Computer Resources Company

EARTH SCIENCE COMPUTER SERVICES

LRM ROTARY OPEN HOLE 58

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:85.000
NAME:LRM	SHEET REF:5930-1N
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:59	TOTAL DEPTH:152.000
GRID TYPE:TRANSVERSE MECATOR	COMMENCED:01/07/81
EASTING:337133.000	COMPLETED:03/07/81
NORTHING:850967.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:MSL	
PARISH:SQUIR	CORE SIZE:
HUNDRED:1	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:8.9
LOG ORGINSATION:CRA	DATE MEASURED:03/07/81
LOGGED BY:MJNF	PLUG DEPTHS:0.0 - 152M
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 59 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
.000			OPEN HOLE 0.0M TO 152M B.O.H. S.A.D.M.E. SAMPLES TAKEN.		
2.000	2.000	CALCRETE	LIGHT, YELLOW, SANDY, MODERATELY STRONG ROCK.		
7.000	5.000	SAND	YELLOW, FINE AND MEDIUM GRAINED, CALCAREOUS, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
10.400	3.400	SAND	LIGHT, YELLOW, MEDIUM TO GRANULAR GRAINED, CALCAREOUS, SUBROUNDED GRAINS, MODERATELY SORTED, WEAKLY CEMENTED SAND.		
12.700	2.300	CLAY	RED-BROWN, SILTY, FIRM CLAY. SILTY MAINLY TO BASE.		
31.200	18.500	SAND	CREAM, YELLOW, COARSE GRAINED AND GRANULAR, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND. PEBBLE BANDS.		
35.000	3.800	SAND AND CLAY	70:30. SAND: CREAM, YELLOW, COARSE GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND. CLAY: SLIGHTLY, SILTY.		
44.400	9.400	CLAY AND SILT	80:20. CLAY: LIGHT, GREY-BROWN, SLIGHTLY, SILTY, SOFT CLAY. ADDITIONAL FEATURES INCLUDE:MICACEOUS. SILT: LIGHT, GREY-BROWN, CLAYEY, MICACEOUS, SOFT CLAY.		
52.100	7.700	CLAY AND SILT	60:40. CLAY: LIGHT, GREY-BROWN, SILTY, SOFT CLAY. SILT: GREY, YELLOW, SLIGHTLY, CLAYEY, SOFT CLAY.		
62.500	10.400	SAND	GREY, FINE TO COARSE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND, SECONDARY PYRITE, SPARSE,		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 59 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			CONCRETIONS, ACCESSORY WHITE MICA, COMMON, GRAINS, TWO MACRO UPWARD COARSENING CYCLES, SILT BAND AT BASE OF UPPER CYCLE..		
62.960	.460	LIGNITE	DARK, BROWN, CLAYEY, SOFT CLAY.		
68.500	5.540	CLAY AND SILT	60:40. CLAY: LIGHT, GREY-BROWN, SLIGHTLY, SILTY, SOFT CLAY. SILT: LIGHT, GREY-BROWN, SLIGHTLY, CLAYEY, SOFT CLAY.		
71.830	3.330	SAND	GREY, MEDIUM GRAINED, QUARTZOSE, MICACEOUS, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND, FINING UPWARDS, SILTY TO TOP.		
72.080	.250	CLAY	BROWN, CARBONACEOUS, MICACEOUS, SOFT CLAY.		
75.010	2.930	CLAY	BROWN, MICACEOUS, SOFT CLAY.		
76.300	1.290	CLAY	GREY-BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
76.740	.440	LIGNITE	DARK, BROWN, CLAYEY, SOFT CLAY.		
77.140	.400	CLAY	GREY-BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
77.890	.750	LIGNITE	DARK, BROWN, CLAYEY, SOFT CLAY.		
78.360	.470	CLAY	GREY-BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
78.790	.430	CLAY	GREY-BROWN, CARBONACEOUS, SOFT CLAY.		
80.100	1.310	CLAY	GREY-BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 59 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
85.550	5.450	SAND	GREY-BROWN, FINE AND MEDIUM GRAINED, QUARTZOSE, MICACEOUS, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
86.910	1.360	LIGNITE	DARK, BROWN, SLIGHTLY, CLAYEY, SOFT CLAY.		
87.530	.620	SILT	BROWN, SOFT CLAY.		
88.620	1.090	LIGNITE	DARK, BROWN, CLAYEY, SOFT CLAY.		
89.370	.750	SILT	BROWN, SOFT CLAY.		
89.630	.260	CLAY	BROWN, CARBONACEOUS, SOFT CLAY.		
90.160	.530	SILT	BROWN, SOFT CLAY.		
90.950	.790	LIGNITE	DARK, BROWN, CLAYEY, SOFT CLAY.		
99.000	8.050	SAND	GREY, FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND.		
105.500	6.500	CLAY	GREY-BROWN, FIRM CLAY, SILTY BANDS.		
106.590	1.090	CLAY	GREY-BROWN, BROWN, SLIGHTLY CARBONACEOUS, FIRM CLAY.		
113.590	7.000	SAND	GREY, MEDIUM AND COARSE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND.		
115.200	1.610	CLAY	GREY-BROWN, SOFT CLAY.		
116.230	1.030	SAND	GREY, VERY FINE AND FINE GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
116.700	.470	CLAY	GREY-BROWN, SOFT CLAY.		
117.420	.720	CLAY	BROWN, SILTY, SOFT CLAY.		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 59 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
117.710	.290	CLAY	GREY-BROWN, SOFT CLAY.		
118.510	.800	SILT	GREY-BROWN, SANDY, SOFT CLAY.		
119.270	.760	CLAY	BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
121.200	1.930	LIGNITE	DARK, BROWN, SOFT CLAY.		
121.550	.350	CLAY	BROWN, CARBONACEOUS, SOFT CLAY.		
129.350	7.800	SAND AND CLAY	70:30, SAND: GREY, VERY FINE AND MEDIUM GRAINED, QUARTZOSE, MICACEOUS, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND, COARSENING UPWARDS, CLAY: SLIGHTLY, SILTY, SOFT CLAY, CARBONACEOUS FLECKS, COMMON.		
129.600	.250	LIGNITE	DARK, BROWN, SLIGHTLY, CLAYEY, VERY WEAK ROCK.		
130.450	.850	SAND	FINE AND MEDIUM GRAINED.		
130.540	.090	LIGNITE	DARK, BROWN, VERY WEAK ROCK.		
131.040	.500	CLAY	BROWN, LIGNITIC, SOFT CLAY.		
131.400	.360	LIGNITE	DARK, BROWN, SLIGHTLY, CLAYEY, VERY WEAK ROCK.		
132.060	.660	SAND	GREY, FINE AND MEDIUM GRAINED.		
132.570	.510	CLAY	GREY, SOFT CLAY.		
133.780	1.210	SILT	GREY, SOFT CLAY.		
134.000	.220	CLAY	BROWN, SLIGHTLY, LIGNITIC, SOFT CLAY.		
134.290	.290	CLAY	BROWN, CARBONACEOUS, SOFT CLAY.		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 59 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
134.470	.180	CLAY	BROWN, SLIGHTLY, LIGNITIC, SOFT CLAY.		
136.100	1.630	SILT	GREY, SLIGHTLY, CLAYEY, SOFT CLAY.		
140.000	3.900	SAND	GREY, MEDIUM AND COARSE GRAINED, QUARTZOSE, WELL SORTED, LOOSE SAND.		
140.690	.690	SILT			
140.990	.300	CLAY	BROWN, SLIGHTLY, LIGNITIC, VERY SOFT CLAY.		
142.870	1.880	CLAY	LIGHT, BROWN, SILTY, VERY SOFT CLAY.		
143.160	.290	CLAY	BROWN, SLIGHTLY CARBONACEOUS, VERY SOFT CLAY.		
144.440	1.280	CLAY	LIGHT, BROWN, VERY SOFT CLAY.		
144.720	.280	CLAY	BROWN, SLIGHTLY, LIGNITIC, VERY SOFT CLAY.		
150.000	5.280	SAND AND CLAY	50:50, SAND: VERY FINE AND FINE GRAINED. CLAY: BROWN, SLIGHTLY CARBONACEOUS, VERY SOFT CLAY, SLIGHTLY LIGNITIC TO BASE.		
152.000	2.000	SAND	GREEN, FINE AND MEDIUM GRAINED, CLAYEY, SILTY, POORLY SORTED, WEAKLY CEMENTED SAND. ADDITIONAL FEATURES INCLUDE:FELDSPATHIC. ? PERMIAN DIAMICTITE BASEMENT.		

END OF BORE AT 152.000 M.

Computer Resources Company

0449

CRA

POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:110.000
NAME:LRM	SHEET REF:6130-4
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:60	TOTAL DEPTH:282.000
GRID TYPE:AMG	COMMENCED:09/07/81
EASTING:535600.000	COMPLETED:11/07/81
NORTHING:6293800.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	
PARISH:SMEAT	CORE SIZE:
HUNDRED:70	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:27.5
LOG ORGINSATION:CHA	DATE MEASURED:11/07/81
LOGGED BY:MJNF	PLUG DEPTHS:
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 60 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
.000			OPEN HOLE 0.0M TO 282M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
19.700	19.700	CLAY AND SAND	60:40. CLAY: MOTTLED, RED-BROWN, YELLOW, SILTY, FIRM CLAY. SAND: YELLOW, RED-BROWN, FINE TO COARSE GRAINED, LITHIC, MODERATELY SORTED.		
30.900	11.200	SAND	ORANGE, RED, MEDIUM TO GRANULAR GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND.		
32.600	1.700	SAND	ORANGE, RED, FINE AND MEDIUM GRAINED, CARBONACEOUS, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND. ADDITIONAL FEATURES INCLUDE:WHITE.		
36.000	3.400	CLAY AND SAND	70:30. CLAY: GREY, SILTY, FIRM CLAY. SAND: WHITE, GREY, VERY FINE AND MEDIUM GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED.		
52.300	16.300	CLAY AND SAND	70:30. CLAY: MOTTLED, GREEN, RED, SANDY, FIRM CLAY, SECONDARY IRON OXIDE, COMMON, STAINING. SAND: VERY FINE AND FINE GRAINED, WELL SORTED. SAND FINES TO TOP OF UNIT.		
53.600	1.300	SAND	MEDIUM AND COARSE GRAINED, MODERATELY SORTED.		
70.000	16.400	CLAY AND SAND	80:20. CLAY: GREEN, YELLOW, FIRM CLAY. SILTY TO TOP OF UNIT. SAND: VERY FINE AND MEDIUM GRAINED. SAND FINES TO TOP OF UNIT.		
81.000	11.000	CLAY	GREEN, FIRM CLAY.		
87.400	6.400	SAND AND CLAY	60:40. SAND: GREEN-GREY, FINE TO COARSE		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 60 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND. CLAY: GREEN, DARK GREY, FIRM CLAY.		
97.160	9.760	CLAY AND SAND	50:50. CLAY: DARK, GREEN-GREY, FIRM CLAY. SILTY IN PARTS. SAND: GREEN-GREY, VERY FINE AND FINE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND.		
98.520	1.360	CLAY	SLIGHTLY, LIGNITIC.		
99.230	.710	CLAY	CARBONACEOUS.		
101.200	1.970	CLAY	SLIGHTLY, LIGNITIC. ADDITIONAL FEATURES INCLUDE:CARBONACEOUS, BANDS.		
102.700	1.500	SAND	VERY FINE AND FINE GRAINED, MODERATELY SORTED.		
104.390	1.690	CLAY	LIGNITIC.		
104.800	.410	CLAY	CARBONACEOUS.		
106.500	1.700	CLAY	LIGNITIC.		
107.250	.750	CLAY	CARBONACEOUS.		
108.080	.830	CLAY	SLIGHTLY, LIGNITIC.		
108.670	.590	CLAY	SLIGHTLY CARBONACEOUS. CARBONACEOUS BANDS TO BASE.		
128.000	19.330	SAND AND CLAY	60:40. SAND: WHITE, FINE TO COARSE GRAINED, QUARTZO-FELDSPATHIC, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND, FINING UPWARDS. CLAY: GREEN-GREY, GREY, SILTY, BANDS, SOFT CLAY.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 60 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
129.900	1.900	SAND	WHITE, MEDIUM AND COARSE GRAINED, QUARTZO-FELDSPATHIC, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
130.700	.800	SAND AND CLAY	50:50, SAND: WHITE, VERY FINE AND FINE GRAINED, QUARTZO-FELDSPATHIC, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND. CLAY.		
133.500	2.800	CLAY			
134.360	.860	SAND	WHITE, FINE TO COARSE GRAINED, QUARTZO-FELDSPATHIC, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
134.910	.550	LIGNITE	CLAYEY.		
137.100	2.190	SAND AND SILT	70:30, SAND: WHITE, FINE TO COARSE GRAINED, QUARTZO-FELDSPATHIC, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND. SILT.		
137.440	.340	CLAY	LIGNITIC.		
138.220	.780	SILT	SLIGHTLY, SANDY. ADDITIONAL FEATURES INCLUDE:SLIGHTLY CARBONACEOUS.		
138.790	.570	CLAY			
140.000	1.210	SAND	OFF-WHITE, MEDIUM AND COARSE GRAINED, QUARTZO-FELDSPATHIC, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
143.100	3.100	SAND AND SILT	60:40, SAND: OFF-WHITE, VERY FINE AND FINE GRAINED, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND, COARSENING UPWARDS. SILT.		
143.340	.240	CLAY	LIGNITIC.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 60 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
144.260	.920	SILT	SLIGHTLY, SANDY.		
144.900	.640	CLAY	LIGNITIC.		
145.790	.890	SAND	OFF-WHITE, FINE TO COARSE GRAINED, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. UPWARD COARSENING CYCLE.		
147.100	1.310	SILT	SANDY.		
148.800	1.700	SAND	OFF-WHITE, VERY FINE AND FINE GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
151.320	2.520	CLAY	SILTY.		
152.200	.880	LIGNITE	DARK, BROWN, CLAYEY, SOFT CLAY.		
152.710	.510	LIGNITE	DARK, BROWN, SOFT CLAY.		
153.210	.500	SILT	SANDY.		
154.250	1.040	CLAY	BROWN, CARBONACEOUS, SILTY, SOFT CLAY.		
158.400	4.150	SAND	FINE TO COARSE GRAINED, WELL SORTED. UPWARD FINING CYCLE.		
161.800	3.400	CLAY AND CLAY	60:40. CLAY. CLAY: SANDY.		
165.180	3.380	SAND AND SILT	80:20. SAND: MEDIUM AND COARSE GRAINED, FINING UPWARDS. SILT.		
166.000	.820	SILT	SLIGHTLY CARBONACEOUS.		
166.960	.960	CLAY	SLIGHTLY CARBONACEOUS. CARBONACEOUS BAND TO TOP.		
167.790	.830	CLAY	SLIGHTLY, LIGNITIC.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 60 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
168.130	.340	CLAY	CARBONACEOUS.		
168.800	.670	SAND	VERY FINE AND FINE GRAINED, MODERATELY SORTED.		
170.000	1.200	CLAY	SILTY.		
174.300	4.300	SAND	FINE AND MEDIUM GRAINED, MODERATELY SORTED.		
176.200	1.900	CLAY	SILTY TO BASE.		
177.800	1.600	SAND	MEDIUM GRAINED, WELL SORTED.		
180.110	2.310	CLAY AND SAND	60:40, CLAY: SILTY, SAND: VERY FINE GRAINED, MODERATELY SORTED. SLIGHTLY SILTY IN PARTS.		
180.420	.310	CLAY	BROWN, SLIGHTLY, LIGNITIC, SOFT CLAY.		
180.850	.430	CLAY	BROWN, CARBONACEOUS, SOFT CLAY.		
181.270	.420	SILT			
181.770	.500	CLAY	BROWN, CARBONACEOUS, SOFT CLAY.		
185.600	3.830	SAND	GREY-BROWN, FINE AND MEDIUM GRAINED, SLIGHTLY CARBONACEOUS, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. UPWARD FINING CYCLE.		
188.800	3.200	SAND AND CLAY	TOWARDS BASE OF UNIT: 60:40. SAND: VERY FINE GRAINED. CLAY.		
191.700	2.900	CLAY			
198.930	7.230	SAND	MEDIUM AND COARSE GRAINED, MODERATELY SORTED. SILT BAND IN MIDDLE.		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 60 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
199.350	.420	LIGNITE	DARK, BROWN, SOFT CLAY.		
200.040	.690	CLAY	DARK, BROWN, SLIGHTLY, LIGNITIC, SOFT CLAY.		
200.820	.780	CLAY	BROWN, CARBONACEOUS, SOFT CLAY.		
201.290	.470	SILT	SANDY.		
202.740	1.450	SILT	LIGHT, BROWN, CLAYEY, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
206.520	3.780	LIGNITE	DARK, BROWN, SOFT CLAY.		
207.970	1.450	LIGNITE	DARK, BROWN, SLIGHTLY, CLAYEY, SOFT CLAY.		
209.230	1.260	SILT	BROWN, CLAYEY, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
209.600	.370	CLAY	BROWN, SLIGHTLY, LIGNITIC, SOFT CLAY.		
210.150	.550	SILT	BROWN, CLAYEY, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
210.420	.270	CLAY	BROWN, CARBONACEOUS, SOFT CLAY.		
219.100	8.680	SAND	OFF-WHITE, FINE TO COARSE GRAINED, QUARTZ-LITHIC, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. TWO UPWARD FINING CYCLES.		
223.600	4.500	SILT AND SAND	80:20. SILT: SANDY. SAND: VERY FINE AND FINE GRAINED, MODERATELY SORTED.		
224.000	.400	SAND	COARSE GRAINED, WELL SORTED.		
224.300	.300	CLAY	DARK, BROWN, LIGNITIC, SOFT CLAY.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 60 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
227.150	2.850	CLAY	BROWN, SLIGHTLY, LIGNITIC, SOFT CLAY.		
240.180	13.030	LIGNITE	DARK, BROWN, SOFT CLAY.		
242.660	2.480	CLAY	BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY. ADDITIONAL FEATURES INCLUDE:SILTY, BANDS.		
243.450	.790	LIGNITE	DARK, BROWN, CLAYEY, SOFT CLAY.		
244.520	1.070	SAND	VERY FINE AND FINE GRAINED, MODERATELY SORTED.		
245.300	.780	CLAY			
250.270	4.970	SAND	MEDIUM GRAINED, WELL SORTED.		
250.780	.510	LIGNITE	DARK, BROWN, SOFT CLAY.		
280.000	29.220	SAND	MEDIUM TO GRANULAR GRAINED, MODERATELY SORTED.		
282.000	2.000	GRANITE	LIGHT, GREY, QUARTZOSE, FELDSPATHIC. ACCESSORY BLACK MICA, COMMON. QUARTZ-FELDSPAR-BIOTITE GRANITE.		

END OF BORE AT 282.000 M.

Consultant Resources Company

CRA

POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN

BORELOGS

ORGN:81
NAME:LRM
TYPE:ROTARY OPEN HOLE
HOLE NUMBER:61
GRID TYPE:AMG
EASTING:590800.000
NORTHING:6273825.000
ACCURACY:APPROXIMATE
DATUM:AHD

COLLAR RL:94.000
SHEET REF:6030-1
INDEX:
TOTAL DEPTH:169.000
COMMENCED:14/07/81
COMPLETED:15/07/81
INCL:90
AZIM:

PARISH:MURLO
HUNDRED:S
SECTION:RR
LOG ORGINSATION:CRA
LOGGED BY:MJNF
DRLL CNTRCTR:SIDES
DRILL TYPE:MAYHEW 1000
TECHNIQUE:MUD

CORE SIZE:
GEOPHYS CONTR:GEOEX PTY LTD
WATER LEVEL:2.7
DATE MEASURED:15/07/81
PLUG DEPTHS:
CASED DEPTH:
UNITS:

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 61 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0 TO 169.0M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
1.700	1.700	CALCRETE	CREAM, MODERATELY STRONG ROCK.		
6.600	4.900	CLAY	RED, BROWN, SILTY, STIFF CLAY.		
18.700	12.100	SAND	LIGHT, GREEN, RED, FINE TO GRANULAR GRAINED, SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND. ADDITIONAL FEATURES INCLUDE:WHITE. SEVEN PEBBLE BANDS. CHIPS DIVERGE AND INDICATE CLAYEY FINE GRAINED SAND FOR THIS UNIT.		
19.500	.800	CLAY	BROWN, CARBONACEOUS, SOFT CLAY. ADDITIONAL FEATURES INCLUDE:SLIGHTLY, LIGNITIC.		
21.100	1.600	SAND	VERY FINE AND MEDIUM GRAINED, WELL SORTED.		
22.400	1.300	CLAY	DARK, GREY, SOFT CLAY.		
24.000	1.600	SILT AND SAND	70:30, SILT: GREY, SOFT CLAY. SAND: VERY FINE GRAINED, MODERATELY SORTED.		
29.300	5.300	SAND	GREY, VERY FINE AND MEDIUM GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. TWO UPWARD FINING CYCLES WITH SILT BAND ON TOP OF ALOWER CYCLE.		
30.400	1.100	SILT AND SAND	80:20, SILT: GREY, SLIGHTLY, SANDY, COMPACT SAND. SAND: GREY, VERY FINE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND.		
31.900	1.500	CLAY	BROWN, SLIGHTLY, LIGNITIC, FIRM CLAY.		
34.000	2.100	SAND	DARK GREY, MEDIUM GRAINED, QUARTZOSE,		

POLDA BASIN BORELOGS

LISTED ON 16/10/81

BORE: LRM ROTARY OPEN HOLE 61

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND.		
35.200	1.200	CLAY	BROWN, SLIGHTLY, LIGNITIC, FIRM CLAY.		
94.600	59.400	SAND	GREY, BROWN, VERY FINE AND MEDIUM GRAINED, QUARTZO-FELDSPATHIC, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. ADDITIONAL FEATURES INCLUDE:COARSE GRAINED, SLIGHTLY, MICACEOUS. SEVERAL UPWARD FINING CYCLES WITHIN A MACRO UPWARD COARSENING CYCLE IN LOWER PART OF UNIT AND A MACRO UPWARD FINING CYCLE IN UPPER PART OF UNIT.		
96.500	1.900	CLAY	LIGHT GREY, SLIGHTLY, SILTY, FIRM CLAY. ADDITIONAL FEATURES INCLUDE:MICACEOUS.		
101.900	5.400	SAND AND SILT	TOWARDS BASE OF UNIT: 60:40. SAND: GREY, VERY FINE AND MEDIUM GRAINED, SLIGHTLY, MICACEOUS, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND, FINING UPWARDS. ADDITIONAL FEATURES INCLUDE:COARSE TO VERY COARSE GRAINED, QUARTZOSE. SILT: LIGHT, GREY, BROWN, MICACEOUS, FIRM CLAY, FINING UPWARDS. SANDY TO BASE. UNIT FINES TO TOP.		
105.100	3.200	CLAY	LIGHT, GREY, BROWN, SILTY, MICACEOUS, FIRM CLAY.		
121.800	16.700	SAND	GREY, FINE TO COARSE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
125.800	4.000	CLAY	LIGHT, GREY-BROWN, MICACEOUS, FIRM CLAY. SLIGHTLY SILTY ESPECIALLY TO BASE.		
133.000	7.200	SAND	GREY, FINE AND MEDIUM GRAINED, QUARTZOSE,		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 61 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
145.800	12.800	SILT AND SAND	60:40, SILT: LIGHT, BROWN, BUFF, SANDY, SOFT CLAY. ADDITIONAL FEATURES INCLUDE:GREY. SAND: GREY, VERY FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
146.800	1.000	CLAY	LIGHT, BROWN, BUFF, SILTY, SOFT CLAY. ADDITIONAL FEATURES INCLUDE:GREY.		
158.400	11.600	SAND AND SILT	70:30. SAND: GREY, VERY FINE AND MEDIUM GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. UPWARD FINING CYCLE TO TOP OF UNIT. SILT: OFF-WHITE, BUFF, SANDY, MICACEOUS, LOOSE SAND.		
167.000	8.600	CLAY	DARK, GREY, MICACEOUS, SOFT CLAY, ACCESSORY BLACK MICA, COMMON. ADDITIONAL FEATURES INCLUDE:BUFF, GREY.		
169.000	2.000	SAND	GREY, MEDIUM TO GRANULAR GRAINED, FELDSPATHIC-QUARTZOSE, MICACEOUS, SUBANGULAR TO SUBROUNDED GRAINS, VERY LOOSE SAND, ACCESSORY BLACK MICA, COMMON. BASEMENT ?SCHISTOSE.		

END OF BORE AT 169.000 M.

Computer Resources Company

0463

CRA

POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:95.000
NAME:LRM	SHEET REF:6030-1
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:62	TOTAL DEPTH:202.000
GRID TYPE:AMG	COMMENCED:15/07/81
EASTING:590125.000	COMPLETED:15/07/81
NORTHING:6277520.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	
PARISH:MURLO	CORE SIZE:
HUNDRED:14	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:RR	WATER LEVEL:4.7
LOG ORGINSATION:CRA	DATE MEASURED:15/07/81
LOGGED BY:MJNF	PLUG DEPTHS:
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 62 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0 TO 202.0M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
1.100	1.100	CALCRETE	CREAM, BUFF, SANDY, MODERATELY STRONG ROCK.		
4.700	3.600	CLAY	RED, BROWN, FIRM CLAY. SILTY TO BASE.		
8.000	3.300	CLAY AND SAND	50:50. CLAY: RED, BROWN, FIRM CLAY. SILTY TO BASE. SAND: WHITE, YELLOW, MEDIUM AND COARSE GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
14.600	6.600	SAND	YELLOW, OFF-WHITE, MEDIUM TO GRANULAR GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND. FOUR PEBBLE BANDS TO BASE CONTAINING ANGULAR QUARTZ PEBBLES.		
15.500	.900	CLAY	SLIGHTLY, LIGNITIC.		
26.100	10.600	SAND	YELLOW, OFF-WHITE, VERY FINE AND FINE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND. ADDITIONAL FEATURES INCLUDE:MEDIUM TO GRANULAR GRAINED. TWO UPWARD COARSENING CYCLES.		
28.700	2.600	CLAY	LIGHT, GREY, MICACEOUS, FIRM CLAY. SLIGHTLY SILTY IN MIDDLE.		
30.000	1.300	SAND	YELLOW, OFF-WHITE, FINE AND MEDIUM GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND.		
40.100	10.100	SILT AND SAND	60:40. SILT: GREY, BROWN, MICACEOUS, FIRM CLAY. SAND: BUFF, GREY, VERY FINE AND FINE GRAINED, SILTY, MICACEOUS, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED,		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 62 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			LOOSE SAND.		
44.100	4.000	SILT AND SILT	TOWARDS TOP OF UNIT: 70:30. SILT: BUFF, CLAYEY, MICACEOUS, FIRM CLAY. SILT: SANDY.		
50.300	6.200	CLAY AND SILT	60:40. CLAY: BUFF, MICACEOUS, FIRM CLAY. SILT: SANDY.		
92.100	41.800	SILT AND SAND	70:30. SILT: BUFF, GREY, SLIGHTLY, SANDY. ADDITIONAL FEATURES INCLUDE:BANDS, MICACEOUS. SAND: BUFF, GREY, VERY FINE AND FINE GRAINED, ROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
99.500	7.400	SAND AND SILT	60:40. SAND: BUFF, GREY, VERY FINE AND FINE GRAINED, SILTY, BANDS, ROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND, FINING UPWARDS. SILT: SLIGHTLY, CLAYEY, FINING UPWARDS.		
122.100	22.600	SILT AND SILT	50:50. SILT: CLAYEY. SILT: SLIGHTLY, SANDY.		
123.300	1.200	SAND	VERY FINE AND FINE GRAINED, MODERATELY SORTED.		
125.200	1.900	CLAY	LIGHT, GREY, MICACEOUS, SOFT CLAY.		
156.800	31.600	SILT AND CLAY	90:10. SILT: SLIGHTLY, SANDY, VERY LOOSE SAND. CLAY: LIGHT, GREY, SILTY, MICACEOUS, SOFT CLAY. TWO MACRO UPWARD FINING CYCLES.		
158.800	2.000	CLAY			
175.300	16.500	SILT	FINING UPWARDS. INCREASINGLY SANDY TO BASE.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 62 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
178.700	3.400	CLAY, CLAY	70:30, CLAY: LIGHT GREY, SILTY, KAOLINITIC, SOFT CLAY, ADDITIONAL FEATURES INCLUDE:MICACEOUS, CLAY: LIGHT GREY, SLIGHTLY, SILTY, SOFT CLAY, ADDITIONAL FEATURES INCLUDE:KAOLINITIC, MICACEOUS.		
185.300	6.600	SILT	FINING UPWARDS, INCREASINGLY SANDY TO BASE.		
186.200	.900	CLAY	BROWN, LIGNITIC, SOFT CLAY.		
187.200	1.000	CLAY	LIGHT GREY, SOFT CLAY.		
187.600	.400	CLAY	BROWN, CARBONACEOUS, SOFT CLAY.		
188.400	.800	CLAY	LIGHT, BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
190.200	1.800	CLAY	LIGHT, GREY, SOFT CLAY.		
191.300	1.100	CLAY	LIGHT, GREY, SILTY, SOFT CLAY.		
198.300	7.000	SILT AND SILT	50:50, SILT: CLAYEY, SILT: SANDY.		
202.000	3.700	SAND	GREY, FINE TO COARSE GRAINED, QUARTZOSE, MICACEOUS, SUBANGULAR GRAINS, MODERATELY SORTED, WEAKLY CEMENTED SAND, MODERATELY CEMENTED, BASEMENT ?QUARTZITE.		

END OF BORE AT 202.000 M.

Computer Resources Company

0468

CRA

POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81
NAME:LRM
TYPE:ROTARY OPEN HOLE
HOLE NUMBER:63
GRID TYPE:AMG
EASTING:605200.000
NORTHING:6271900.000
ACCURACY:APPROXIMATE
DATUM:AHD

COLLAR RL:110.000
SHEET REF:6130-4
INDEX:
TOTAL DEPTH:170.000
COMMENCED:15/07/81
COMPLETED:16/07/81
INCL:90
AZIM:

PARISH:RUDAL
HUNDRED:15
SECTION:
LOG ORGINSATION:CRA
LOGGED BY:MJNF
DRLL CNTRCTR:SIDES
DRILL TYPE:MAYHEW 1000
TECHNIQUE:MUD

CORE SIZE:
GEOPHYS CONTR:GEOEX PTY LTD
WATER LEVEL:10.6
DATE MEASURED:16/07/81
PLUG DEPTHS:
CASED DEPTH:
UNITS:

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 63 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF OATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0 TO 170.00M B.O.H. SAMPLES 891057 TO 891126 DESPATCHED ON D.P.O. NO. T0131 TAKEN OVER INTERVAL 30 TO 170M. CORRECTED DEPTH FOR TOP OF SAMPLE 891057 IS 26.60 M..		
1.500	1.500	CALCRETE	CREAM, MODERATELY STRONG ROCK.		
2.800	1.300	CLAY	CREAM, REO-BROWN, SOFT CLAY.		
5.100	2.300	SAND	FINE AND MEDIUM GRAINED, MODERATELY SORTED.		
7.200	2.100	SILT	MOTTLED, GREEN, RED-BROWN, FIRM CLAY.		
10.400	3.200	CLAY	MOTTLED, GREEN, RED-BROWN, SILTY, FIRM CLAY.		
11.900	1.500	SILT	GREEN, FIRM CLAY.		
12.600	.700	SILT	LIGNITIC.		
13.800	1.200	CLAY	SILTY, SLIGHTLY CARBONACEOUS.		
14.700	.900	SILT	SLIGHTLY, CLAYEY. ADOITIONAL FEATURES INCLUOE:SLIGHTLY CARBONACEOUS.		
15.400	.700	CLAY	SILTY, SLIGHTLY CARBONACEOUS.		
17.000	1.600	SAND AND SILT	80:20. SANO: FINE AND MEDIUM GRAINED. SLIGHTLY CARBONACEOUS, MODERATELY SORTEO. SILT: SLIGHTLY CARBONACEOUS.		
19.800	2.800	CLAY	CARBONACEOUS. AODITIONAL FEATURES INCLUDE:LIGNITIC, BANDS.		
21.100	1.300	SAND AND SILT	70:30. SANO: VERY FINE AND MEDIUM GRAINED, MODERATELY SORTED. SILT.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 63 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
23.800	2.700	CLAY	DARK, GREY-BROWN, WHITE, SILTY, BANDS, FIRM CLAY.		
25.400	1.600	SAND	WHITE, VERY FINE AND FINE GRAINED, SUBANGULAR GRAINS, MODERATELY SORTED, COMPACT SAND. ADDITIONAL FEATURES INCLUDE:MEDIUM AND VERY COARSE GRAINED.		
26.600	1.200	CLAY	WHITE, GREEN-GREY, SILTY, FIRM CLAY.		
32.470	5.870	SAND	WHITE, COARSE GRAINED AND GRANULAR, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. TWO MACRO UPWARD COARSENING CYCLES, FIVE PEBBLE BANDS.		
32.980	.510	CLAY	DARK, BROWN, SLIGHTLY, LIGNITIC, FIRM CLAY.		
34.200	1.220	LIGNITE	DARK, BROWN, FIRM CLAY.		
34.630	.430	CLAY	DARK, BROWN, SLIGHTLY, LIGNITIC, FIRM CLAY.		
34.880	.250	CLAY	DARK, BROWN, LIGNITIC, FIRM CLAY.		
35.220	.340	CLAY	BROWN, CARBONACEOUS, FIRM CLAY.		
35.460	.240	CLAY	DARK, BROWN, SLIGHTLY, LIGNITIC, FIRM CLAY.		
35.790	.330	CLAY	BROWN, SLIGHTLY, SILTY, FIRM CLAY. ADDITIONAL FEATURES INCLUDE:SLIGHTLY CARBONACEOUS.		
36.180	.390	CLAY	BROWN, CARBONACEOUS, FIRM CLAY.		
37.250	1.070	SILT			

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 63 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
37.470	.220	CLAY	BROWN, SLIGHTLY CARBONACEOUS, FIRM CLAY.		
41.800	4.330	SAND	GREY, FINE TO COARSE GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND, MAXIMUM GRAIN SIZE CYCLE.		
44.700	2.900	SILT AND SILT	TOWARDS TOP OF UNIT: 60:40, SILT, SILT: CLAYEY.		
81.200	36.500	SAND	GREY, VERY FINE AND FINE GRAINED, MICACEOUS, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. ADDITIONAL FEATURES INCLUDE:MEDIUM AND VERY COARSE GRAINED. QUARTZ PEBBLES UP TO 2CM IN COARSER PARTS. FIVE MAXIMUM GRAIN SIZE CYCLES. SILT BAND ON TOP OF THIRD CYCLE FROM THE BASE..		
85.000	3.800	CLAY AND CLAY	80:20, CLAY: BUFF, BROWN, SILTY, SOFT CLAY. CLAY: BUFF, BROWN, SOFT CLAY.		
87.700	2.700	SAND	BUFF, GREY, FINE TO COARSE GRAINED, QUARTZOSE, MICACEOUS, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
92.900	5.200	CLAY AND CLAY	60:40, CLAY: GREY-BROWN, SILTY, FIRM CLAY. CLAY: GREY-BROWN, FIRM CLAY.		
93.620	.720	CLAY	DARK, BROWN, SLIGHTLY, LIGNITIC, FIRM CLAY.		
94.600	.980	CLAY	DARK, BROWN, LIGNITIC, FIRM CLAY.		
102.200	7.600	CLAY AND CLAY	60:40, CLAY, CLAY: SILTY.		
103.300	1.100	SILT	SANDY TO BASE.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 63 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
113.400	10.100	SAND	GREY, BUFF, VERY FINE AND FINE GRAINED, MICACEOUS, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:MEDIUM AND VERY COARSE GRAINED, UPWARD FINING CYCLE.		
113.900	.500	CLAY	BROWN, SOFT CLAY.		
114.600	.700	CLAY	DARK, BROWN, SLIGHTLY, LIGNITIC, SOFT CLAY.		
115.200	.600	CLAY	BROWN, SOFT CLAY.		
115.600	.400	CLAY	BROWN, CARBONACEOUS, SOFT CLAY.		
116.100	.500	CLAY	BROWN, SOFT CLAY.		
116.900	.800	CLAY	DARK, BROWN, SLIGHTLY, LIGNITIC, SOFT CLAY.		
118.300	1.400	CLAY	BROWN, SOFT CLAY.		
120.000	1.700	SILT	BUFF, BROWN, MICACEOUS, FIRM CLAY.		
123.600	3.600	SAND	VERY FINE AND FINE GRAINED, WELL SORTED, FINING UPWARDS.		
125.000	1.400	SILT	BUFF, BROWN, MICACEOUS, FIRM CLAY.		
157.600	32.600	SAND AND SILT	90:10, SAND: VERY FINE AND MEDIUM GRAINED, WELL SORTED, TWO UPWARD COARSENING CYCLES TO BASE. SILT.		
158.000	.400	CLAY			
163.600	5.600	SAND	VERY FINE AND FINE GRAINED, WELL SORTED, TWO UPWARD FINING CYCLES.		
164.100	.500	SILT	SLIGHTLY, CLAYEY.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 63 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
165.700	1.600	SAND	VERY FINE AND FINE GRAINED, WELL SORTED, COARSENING UPWARDS.		
166.800	1.100	CLAY			
168.600	1.800	SILT			
170.000	1.400	SAND	GREY, MEDIUM TO GRANULAR GRAINED, QUARTZOSE, SUBANGULAR GRAINS, POORLY SORTED, VERY LOOSE SAND. BASEMENT ?GRANITIC.		

END OF BORE AT 170.000 M.

CRA

POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:110.000
NAME:LRM	SHEET REF:6130-4
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:64	TOTAL DEPTH:282.000
GRID TYPE:AMG	COMMENCED:16/07/81
EASTING:597100.000	COMPLETED:17/07/81
NORTHING:6283225.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	

PARISH:SMEAT	CORE SIZE:
HUNDRED:70	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:RR	WATER LEVEL:12.2
LOG ORGINSATION:CRA	DATE MEASURED:17/07/81
LOGGED BY:MJNF	PLUG DEPTHS:
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 64 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0 TO 282.00M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
1.700	1.700	CALCRETE	CREAM, SANDY, MODERATELY STRONG ROCK.		
5.400	3.700	SILT	BROWN, RED, FIRM CLAY.		
10.600	5.200	SAND	RED, FINE TO COARSE GRAINED, QUARTZ-LITHIC, SUBANGULAR GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
16.600	6.000	SAND	RED, MEDIUM TO GRANULAR GRAINED, SUBANGULAR GRAINS, WELL SORTED, VERY LOOSE SAND. THREE PEBBLE BANDS.		
17.300	.700	CLAY	ORANGE, WHITE, SILTY, SOFT CLAY.		
18.700	1.400	SAND	RED, VERY FINE AND FINE GRAINED, QUARTZ-LITHIC, SUBANGULAR GRAINS, MODERATELY SORTED, VERY LOOSE SAND. ADDITIONAL FEATURES INCLUDE:MEDIUM TO GRANULAR GRAINED.		
19.800	1.100	SAND	RED, BROWN, MEDIUM TO GRANULAR GRAINED, QUARTZ-LITHIC, SUBANGULAR GRAINS, MODERATELY SORTED, VERY LOOSE SAND. SLIGHTLY LIGNITIC TO BASE.		
25.900	6.100	SAND AND SILT	80:20. SAND: OFF-WHITE, GREY, FINE AND MEDIUM GRAINED, QUARTZ-LITHIC, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. ADDITIONAL FEATURES INCLUDE:COARSE TO VERY COARSE GRAINED. SILT: MOTTLED, GREEN, RED, CLAYEY, SOFT CLAY.		
41.000	15.100	CLAY AND SILT	60:40. CLAY: MOTTLED, GREEN, RED, SLIGHTLY, SILTY, SOFT CLAY. SILT: GREEN, YELLOW, CLAYEY, SOFT CLAY.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 64 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
55.500	14.500	CLAY AND CLAY	70:30. CLAY: GREEN, FIRM CLAY. CLAY: GREEN, SILTY, FIRM CLAY. FINE GRAINED SAND BAND IN MIDDLE.		
64.800	9.300	SAND AND CLAY	70:30. SAND: VERY FINE AND MEDIUM GRAINED, WELL SORTED. CLAY: GREEN-GREY, SILTY, BANDS, FIRM CLAY.		
68.000	3.200	CLAY	GREEN-GREY, FIRM CLAY.		
69.400	1.400	SAND	VERY FINE AND FINE GRAINED, MODERATELY SORTED.		
71.200	1.800	CLAY	SLIGHTLY CARBONACEOUS.		
74.200	3.000	CLAY AND SAND	60:40. CLAY: BLUE, GREEN-GREY, SLIGHTLY, SILTY, FIRM CLAY. SAND: WHITE, MEDIUM AND COARSE GRAINED, QUARTZOSE, SUBANGULAR GRAINS, POORLY SORTED. VERY LOOSE SAND.		
78.600	4.400	SAND	WHITE, BROWN, VERY FINE AND FINE GRAINED, QUARTZOSE, SLIGHTLY, SUBANGULAR GRAINS, WELL SORTED, VERY LOOSE SAND. ADDITIONAL FEATURES INCLUDE:MEDIUM AND COARSE GRAINED, LIGNITIC, BANDS.		
82.000	3.400	SILT AND SAND	60:40. SILT: GREEN-GREY, FIRM CLAY. SAND: BLUE, VERY FINE AND FINE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND.		
83.500	1.500	SAND	WHITE, VERY FINE AND MEDIUM GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND.		
85.700	2.200	CLAY	GREEN-GREY, SILTY, FIRM CLAY. INCREASINGLY SILTY TO TOP.		

Computer Operations Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 64 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
86.700	1.000	SAND	WHITE, FINE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND.		
98.200	11.500	CLAY AND CLAYSTONE	70:30, CLAY: LIGHT, BROWN, SILTY, BANDS, FIRM CLAY, ADDITIONAL FEATURES INCLUDE:SLIGHTLY CARBONACEOUS, CLAYSTONE: GREEN, WEAK ROCK.		
106.300	8.100	SAND	WHITE, VERY FINE AND FINE GRAINED, QUARTZOSE, SUBANGULAR GRAINS, WELL SORTED, VERY LOOSE SAND, ADDITIONAL FEATURES INCLUDE:MEDIUM AND VERY COARSE GRAINED.		
107.100	.800	CLAY	BROWN, CARBONACEOUS, FIRM CLAY.		
109.800	2.700	SAND AND SILT	90:10, SAND: WHITE, VERY FINE AND MEDIUM GRAINED, QUARTZOSE, SUBANGULAR GRAINS, WELL SORTED, VERY LOOSE SAND, SILT: GREEN-GREY, FIRM CLAY, UPWARD FINING CYCLE.		
113.800	4.000	SAND AND SILT	50:50, SAND: WHITE, VERY FINE AND MEDIUM GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND, COARSENING UPWARDS, SILT: GREEN-GREY, FIRM CLAY, COARSENING UPWAROS, CLAYEY TO BASE.		
115.100	1.300	SAND	WHITE, MEDIUM TO GRANULAR GRAINED, QUARTZOSE, SUBANGULAR GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
120.000	4.900	CLAY AND SAND	60:40, CLAY: GREY, SILTY, SOFT CLAY, SAND: GREY, VERY FINE AND FINE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
122.100	2.100	SAND	GREY, VERY FINE AND FINE GRAINED,		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 64 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
123.320	1.220	CLAY	GREY, SOFT CLAY.		
123.590	.270	CLAY	DARK, BROWN, SLIGHTLY, LIGNITIC, SOFT CLAY.		
125.890	2.300	CLAY AND CLAY	60:40. CLAY: BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY. CLAY: BROWN, CARBONACEOUS, SOFT CLAY.		
126.120	.230	CLAY	DARK, BROWN, SLIGHTLY, LIGNITIC, SOFT CLAY.		
129.220	3.100	CLAY AND CLAY	60:40. CLAY: BROWN, CARBONACEOUS, SOFT CLAY. CLAY: BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
132.500	3.280	SAND	GREY, FINE AND MEDIUM GRAINED, QUARTZO-FELDSPATHIC, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND.		
134.600	2.100	SAND	GREY, COARSE GRAINED AND GRANULAR, QUARTZO-FELDSPATHIC, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. UPWARD COARSENING CYCLE.		
157.890	23.290	SAND	GREY, BROWN, FINE TO COARSE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. SLIGHTLY LIGNITIC SILTY BAND IN MIDDLE.		
158.510	.620	LIGNITE	DARK, BROWN, SOFT CLAY.		
158.980	.470	LIGNITE	DARK, BROWN, SLIGHTLY, CLAYEY, SOFT CLAY.		
160.180	1.200	LIGNITE	DARK, BROWN, SOFT CLAY.		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 64 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
160.450	.270	CLAY	GREY-BROWN, SOFT CLAY.		
161.600	1.150	SILT AND SAND	70:30. SILT: GREY-BROWN, SOFT CLAY. SAND: GREY, VERY FINE GRAINED, WELL SORTED, VERY LOOSE SAND.		
164.400	2.800	SAND	GREY, VERY FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND, SECONDARY PYRITE, COMMON. UPWARD FINING CYCLE.		
165.000	.600	SILT	SLIGHTLY CARBONACEOUS.		
165.780	.780	LIGNITE			
170.000	4.220	SAND	GREY, VERY FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
172.300	2.300	SILT AND SAND	60:40. SILT: BLUE, GREY, CLAYEY. SAND: GREY, VERY FINE GRAINED, WELL SORTED, VERY LOOSE SAND.		
185.790	13.490	SAND	GREY, BROWN, VERY FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. FINER BANDS SLIGHTLY CARBONACEOUS.		
186.620	.830	LIGNITE			
187.240	.620	CLAY	BLUE, FIRM CLAY.		
187.720	.480	CLAY	SLIGHTLY CARBONACEOUS.		
188.300	.580	SAND	GREY, VERY FINE GRAINED, WELL SORTED, VERY LOOSE SAND.		
189.300	1.000	MUDSTONE	BLUE, GREY, WEAK ROCK.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 64 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
190.900	1.600	SAND	GREY, FINE AND MEDIUM GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND.		
195.400	4.500	CLAY AND SAND	50:50. CLAY: SLIGHTLY, SILTY. ADDITIONAL FEATURES INCLUDE:CARBONACEOUS. SAND: VERY FINE AND FINE GRAINED, MODERATELY SORTED.		
197.400	2.000	SAND	GREY, FINE TO COARSE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
205.200	7.800	SAND AND SILT	70:30. SAND: GREY, FINE TO COARSE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. SILT: CLAYEY, BANDS. SLIGHTLY CARBONACEOUS TO BASE.		
233.700	28.500	SAND	GREY, VERY FINE AND FINE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. ADDITIONAL FEATURES INCLUDE:MEDIUM AND COARSE GRAINED.		
235.400	1.700	SILT AND SILT	50:50. SILT. SILT: SANDY.		
237.100	1.700	SAND	GREY, VERY FINE AND MEDIUM GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, COARSENING UPWARDS.		
238.600	1.500	SILT AND SAND	70:30. SILT. SAND: GREY, VERY FINE GRAINED, VERY LOOSE SAND.		
253.200	14.600	SAND AND SILT	70:30. SAND: GREY, VERY FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. SILT: SANDY.		
254.700	1.500	MUDSTONE	BLUE, GREY, WEAK ROCK.		
264.400	9.700	SAND	GREY, VERY FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 64 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			SAND, FINING UPWARDS.		
271.300	6.900	CLAY	BLUE, GREEN-GREY, FIRM CLAY. SLIGHTLY SILTY IN MIDDLE.		
275.800	4.500	CLAY AND SILT	50:50, CLAY: BLUE, GREEN-GREY, SILTY, FIRM CLAY. SILT: SLIGHTLY, CLAYEY.		
282.000	6.200	SAND	GREY, VERY FINE AND MEDIUM GRAINED, FIRM CLAY, SILTY MATRIX. POSSIBLY BASEMENT SAND FROM GAMMA LOG.		

END OF BORE AT 282.000 M.

Computer Resources Company

0484

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN

BORELOGS

ORGN:81
NAME:LRM
TYPE:ROTARY OPEN HOLE
HOLE NUMBER:65
GRID TYPE:AMG
EASTING:593225.000
NORTHING:6285725.000
ACCURACY:APPROXIMATE
DATUM:AHD

COLLAR RL:100.000
SHEET REF:6130-4
INDEX:
TOTAL DEPTH:116.000
COMMENCED:17/07/81
COMPLETED:18/07/81
INCL:90
AZIM:

PARISH:BOONE
HUNDRED:65
SECTION:
LOG ORGINSATION:CRA
LOGGED BY:MJNF
DRLL CNTRCTR:SIDES
DRILL TYPE:MAYHEW 1000
TECHNIQUE:MUD

CORE SIZE:
GEOPHYS CONTR:GEOEX PTY LTD
WATER LEVEL:15.5
DATE MEASURED:18/07/81
PLUG DEPTHS:
CASED DEPTH:
UNITS:

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
HRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 65 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0M TO 116.0M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
0.500	.500	CALCRETE	CREAM, SANDY, MODERATELY STRONG ROCK.		
4.000	3.500	SAND	CREAM, BROWN, MEDIUM AND VERY COARSE GRAINED, SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND, FINING UPWARDS.		
5.600	1.600	SAND	CREAM, BROWN, VERY FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND, COARSENING UPWARDS.		
7.700	2.100	SILT			
10.800	3.100	CLAY	BROWN, FIRM CLAY.		
13.200	2.400	SILT AND SILT	60:40. SILT: SANDY. SILT.		
14.300	1.100	CLAY	GREEN-GREY, FIRM CLAY.		
23.400	9.100	SAND	WHITE, GREEN-GREY, FINE TO GRANULAR GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND.		
24.100	.700	CLAY	GREEN-GREY, SILTY, FIRM CLAY.		
32.300	8.200	SAND	WHITE, RED, FINE AND MEDIUM GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND, ADDITIONAL FEATURES INCLUDE:COARSE TO VERY COARSE GRAINED.		
35.100	2.800	CLAY	MOTTLED, RED, GREEN, SLIGHTLY, SILTY, FIRM CLAY.		
57.500	22.400	CLAY	MOTTLED, GREEN, YELLOW, FIRM CLAY.		
64.600	7.100	CLAY AND SILT	70:30. CLAY: DARK, GREEN, YELLOW, CALCAREOUS, FIRM CLAY. SILT: GREEN, FIRM		

POLDA BASIN — BORELOGS

BORE: LRM ROTARY OPEN HOLE 65 — LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			CLAY.		
66.300	1.700	SILT AND SAND	TOWARDS TOP OF UNIT: 60:40. SILT: GREEN-GREY, SLIGHILY, SANDY, COMPACT SAND. ADDITIONAL FEATURES INCLUDE:BANDS. SAND: WHITE, VERY FINE GRAINED, MODERATELY SORTED, VERY LOOSE SAND.		
67.900	1.600	CLAY	LIGHT, GREEN, GREY, FIRM CLAY.		
70.100	2.200	CLAY AND SAND	60:40. CLAY: LIGHT, GREEN-GREY, SILTY, FIRM CLAY. SAND: WHITE, VERY FINE GRAINED, MODERATELY SORTED, VERY LOOSE SAND.		
72.900	2.800	SAND	WHITE, FINE TO COARSE GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND.		
75.300	2.400	CLAY AND SAND	50:50. CLAY: LIGHT, GREEN, GREY, SILTY, BANDS, FIRM CLAY. SAND: WHITE, VERY FINE GRAINED, MODERATELY SORTED, VERY LOOSE SAND.		
85.600	10.300	SAND AND SILT	70:30. SAND: WHITE, FINE TO COARSE GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. SILT: LIGHT, GREEN-GREY, FIRM CLAY.		
87.000	1.400	CLAY	GREY, FIRM CLAY.		
90.300	3.300	CLAY	LIGHT, GREY, SILTY, FIRM CLAY.		
95.100	4.800	SILT AND SAND	50:50. SILT: DARK, GREY, CLAYEY, BANDS, FIRM CLAY. SAND: WHITE, VERY FINE GRAINED, MODERATELY SORTED, LOOSE SAND.		
97.100	2.000	CLAY	LIGHT GREY, SILTY, FIRM CLAY.		
98.000	.900	SAND	WHITE, MEDIUM GRAINED.		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 65 LISTED ON 16/10/81

DEPTH TO BASE	FSTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			FELDSPATHIC-QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND.		
101.100	3.100	CLAY	LIGHT GREY, SILTY, FIRM CLAY.		
102.600	1.500	SILT	DARK, GREY, CLAYEY, BANDS, FIRM CLAY.		
103.000	.400	CLAY	SLIGHTLY CARBONACEOUS.		
109.900	6.900	SAND AND SILT	70:30. SAND: WHITE, VERY FINE AND MEDIUM GRAINED, FELDSPATHIC-QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. SILT: GREY, CLAYEY, FIRM CLAY. UPWARD COARSENING CYCLE AT BASE.		
111.600	1.700	CLAY AND CLAY	60:40. CLAY: GREY, BROWN, SLIGHTLY CARBONACEOUS, FIRM CLAY. CLAY: GREY, SILTY, FIRM CLAY.		
116.000	4.400	CLAY AND SAND	INTERMIXED: 50:50. CLAY: DARK, GREEN-GREY, SILTY, BANDS, FIRM CLAY. SAND: GREEN, VERY FINE AND MEDIUM GRAINED, FELDSPATHIC-QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, POORLY SORTED, COMPACT SAND, WEATHERED BASEMENT ?GRANITE OR GNEISS, HARD TO BASE - USED ROLLER BIT.		

END OF BORE AT 116.000 M.

0489

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN

BORELOGS

ORGN:81
NAME:LRM
TYPE:ROTARY OPEN HOLE
HOLE NUMBER:66
GRID TYPE:AMG
EASTING:593950.000
NORTHING:6286100.000
ACCURACY:APPROXIMATE
DATUM:AHD

COLLAR RL:95.000
SHEET REF:6130-4
INDEX:
TOTAL DEPTH:106.000
COMMENCED:18/07/81
COMPLETED:18/07/81
INCL:90
AZIM:

PARISH:BOONE
HUNDRED:22
SECTION:RR
LOG ORGINSATION:CRA
LOGGED BY:MJNF
DRLL CNTRCTR:SIDES
DRILL TYPE:MAYHEW 1000
TECHNIQUE:MUD

CORE SIZE:
GEOPHYS CONTR:GEOEX PTY LTD
WATER LEVEL:1.5
DATE MEASURED:18/07/81
PLUG DEPTHS:
CASED DEPTH:
UNITS:

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
HRD
SP
R
C

POLDA BASIN

BORELOGS

BORE: LRM ROTARY OPEN HOLE 66

LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0 TO 106.0M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
0.800	.800	CALCRETE	CREAM, SANDY, MODERATELY STRONG ROCK.		
1.600	.800	SILT	ORANGE, BROWN, SOFT CLAY.		
3.200	1.600	SAND	BROWN, COARSE GRAINED AND GRANULAR, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND.		
8.700	5.500	SILT, SAND	50:50, SILT, SAND: MOTTLED, WHITE, RED, VERY FINE AND FINE GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND. ADDITIONAL FEATURES INCLUDE:MEDIUM AND VERY COARSE GRAINED.		
11.100	2.400	PEBBLE CONGLOMERATE	WHITE, MEDIUM GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
13.500	2.400	CLAY			
21.000	7.500	PEBBLE CONGLOMERATE	WHITE, FINE AND MEDIUM GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. MEDIUM GRAINED SAND BAND IN MIDDLE.		
22.000	1.000	SILT AND SAND	80:20, SILT: SLIGHTLY, SANDY, SAND: MOTTLED, WHITE, RED, FINE GRAINED, SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND.		
24.200	2.200	SAND	MOTTLED, WHITE, RED, VERY FINE AND FINE GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND.		
25.100	.900	SAND	WHITE, RED, FINE TO COARSE GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 66

LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
28.300	3.200	SILT AND SAND	50:50. SILT: CLAYEY. SAND: MOTTLED, WHITE, RED, VERY FINE GRAINED, WELL SORTED, COMPACT SAND.		
29.400	1.100	SAND	MEDIUM GRAINED, WELL SORTED.		
32.900	3.500	CLAY	MOTTLED, GREEN, RED. SLIGHTLY, SILTY, FIRM CLAY.		
34.400	1.500	SAND	VERY FINE GRAINED, WELL SORTED.		
63.600	29.200	CLAY AND CLAY	70:30. CLAY: GREEN, GREY, FIRM CLAY. CLAY: GREEN-GREY, SLIGHTLY, SILTY, FIRM CLAY.		
65.800	2.200	SAND	VERY FINE AND FINE GRAINED, WELL SORTED.		
68.500	2.700	CLAY AND SILT	70:30. CLAY: GREEN, OFF-WHITE, SILTY, FIRM CLAY. ADDITIONAL FEATURES INCLUDE:KAOLINITIC, BANDS. SILT: GREY, CLAYEY, BANDS, FIRM CLAY.		
71.800	3.300	SAND	VERY FINE AND FINE GRAINED, WELL SORTED, COARSENING UPWARDS.		
72.400	.600	SILT	GREY, CLAYEY, FIRM CLAY.		
73.200	.800	SILT	SANDY BAND TO TOP.		
77.700	4.500	SAND	OFF-WHITE, GREY, FINE TO COARSE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND, FINING UPWARDS.		
82.100	4.400	CLAY	OFF-WHITE, GREY, KAOLINITIC, FIRM CLAY. SILTY TO BASE.		
83.800	1.700	SAND	GREY, VERY FINE GRAINED, WELL SORTED, LOOSE SAND, FINING UPWARDS.		

POLDA BASIN

BORELOGS

BORE: LRM ROTARY OPEN HOLE 66

LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
95.600	11.800	CLAY AND SILT	80:20, CLAY: GREY, OFF-WHITE, SILTY, KAOLINITIC, FIRM CLAY. SILT: GREY, OFF-WHITE, FIRM CLAY, SANDY BAND TO BASE.		
100.600	5.000	SILT AND SAND	70:30, SILT: GREY, CLAYEY, FIRM CLAY. SAND: VERY FINE GRAINED.		
106.000	5.400	CLAY AND SILT	70:30, CLAY: DARK, GREY, OFF-WHITE, SLIGHTLY, SILTY, FIRM CLAY, COARSENING UPWARDS. ADDITIONAL FEATURES INCLUDE:KAOLINITIC. SILT: CLAYEY, FIRM CLAY. COARSENING UPWARDS. WEATHERED BASEMENT ?GRANITE.		

END OF BORE AT 106.000 M.

0494

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POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN BORELOGS

ORGN:81	COLLAR RL:150.000
NAME:LRM	SHEET REF:6030-1
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:67	TOTAL DEPTH:226.000
GRID TYPE:AMG	COMMENCED:19/07/81
EASTING:577350.000	COMPLETED:19/07/81
NORTHING:6286875.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	
PARISH:PALKA	CORE SIZE:
HUNDRED:15	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:	WATER LEVEL:35.6
LOG ORGINSATION:CRA	DATE MEASURED:19/07/81
LOGGED BY:MJNF	PLUG DEPTHS:
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 67 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0 TO 226.0M B.O.H. SAMPLES 891127 TO 891239 DESPATCHED ON O.P.O. NO. 10132 TAKEN OVER INTERVAL 0 TO 226M DRILL DEPTH.		
1.300	1.300	CALCRETE	CREAM, SANDY, MODERATELY STRONG ROCK.		
2.400	1.100	SILT	ORANGE, BROWN, SOFT CLAY.		
3.900	1.500	CLAY			
12.300	8.400	SILT, SAND	60:40. SILT, SAND: ORANGE, RED, FINE TO COARSE GRAINED, QUARTZOSE, SUBROUNDED GRAINS, MODERATELY SORTED, WEAKLY CEMENTED SAND. ADDITIONAL FEATURES INCLUDE:WHITE. FEW SANDSTONE BANDS.		
13.600	1.300	CLAY	SLIGHTLY, SILTY.		
17.900	4.300	SAND	OFF-WHITE, PINK, MEDIUM TO GRANULAR GRAINED, MICACEDUS, SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND. ADDITIONAL FEATURES INCLUDE:YELLOW.		
18.500	.600	CLAY			
21.100	2.600	SAND	OFF-WHITE, YELLOW, VERY FINE AND MEDIUM GRAINED, MICACEOUS, SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND.		
23.300	2.200	SILT	CLAYEY.		
28.000	4.700	SAND	OFF-WHITE, YELLOW, VERY FINE AND FINE GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND. ADDITIONAL FEATURES INCLUDE:PINK, MEDIUM AND VERY COARSE GRAINED.		
28.700	.700	CLAY			

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 67 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
47.000	18.300	PEBBLE CONGLOMERATE AND SAND	70:30. PEBBLE CONGLOMERATE: OFF-WHITE, PINK, FINE AND MEDIUM GRAINED, QUARTZOSE, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND. SAND: OFF-WHITE, PINK, COARSE GRAINED AND GRANULAR, QUARTZOSE, MICACEOUS, ROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND.		
50.200	3.200	SAND, SILT	80:20. SAND: OFF-WHITE, FINE AND MEDIUM GRAINED, QUARTZOSE, ROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND. SILT: LIGHT GREY, SLIGHTLY, SANDY, FIRM CLAY. ADDITIONAL FEATURES INCLUDE:MICACEOUS.		
68.200	18.000	SAND	OFF-WHITE, VERY FINE GRAINED, QUARTZOSE, ROUNDED GRAINS, WELL SORTED, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:FINE TO GRANULAR GRAINED, NUMEROUS PEBBLE BANDS. OCCASIONAL SILTY BANDS TO BASE.		
76.300	8.100	SILT AND SAND	70:30. SILT: DARK, GREY, MICACEOUS, FIRM CLAY. SAND: OFF-WHITE, PINK, VERY FINE GRAINED, SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND. CLAY BAND IN MIDDLE AND TO BASE.		
81.700	5.400	CLAY AND CLAY	70:30. CLAY: GREY-BROWN, FIRM CLAY. CLAY: GREY-BROWN, SILTY, MICACEOUS, FIRM CLAY.		
94.500	12.800	SILT AND SAND	60:40. SILT: GREY-BROWN, FIRM CLAY. SAND: OFF-WHITE, PINK, VERY FINE GRAINED, VERY LOOSE SAND.		
96.200	1.700	CLAY, SILT	70:30. CLAY: GREY-BROWN, FIRM CLAY. SILT: GREY-BROWN, SLIGHTLY, CLAYEY, FIRM CLAY. ADDITIONAL FEATURES INCLUDE:MICACEOUS.		
98.800	2.600	SILT	GREY-BROWN, MICACEOUS, FIRM CLAY, FINING		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 67 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			UPWARDS.		
102.600	3.800	SAND	OFF-WHITE, PINK, VERY FINE AND FINE GRAINED, MICACEOUS, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND, FINING UPWARDS.		
107.800	5.200	SILT, SILT	80:20. SILT: GREY-BROWN, CLAYEY, MICACEOUS, FIRM CLAY. SILT: GREY-BROWN, SLIGHTLY, SANDY, FIRM CLAY. ADDITIONAL FEATURES INCLUDE:MICACEOUS.		
109.100	1.300	SAND	OFF-WHITE, PINK, FINE AND MEDIUM GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND.		
109.800	.700	SILT	GREY-BROWN, CLAYEY, FIRM CLAY.		
110.300	.500	SAND	OFF-WHITE, PINK, FINE AND MEDIUM GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND.		
112.400	2.100	SILT	GREY-BROWN, FIRM CLAY. CLAYEY TO TOP.		
116.200	3.800	SAND	OFF-WHITE, VERY FINE GRAINED, SILTY, BANDS, WELL SORTED, VERY LOOSE SAND.		
118.000	1.800	SILT	GREY-BROWN, CLAYEY, FIRM CLAY.		
128.100	10.100	SILT AND SAND	60:40. SILT, SANDY IN PARTS. SAND: GREY-BROWN, VERY FINE AND MEDIUM GRAINED, MICACEOUS, QUARTZO-FELDSPATHIC, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND.		
129.800	1.700	SILT AND SILT	80:20. SILT, CLAYEY ESPECIALLY TO BASE. SILT: SLIGHTLY, SANDY.		
133.200	3.400	SAND	GREY, VERY FINE AND FINE GRAINED,		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 67 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			MICACEOUS, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND.		
134.200	1.000	SILT	CLAYEY.		
135.700	1.500	SAND	GREY, VERY FINE AND FINE GRAINED, MICACEOUS, MODERATELY SORTED, LOOSE SAND.		
137.900	2.200	SILT			
144.600	6.700	SAND AND SILT	70:30, SAND: GREY, BROWN, VERY FINE GRAINED, QUARTZO-FELDSPATHIC, MICACEOUS, SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND, ADDITIONAL FEATURES INCLUDE:FINE TO COARSE GRAINED, SILT: SANDY.		
149.800	5.200	SILT	CLAYEY, BANDS.		
152.200	2.400	SAND	GREY, VERY FINE GRAINED, MICACEOUS, WELL SORTED, LOOSE SAND.		
152.900	.700	SILT	CLAYEY, BANDS.		
154.200	1.300	CLAY			
156.000	1.800	SAND	GREY, VERY FINE AND FINE GRAINED, MICACEOUS, SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
157.100	1.100	SILT	CLAYEY.		
162.400	5.300	SAND AND SILT	TOWARDS TOP OF UNIT: 70:30, SAND: LIGHT GREY, OFF-WHITE, FINE AND MEDIUM GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND, SILT.		
163.200	.800	SILT	CLAYEY.		
170.600	7.400	SAND	LIGHT GREY, OFF-WHITE, VERY FINE AND		

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 67 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
			MEDIUM GRAINED, QUARTZOSE, SUBROUNDED GRAINS, WELL SORTED, VERY LOOSE SAND. SILT BAND TO BASE.		
178.100	7.500	SILT AND SILT	50:50. SILT: GREY, CLAYEY, MICACEOUS, SOFT CLAY. SILT: GREY, SANDY, MICACEOUS, SOFT CLAY.		
184.800	6.700	SAND	GREY, VERY FINE AND MEDIUM GRAINED, QUARTZO-FELDSPATHIC, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, LOOSE SAND. UPWARD COARSENING CYCLE TO BASE.		
186.500	1.700	SILT	LIGHT GREY, MICACEOUS, SOFT CLAY. INCREASINGLY SANDY TO TOP..		
187.500	1.000	SILT	LIGHT GREY, CLAYEY, MICACEOUS, SOFT CLAY.		
192.000	4.500	SILT AND SAND	60:40. SILT: LIGHT GREY, MICACEOUS, SOFT CLAY. SAND: GREY, VERY FINE AND FINE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND.		
192.900	.900	CLAY	GREY, SOFT CLAY.		
194.900	2.000	SILT AND SILT	60:40. SILT: GREY, MICACEOUS, SOFT CLAY. SILT: GREY, CLAYEY, MICACEOUS, SOFT CLAY.		
198.900	4.000	SAND AND SILT	60:40. SAND: GREY, VERY FINE GRAINED, SILTY, MICACEOUS, VERY LOOSE SAND. SILT: GREY, CLAYEY, MICACEOUS, SOFT CLAY.		
205.900	7.000	SILT AND SILT	70:30. SILT: GREY, CLAYEY, MICACEOUS, SOFT CLAY. SILT: GREY, MICACEOUS, SOFT CLAY.		
213.000	7.100	SAND AND SILT	70:30. SAND: LIGHT GREY, VERY FINE AND FINE GRAINED, WELL SORTED, VERY LOOSE SAND. SILT: GREY, MICACEOUS, SOFT CLAY.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 67 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
216.700	3.700	SILT AND SILT	80:20. SILT: GREY, SLIGHTLY, CLAYEY, SOFT CLAY, ACCESSORY BLACK MICA, COMMON. ADDITIONAL FEATURES INCLUDE:MICACEOUS. SILT: GREY, MICACEOUS, SOFT CLAY, ACCESSORY BLACK MICA, COMMON.		
218.200	1.500	SAND	LIGHT GREY, VERY FINE AND FINE GRAINED, WELL SORTED, VERY LOOSE SAND.		
219.800	1.600	SILT	GREY, SLIGHTLY, CLAYEY, SOFT CLAY, ACCESSORY BLACK MICA, COMMON. ADDITIONAL FEATURES INCLUDE:MICACEOUS.		
221.500	1.700	SAND AND SILT	50:50. SAND: LIGHT GREY, VERY FINE GRAINED, SILTY, BANDS, VERY LOOSE SAND. SILT: GREY, MICACEOUS, SOFT CLAY, ACCESSORY BLACK MICA, COMMON.		
224.400	2.900	SILT	GREY, CLAYEY, MICACEOUS, SOFT CLAY, ACCESSORY BLACK MICA, COMMON. INCREASINGLY CLAYEY TO TOP.		
226.000	1.600	SAND	LIGHT GREY, FINE TO GRANULAR GRAINED, QUARTZO-FELDSPATHIC, SUBANGULAR GRAINS, MODERATELY SORTED, VERY LOOSE SAND. **TOTAL DEPTH**		

END OF BORE AT 226.000 M.

0502

CRA

POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN

BORELOGS

ORGN:81
NAME:LRM
TYPE:ROTARY OPEN HOLE
HOLE NUMBER:68
GRID TYPE:TRANSVERSE MECATOR
EASTING:371100.000
NORTHING:850500.000
ACCURACY:APPROXIMATE
DATUM:AHD

COLLAR RL:158.000
SHEET REF:6030-4N
INDEX:
TOTAL DEPTH:160.000
COMMENCED:19/07/81
COMPLETED:20/07/81
INCL:90
AZIM:

PARISH:MCLAC
HUNDRED:23
SECTION:RR
LOG ORGINSATION:CRA
LOGGED BY:MJNF
DRLL CNTRCTR:SIDES
DRILL TYPE:MAYHEW 1000
TECHNIQUE:MUD

CORE SIZE:
GEOPHYS CONTR:GEOEX PTY LTD
WATER LEVEL:1.8
DATE MEASURED:20/07/81
PLUG DEPTHS:
CASED DEPTH:
UNITS:

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 68 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
	.000		OPEN HOLE 0.0 TO 160.0M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
1.300	1.300	SANDSTONE	CREAM, RED-BROWN, FINE AND MEDIUM GRAINED, MODERATELY STRONG ROCK, SECONDARY CALCRETE, COMMON, CEMENT.		
5.000	3.700	SILT	DARK, RED, BROWN, CLAYEY, SLIGHTLY CARBONACEOUS, FIRM CLAY.		
9.500	4.500	SAND	CREAM, WHITE, FINE AND MEDIUM GRAINED, SUBANGULAR GRAINS, MODERATELY SORTED, COMPACT SAND.		
10.300	.800	CLAY	SILTY.		
21.500	11.200	SAND	MOTTLED, CREAM, PINK, FINE TO COARSE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND. ADDITIONAL FEATURES INCLUDE:VERY COARSE GRAINED.		
22.700	1.200	CLAY	LIGHT, BROWN, SLIGHTLY CARBONACEOUS, SOFT CLAY.		
26.200	3.500	SAND	MOTTLED, CREAM, PINK, FINE AND MEDIUM GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND. UPWARD FINING CYCLE TO TOP.		
32.000	5.800	CLAY AND SAND	60:40. CLAY: CREAM, PINK, SILTY, SOFT CLAY. SAND: CREAM, PINK, VERY FINE AND FINE GRAINED, MODERATELY SORTED, COMPACT SAND.		
39.400	7.400	SAND AND CLAY	60:40. SAND: CREAM, PINK, FINE TO COARSE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, COMPACT SAND. CLAY: CREAM, PINK, SILTY, SOFT CLAY.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 68 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
48.900	9.500	SAND	OFF-WHITE, CREAM, MEDIUM TO GRANULAR GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, VERY LOOSE SAND.		
58.200	9.300	CLAY	GREY, SILTY, BANDS, SOFT CLAY, 25CM BAND OF LIGNITE IN MIDDLE, KAOLINITIC BANDS OTO TOP.		
77.400	19.200	SAND	CREAM, VERY FINE GRAINED, QUARTZO-FELDSPATHIC, SUBANGULAR GRAINS, WELL SORTED, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:FINE TO COARSE GRAINED. TWO SILT BANDS TO BASE AND ONE TO TOP. TWO MACRO UPWARD COARSENING CYCLES.		
79.000	1.600	CLAY	GREY, BROWN, SLIGHTLY, SILTY. TWO CARBONACEOUS BANDS.		
93.600	14.600	SILT AND CLAY	60:40. SILT: GREY, CLAYEY, SOFT CLAY. CLAY: GREY, SILTY, SOFT CLAY.		
105.600	12.000	SAND AND SILT	60:40. SAND: GREY, VERY FINE AND MEDIUM GRAINED, SILTY, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND. SILT: GREY, SOFT CLAY.		
117.000	11.400	CLAY	GREY, SILTY, SOFT CLAY.		
118.400	1.400	SILT	GREY, CLAYEY, BANDS, SOFT CLAY.		
126.800	8.400	SAND, SILT	60:40. SAND: GREY, VERY FINE AND FINE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND. SILT: GREY, SLIGHTLY, SANDY, LOOSE SAND. ADDITIONAL FEATURES INCLUDE:BANDS.		
132.800	6.000	CLAY	GREY, SOFT CLAY.		

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 68 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
140.500	7.700	SILT	SANDY IN MIDDLE.		
148.600	8.100	SAND AND SILT	80:20. SAND: GREY, VERY FINE AND FINE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, MODERATELY SORTED, LOOSE SAND. SILT.		
160.000	11.400	CLAY AND CLAY	60:40. CLAY: DARK, GREY, BROWN, SILTY, SOFT CLAY. CLAY: DARK, GREY, BROWN, SOFT CLAY. BASEMENT ?GRANITE.		

END OF BORE AT 160.000 M.

Computer Resource Company

0507

CRA

POLDA BASIN

BORELOGS

EARTH SCIENCE COMPUTER SERVICES

POLDA BASIN

BORELOGS

ORGN:81	COLLAR RL:68.000
NAME:LRM	SHEET REF:6031-3
TYPE:ROTARY OPEN HOLE	INDEX:
HOLE NUMBER:69	TOTAL DEPTH:34.000
GRID TYPE:AMG	COMMENCED:21/07/81
EASTING:564100.000	COMPLETED:21/07/81
NORTHING:6307350.000	INCL:90
ACCURACY:APPROXIMATE	AZIM:
DATUM:AHD	
PARISH:ULYER	CORE SIZE:
HUNDRED:42	GEOPHYS CONTR:GEOEX PTY LTD
SECTION:RR	WATER LEVEL:0.0
LOG ORGINSATION:CRA	DATE MEASURED:21/07/81
LOGGED BY:MJNF	PLUG DEPTHS:
DRLL CNTRCTR:SIDES	CASED DEPTH:
DRILL TYPE:MAYHEW 1000	UNITS:
TECHNIQUE:MUD	

AVAILABLE DATA

NEUTRON
GAMMA
LONG SPACED DENSITY
BRD
SP
R
C

Computer Resources Company

POLDA BASIN BORELOGS

BORE: LRM ROTARY OPEN HOLE 69 LISTED ON 16/10/81

DEPTH TO BASE	ESTIM THICK	ROCK TYPE	GEOLOGICAL DESCRIPTION OF DATA	SEAM NAME	SM WOR SAMP NO SEC NUMB
.000			OPEN HOLE 0.0 TO 34.0M B.O.H. NO SAMPLES TAKEN FOR ANALYSIS.		
2.400	2.400	CALCRETE	CREAM, SANDY, MODERATELY STRONG ROCK.		
3.100	.700	SILT	YELLOW, BROWN, FIRM CLAY.		
14.000	10.900	SAND	WHITE, YELLOW, FINE TO COARSE GRAINED, SUBANGULAR TO SUBROUNDED GRAINS, WELL SORTED, COMPACT SAND. ADDITIONAL FEATURES INCLUDE:RED-BROWN, VERY COARSE GRAINED, SILTY TO BASE. IRONSTONE BAND AT 12M..		
25.300	11.300	CLAY	CREAM, GREEN-GREY, MICACEOUS, SOFT CLAY, SECONDARY CHLORITE, COMMON, SLIGHTLY SILTY TO BASE.		
34.000	8.700	SAND	GREEN, FINE TO GRANULAR GRAINED, MICACEOUS, FELDSPATHIC-QUARTZOSE, ANGULAR GRAINS, WELL SORTED, COMPACT SAND, SECONDARY CHLORITE, ABUNDANT. ADDITIONAL FEATURES INCLUDE:SUBANGULAR GRAINS, SLIGHTLY CLAYEY MATRIX ESPECIALLY TO BASE, PEBBLE BAND CONTAINING ANGULAR QUARTZO-FELDSPATHIC FRAGMENTS TO BASE, MAXIMUM GRAIN SIZE CYCLE.		

IV

0510

APPENDIX 2

POLDA BASIN COMPOSITE BOREHOLE LOGS

0511

GEOEX PTY. LTD COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

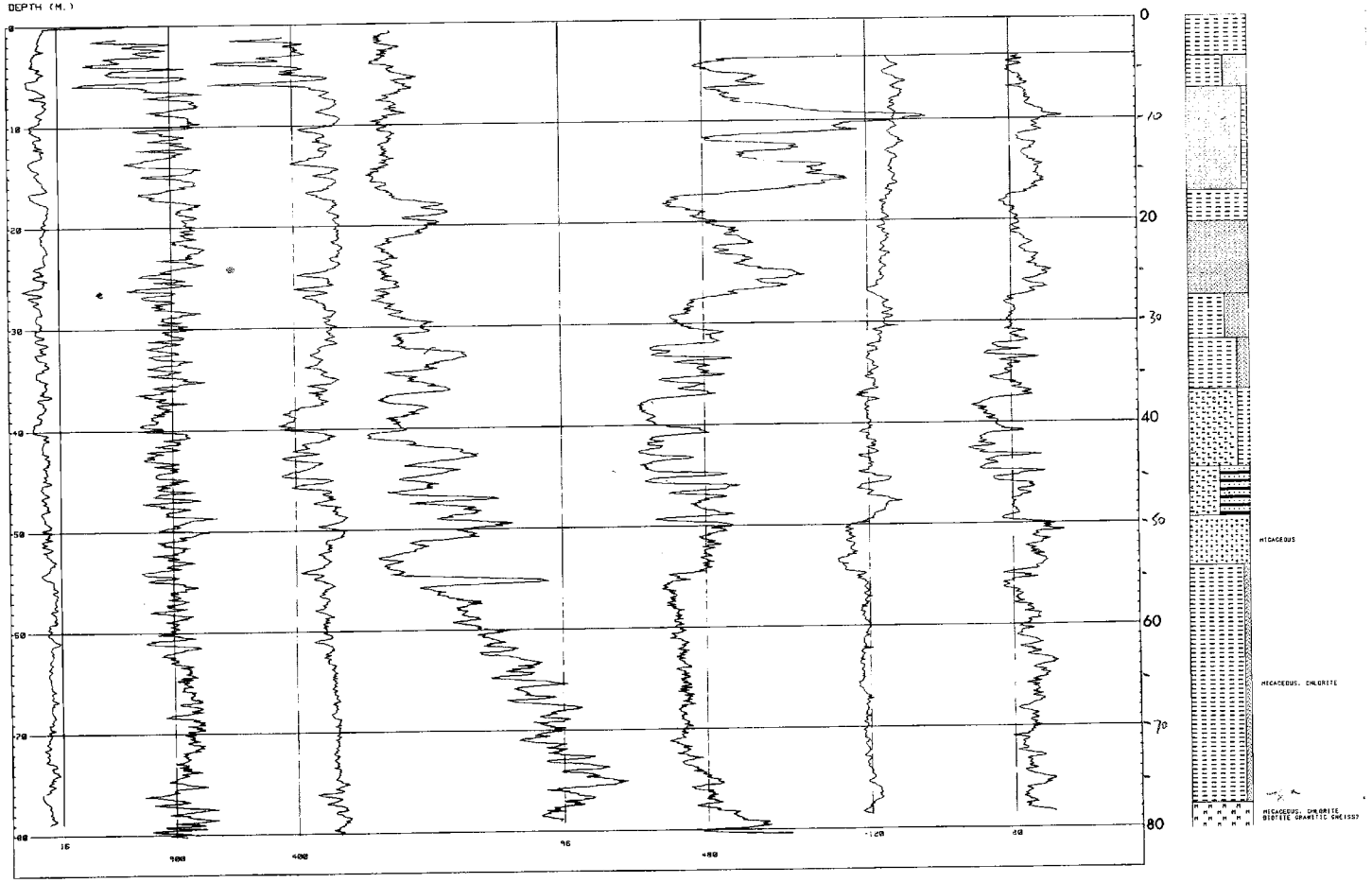
LOGGING SPEEDS:
DENSITY PROBE 5 M/MIN
NEUTRON PROBE 5 M/MIN
DATUM ABOVE GROUND LEVEL 0.00 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER:58101.28

PLOTTING SCALE: 1:200
PLOTTING 1 Point IN :2
FILTERING :
SHORT DENSITY. .5
LONG DENSITY. .5
CALIPER. .2
NATURAL GAMMA. .15
NEUTRON. .5
SELF POTENTIAL. .3
RESISTANCE. .5
SONIC. .3

BOREHOLE NO. 81LRM42
DEPTH LOGGED 80.47 M.
DATE LOGGED 09/06/81
DATE PROCESSED 10/06/81

SHORT SPACED DENSITY CPS 1000 900 800 700 600
CAL GM/CC 1.19 1.74
CALIPER cm. 8 16 24 32 10 20 30
NATURAL GAMMA CPS 48 64 80 96 112 128 144
CAL 0 API 100 API
SELF POTENTIAL mV -160 -140 -120 -100 -80
RESISTANCE Ohms 76 80 84 88 92
LONG SPACED DENSITY CPS 800 600 400 200 0
CAL GM/CC 1.19 1.74
NEUTRON CPS 160 320 480 640 800 960
CAL 26% 18%
CAL +1

DEPTH (M.)



LEGEND
LITHOLOGY REFERENCE

LITHIFTIC SAND
CARB. SILT/STONE
CLAY
SAND
CARB. CLAY
METAMORPHIC/ POSSIBLY METAMORPHIC
SILT

C R A EXPLORATION PTY LIMITED

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 42

REF	Kimba SI 53-7	
SCALE	1 : 500	
AUTHOR	M. J. F.	REPORT No. 10307
DATE	Dec. 1981	PLAN No SAa1292

0512

GEOEX
PTY LTD COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

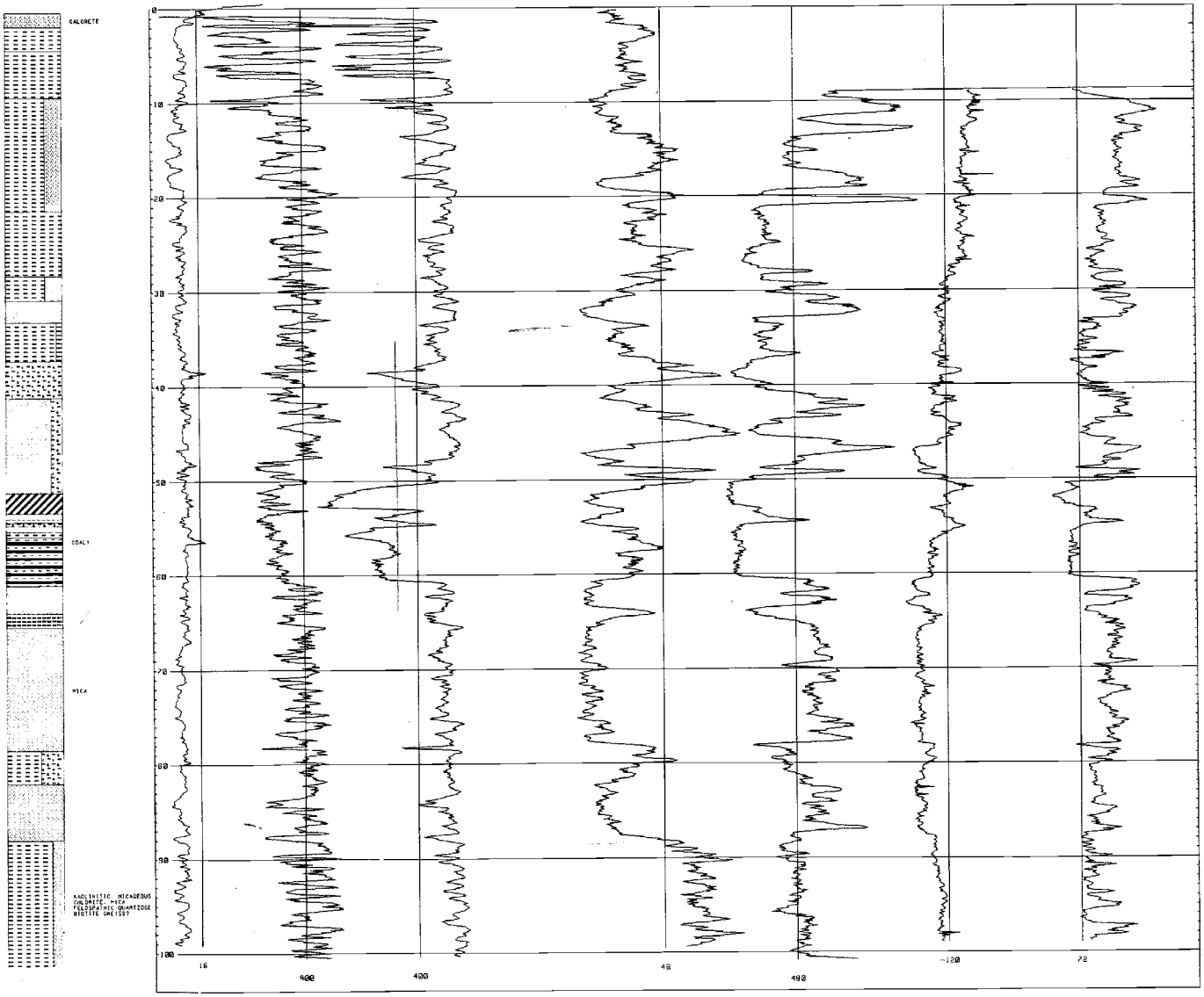
LOGGING SPEEDS:
DENSITY PROBE 5 M/MIN
NEUTRON PROBE 5 M/MIN
DATUM ABOVE GROUND LEVEL .49 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER:58101.26

PLOTTING SCALE: 1:200
PLOTTING : Point IN :3
FILTERING :
SHORT DENSITY.....5
LONG DENSITY.....5
CALIPER.....2
NATURAL GAMMA....15
NEUTRON.....5
SELF POTENTIAL...3
RESISTANCE.....5
SONIC.....3

BOREHOLE NO. 81LRM43
DEPTH LOGGED 100.80 M.
DATE LOGGED 09/08/81
DATE PROCESSED 10/08/81

SHORT SPACED DENSITY CPS 1000 900 800 700 600
CAL GM/CC 1.19 1.74
CALIPER cm. 8 16 24 32 10 20 30
LONG SPACED DENSITY CPS 600 500 400 200 0
CAL GM/CC 1.19 1.74
NATURAL GAMMA CPS 0 16 32 48 64 80 96
CAL 0 API 100 API
SELF POTENTIAL mV -160 -140 -120 -100 -80
NEUTRON CPS 160 320 480 640 800 960
CAL 26% 15%
RESISTANCE Ohms 68 72 76 80 84
CAL #1

DEPTH (M.)



LEGEND
LITHOLOGY REFERENCE

LIGNITE
CARB. MUDSTONE
LIGNITIC CLAY
SILT
CLAY
SAND
CARB. CLAY

CRA EXPLORATION PTY. LIMITED

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 43

Ref: Kimba SI 53-7	
Author: M.J.N.F.	Scale: 1:500
Drawn:	Report No: 10307
Date: DECEMBER 1981	Plan No: SAa1293

GEOEX PTY. LTD COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

LOGGING SPEEDS:
NEUTRON PROBE 6 M/MIN
DATUM ABOVE GROUND LEVEL .50 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER:38105.28

PLOTTING SCALE: 1:200
PLOTTING : Point IN :3
FILTERING :
SHORT DENSITY.... 5
LONG DENSITY..... 7
CALIPER..... 4
NATURAL GAMMA. 15
NEUTRON..... 5
SELF POTENTIAL. 3
RESISTANCE..... 5

BOREHOLE NO. 81LRM44

DEPTH LOGGED 57.54 M.
DATE LOGGED 11/06/81
DATE PROCESSED 12/06/81

0513

SHORT SPACED DENSITY CPS
1000 900 800 700 600
CAL GM/CC 1.19 1.74

CALIPER cm.
8 16 24 32
10 20 30

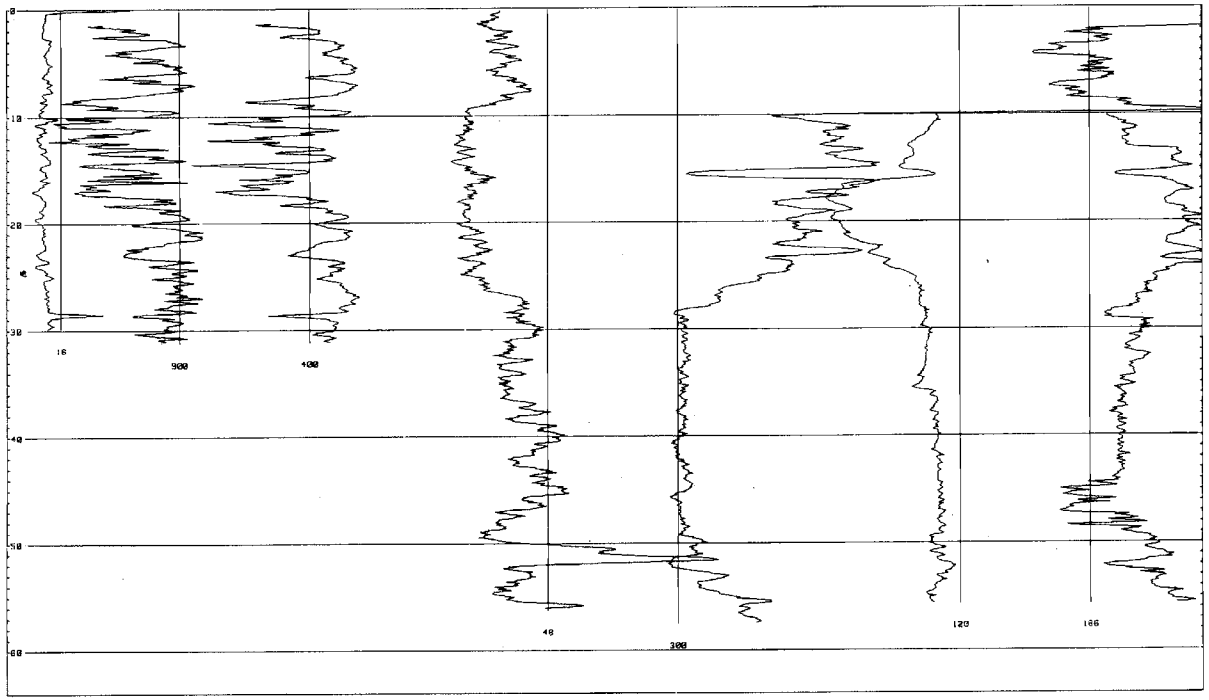
NATURAL GAMMA CPS
0 16 32 48 64 80 96
CAL 0 API 100 API

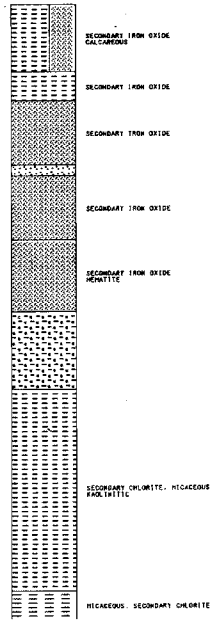
SELF POTENTIAL mV
0 60 120 180 240

RESISTANCE Ohms
174 160 160 132 138

LONG SPACED DENSITY CPS
800 600 400 200 0
CAL GM/CC 1.19 1.74

NEUTRON CPS
0 300 600 900 1200
CAL 26% 19% 1.9%





LEGEND
LITHOLOGY REFERENCE
CLAY
SANDSTONE
CARB. CLAY
SCHIST
CARB

C R A EXPLORATION PTY LIMITED

POLDA BASIN
1981 DRILLING PROGRAM
COMPOSITE BOREHOLE LOG
HOLE 81LRM44

REF. Kimba SI 53-7	
SCALE 1:500	
AUTHOR M. J. F.	REPORT 10307
DATE DEC. 1981	PLAN No SAa1294

GEOEX PTY LTD

COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

LOGGING SPEEDS:
DENSITY PROBE 5 M/MIN
NEUTRON PROBE 5 M/MIN
DATUM ABOVE GROUND LEVEL 0.00 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER:38105.28

PLOTTING SCALE: 1:200
PLOTTING 1 Point IN :2
FILTERING :
SHORT DENSITY. . 5
LONG DENSITY. . 5
CALIPER. . 2
NATURAL GAMMA. . 15
NEUTRON. 5
SELF POTENTIAL. . 3
RESISTANCE. . . 5

BOREHOLE NO. 81LRM45
DEPTH LOGGED 80.82 M.
DATE LOGGED 11/06/81
DATE PROCESSED 11/06/81

0514

SHORT SPACED DENSITY CPS
CAL GM/CC 1.19 | 1.74

CALIPER cm.

NATURAL GAMMA CPS
CAL 0 API | 100 API

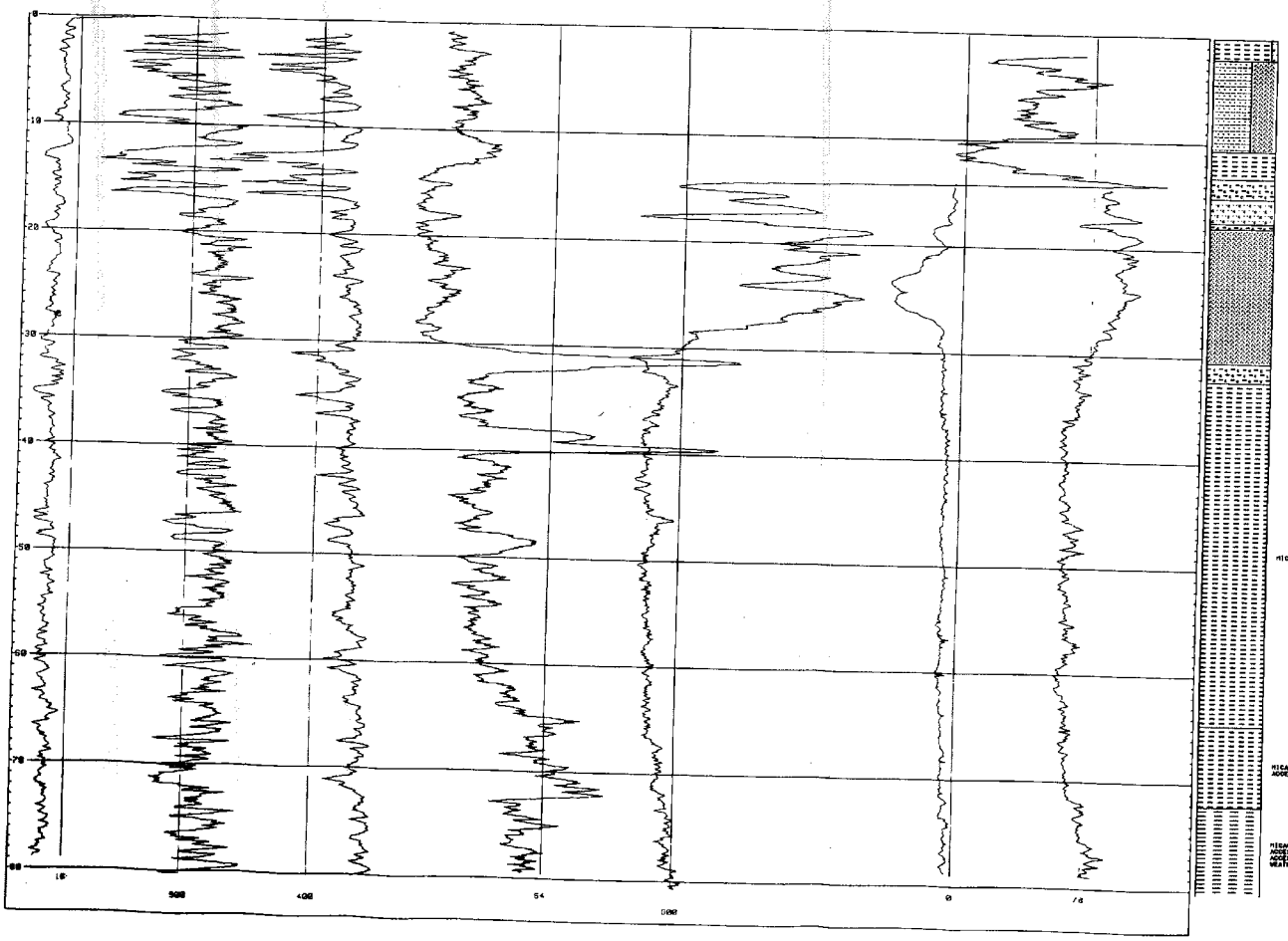
SELF POTENTIAL mV

RESISTANCE Ohms

LONG SPACED DENSITY CPS
CAL GM/CC 1.19 | 1.74

NEUTRON CPS
CAL 26% | 19% | 1.9%

DEPTH (M.)



LEGEND
LITHOLOGY REFERENCE

CLAY
CARB. SAND/STONE
CARB. CLAY
CALCRETE
SILT
BONIST
SAND

CRA EXPLORATION PTY LIMITED	
POLDA BASIN 1981 DRILLING PROGRAMME COMPOSITE BOREHOLE LOG HOLE 81 LRM 45	
REF. Kimba SI 53-7	
SCALE 1:500	
AUTHOR M.J.N.F.	REPORT 10307
DATE DECEMBER 1981	PLAN No SAa 1295

GEOEX
PTY LTD COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

LOGGING SPEEDS:
DENSITY PROBE 6 M/MIN
NEUTRON PROBE 5 M/MIN
DATUM ABOVE GROUND LEVEL 0.00 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER:36105.28

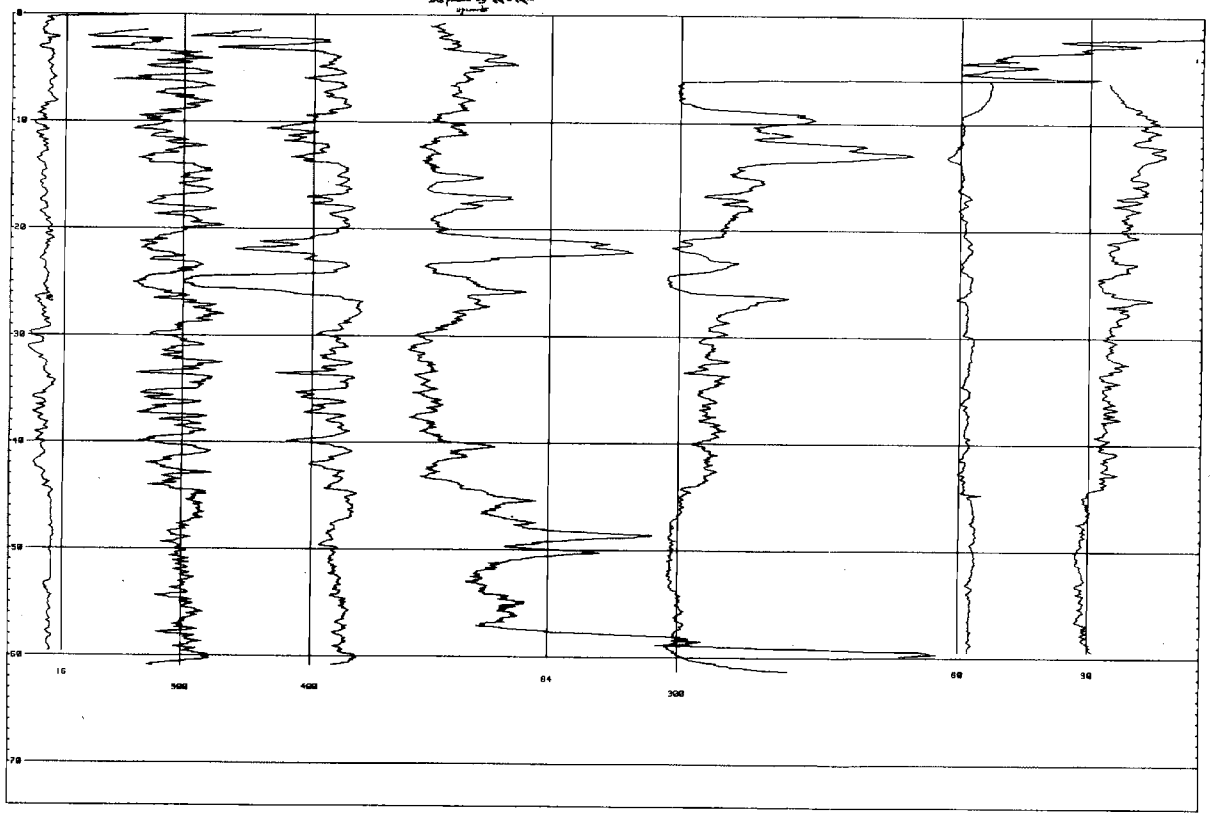
PLOTTING SCALE: 1:200
PLOTTING I Point IN :3
FILTERING :
SHORT DENSITY. . .5
LONG DENSITY. . .5
CALIPER. 2
NATURAL GAMMA. . .15
NEUTRON. 5
SELF POTENTIAL. . .3
RESISTANCE. 5

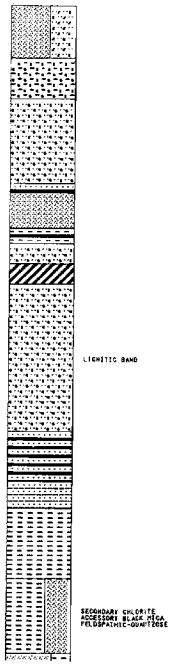
BOREHOLE NO. 81LRM46
DEPTH LOGGED 61.31 M.
DATE LOGGED 12/06/81
DATE PROCESSED 12/06/81

0515

SHORT SPACED DENSITY CPS
CAL GM/CC 1.19 1.74
CALIPER cm.
NATURAL GAMMA CPS
CAL 0 API 100 API
SELF POTENTIAL mV
RESISTANCE Ohms
LONG SPACED DENSITY CPS
CAL GM/CC 1.19 1.74
NEUTRON CPS
CAL 26% 15% 1.9%

DEPTH (M.)





LEGEND
LITHOLOGY REFERENCE

LIGNITE
SILT
LIGNITIC CLAY
SAND
LIGNITIC SAND
CARB. SAND/STONE
CLAY
CALCRETE
CARB. CLAY

C R A EXPLORATION PTY LIMITED

POLDA BASIN
1981 DRILLING PROGRAM
COMPOSITE BOREHOLE LOG
HOLE 81LRM46

REF. Kimba SI 53-7	
SCALE 1:500	
AUTHOR M. J. F.	REPORT 10307
DATE DEC. 1981	PLAN No SAa 1296

0516

GEOEX
PTY LTD COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

LOGGING SPEEDS:
DENSITY PROBE 5 M/MIN
NEUTRON PROBE 5 M/MIN
DATUM ABOVE GROUND LEVEL .48 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER: 28105.28

PLOTTING SCALE: 1:200
PLOTTING 1 Points IN 13
FILTERING :
SHORT DENSITY. . 5
LONG DENSITY. . 5
CALIPER. . .2
NATURAL GAMMA. . . .15
NEUTRON. 5
SELF POTENTIAL. . . 3
RESISTANCE. . . 5

BOREHOLE NO. 81LRM47
DEPTH LOGGED 94.53 M.
DATE LOGGED 13/06/81
DATE PROCESSED 13/06/81

SHORT SPACED DENSITY CPS
1000 900 800 700 600
CAL GM/CC 1.19 1.74

CALIPER cm.
8 16 24 32
10 20 30

LONG SPACED DENSITY CPS
600 500 400 300 0
CAL GM/CC 1.19 1.74

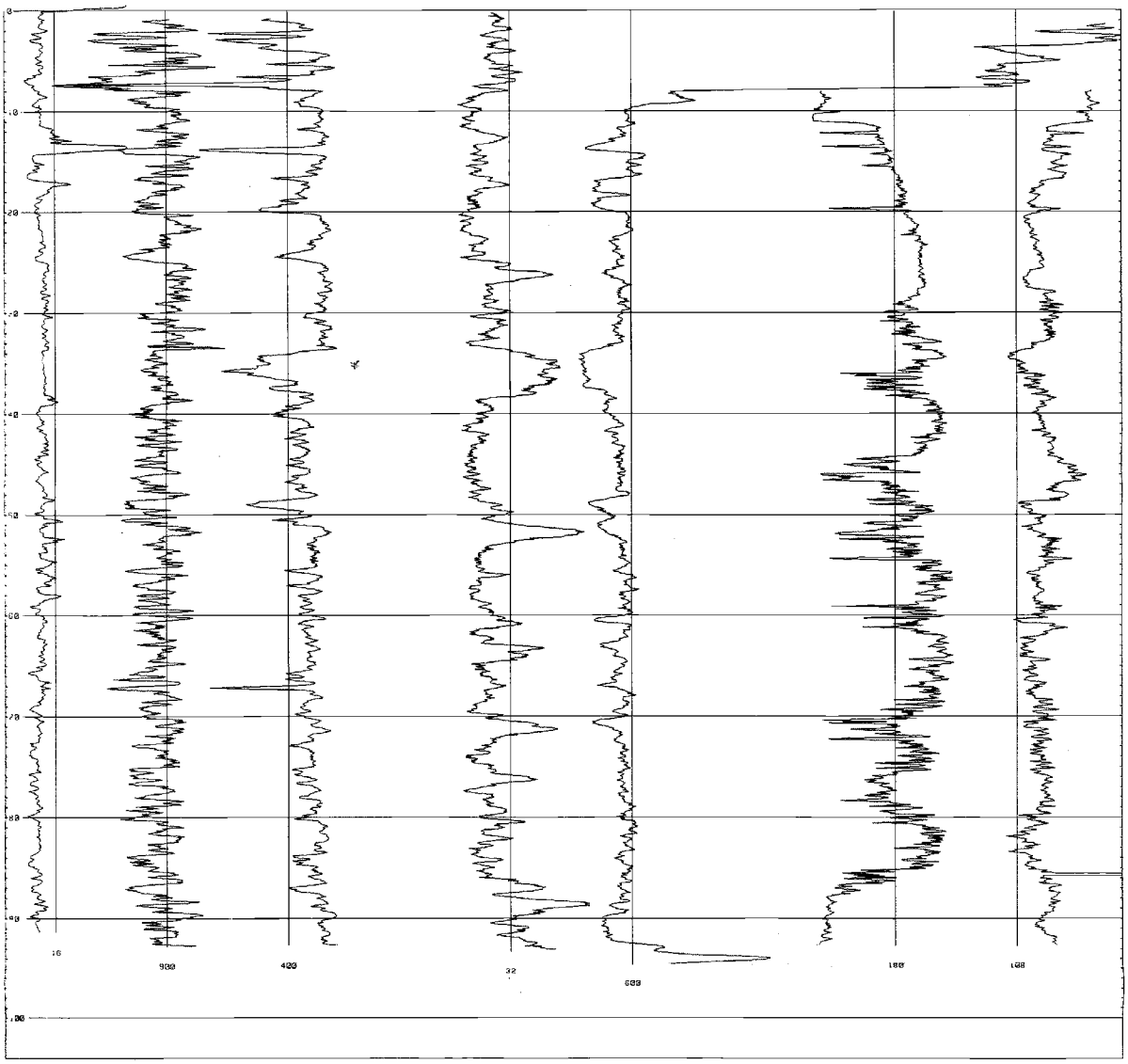
NATURAL GAMMA CPS
0 16 32 48 64 80
CAL 0 API 100 API

NEUTRON CPS
0 300 600 900 1200 1500
CAL 28% 19% 1.9%

SELF POTENTIAL mV
60 120 180 240 300

RESISTANCE Ohms
98 102 108 114 120

DEPTH (M.)



MICACEOUS

MICACEOUS

QUARTZ-LITHIC ACCESSORY WHITE MICA GREEN LITHIC AND QUARTZITE

LEGEND
LITHOLOGY REFERENCE

CLAY
SAND
CARB. CLAY
METAMORPHIC POSSIBLY METAMORPHIC

CRA EXPLORATION PTY LIMITED

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 47

REF. Kimba SI 53-7	
SCALE 1: 500	
AUTHOR M.J.N.F.	REPORT NO. 10307
DATE DECEMBER 1981	PLAN NO SAa 1297

GEOEX PTY. LTD COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

LOGGING SPEEDS:
DENSITY PROBE 8 M/MIN
NEUTRON PROBE 5 M/MIN
DATUM ABOVE GROUND LEVEL 0.00 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER: 38105.28

PLOTTING SCALE: 1:200
PLOTTING : Point IN :3
FILTERING :
SHORT DENSITY . 5
LONG DENSITY. . 5
CALIPER. 2
NATURAL GAMMA. . 15
NEUTRON. 5
SELF POTENTIAL. . 2
RESISTANCE. . . 5

BOREHOLE NO. 81LRM48

DEPTH LOGGED 41.56 M.
DATE LOGGED 13/06/81
DATE PROCESSED 13/06/81

0517

SHORT SPACED DENSITY CPS
1000 900 800 700 600
CAL GM/CC 1.19 1.74

CALIPER cm.
8 16 24 32
10 20 30

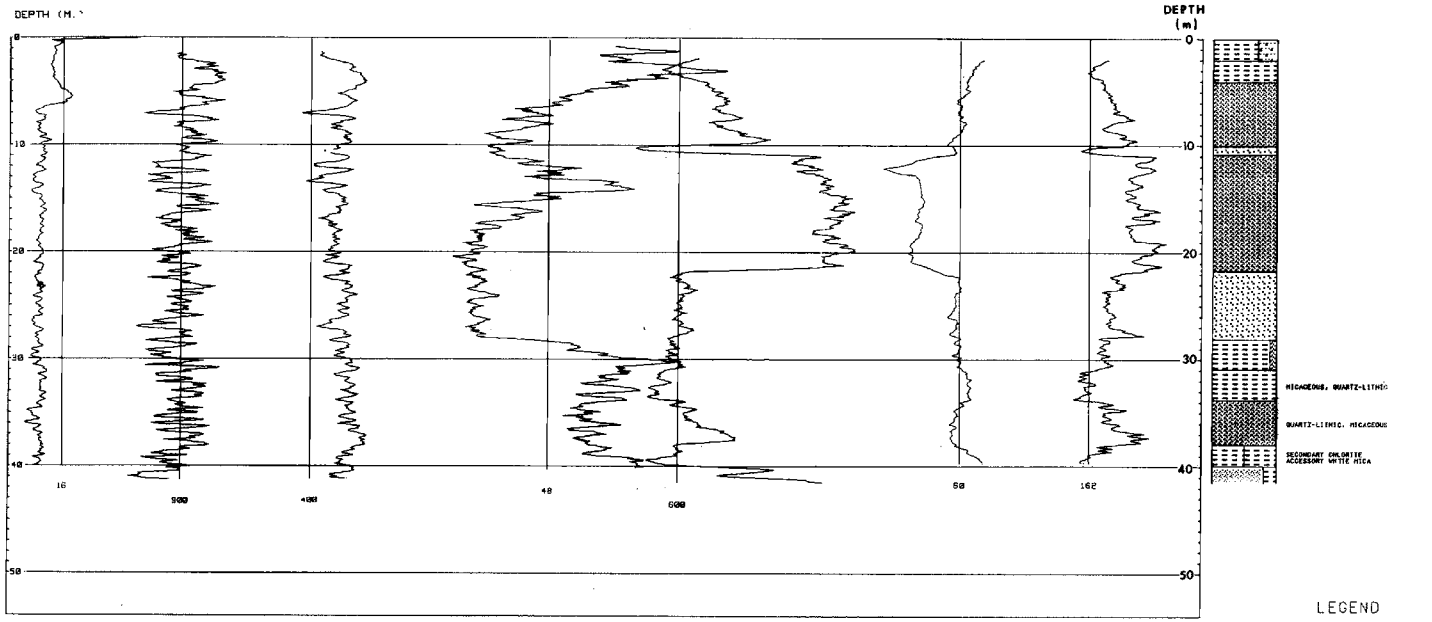
NATURAL GAMMA CPS
0 16 32 48 64 80 96
CAL 0 API 100 API

SELF POTENTIAL mV
-60 0 60 120 180

RESISTANCE Ohms
150 156 162 168 174

LONG SPACED DENSITY CPS
800 600 400 200 0
CAL GM/CC 1.19 1.74

NEUTRON CPS
0 300 600 900 1200 1500
CAL 26% 19% 1.9%



LEGEND
LITHOLOGY REFERENCE

CLAY
SANDSTONE
SAND
CALCRETE

BORE : LRM ROTARY OPEN HOLE 48

C R A EXPLORATION PTY LIMITED

POLDA BASIN
1981 DRILLING PROGRAM
COMPOSITE BOREHOLE LOG
HOLE 81LRM48

REF. Kimba SI 53-7	
SCALE 1:500.	
AUTHOR M. J. F.	REPORT 10307
DATE DEC. 1981	PLAN No SAa1298

0518

GEOEX PTY. LTD COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

LOGGING SPEEDS:
DENSITY PROBE 5 M/MIN
NEUTRON PROBE 6 M/MIN
DATUM ABOVE GROUND LEVEL 0.00 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER: 38105.28

PLOTTING SCALE: 1:200
PLOTTING 1 Point IN :3
FILTERING :
SHORT DENSITY....5
LONG DENSITY.....5
CALIPER.....2
NATURAL GAMMA....15
NEUTRON.....5
SELF POTENTIAL...3
RESISTANCE.....5

BOREHOLE NO. 81LRM49
DEPTH LOGGED 60.49 M.
DATE LOGGED 14/06/81
DATE PROCESSED 14/06/81

SHORT SPACED DENSITY CPS
CAL GM/CC 1.19 1.74
CALIPER cm.
LONG SPACED DENSITY CPS
CAL GM/CC 1.19 1.74
NATURAL GAMMA CPS
NEUTRON CPS
CAL 26% 15% 1.9%
SELF POTENTIAL mV
RESISTANCE Ohms

DEPTH (M.)

LEGEND
LITHOLOGY REFERENCE
CLAY
SANDSTONE
CARB. CLAY
CALCRETE
SAND
SCHIST

C R A EXPLORATION PTY LIMITED

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 49

REF. Kimba SI 53-7	
SCALE : 1:500	
AUTHOR : M.J.N.F.	REPORT: 10307
DATE : DECEMBER 1981	PLAN No SAa1299

0519

GEOEX PTY LTD COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

LOGGING SPEEDS:
DENSITY PROBE 5 M/MIN
NEUTRON PROBE 5 M/MIN
DATUM ABOVE GROUND LEVEL .50 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER:38105.28

PLOTTING SCALE: 1:200
PLOTTING : Point IN :3
FILTERING :
SHORT DENSITY....4
LONG DENSITY....5
CALIPER.....2
NATURAL GAMMA....15
NEUTRON.....5
SELF POTENTIAL...2
RESISTANCE.....4

BOREHOLE NO. 81LRM50
DEPTH LOGGED 95.44 M.
DATE LOGGED 14/06/81
DATE PROCESSED 14/06/81

SHORT SPACED DENSITY CPS 1800 900 600 300 0
CAL GM/CC 1.19 1.74
CALIPER cm. 8 16 24 32 10 20 30
NATURAL GAMMA CPS 16 32 48 64 80 96 112
CAL 0 API 100 API
SELF POTENTIAL mV -80 0 50 120 130
RESISTANCE Ohms 48 54 60 66 72
LONG SPACED DENSITY CPS 800 600 400 200 0
CAL GM/CC 1.19 1.74
NEUTRON CPS 0 300 600 900 1200
CAL 26% 19% 1.9%

DEPTH (m) DEPTH (M)

0 10 20 30 40 50 60 70 80 90 100

LIGNITIC BANDS
LIGNITIC
MICACEOUS
MICACEOUS
LITHIC-QUARTZ. M. ACEOUS

16 900 400 64 300 60 60

LEGEND
LITHOLOGY REFERENCE

LIGNITIC SAND
SAND
CLAY
CALCRITE
CARB. CLAY
QUARTZITE

CRA EXPLORATION PTY. LIMITED

POLDA BASIN
1981 DRILLING PROGRAM
COMPOSITE BOREHOLE LOG
HOLE 81LRM 50

Ref.	Kimba SI 53 - 7		
Scale	1:500		
Author	M. J. F.	Report N°	10307
Date	DEC. 1981	Plan N°	SAa 1300

GEOEX PTY LTD COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

LOGGING SPEEDS:
DENSITY PROBE 5 M/MIN
NEUTRON PROBE 5 M/MIN
DATUM ABOVE GROUND LEVEL .52 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER:38105.28

PLOTTING SCALE: 1:200
PLOTTING 1 Point IN :3
FILTERING :
SHORT DENSITY. . .5
LONG DENSITY. . 5
CALIPER. 2
NATURAL GAMMA. . . .5
NEUTRON. 5
SELF POTENTIAL. . .3
RESISTANCE. 5

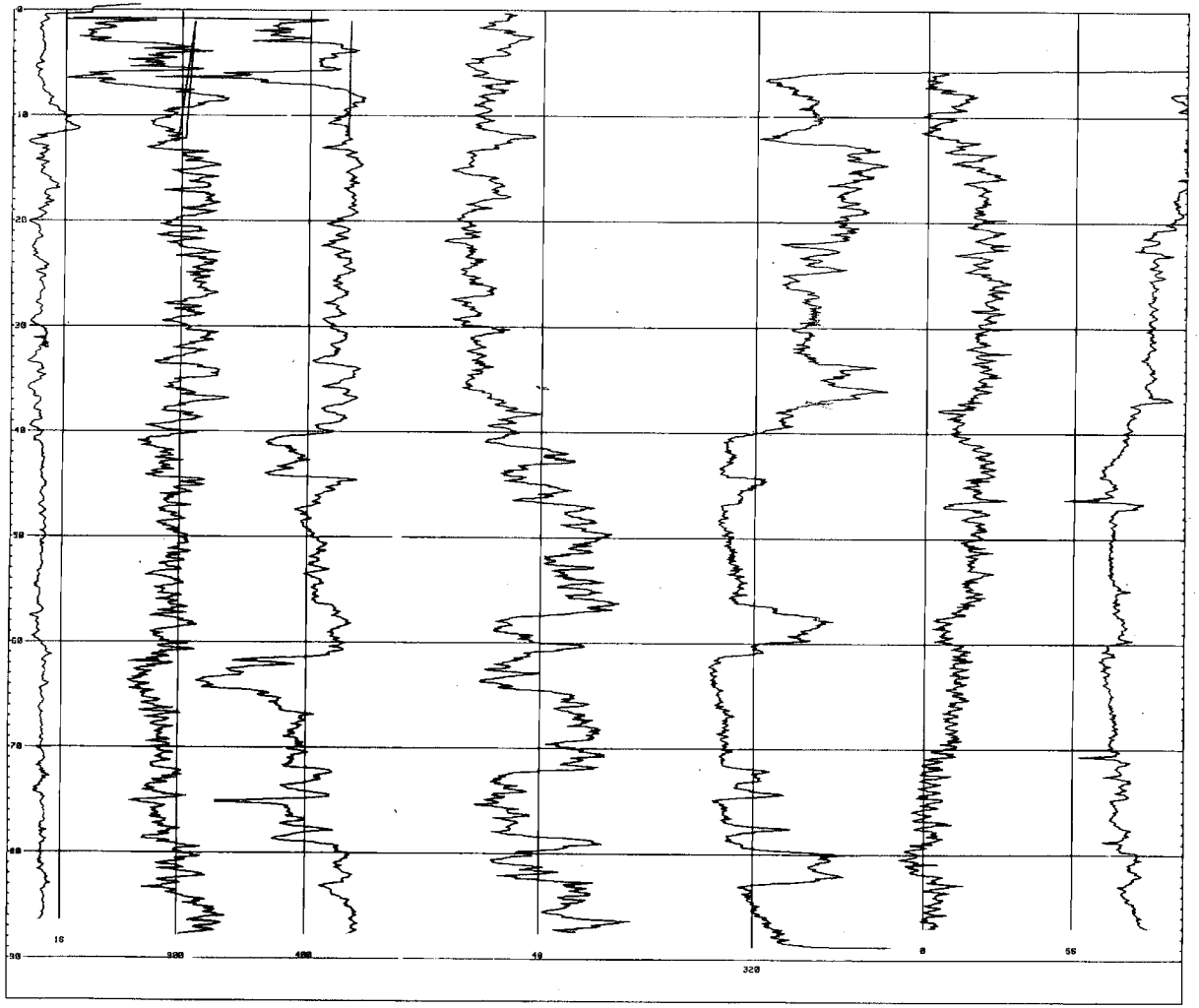
BOREHOLE NO. 81LRM51

DEPTH LOGGED 88.84 M.
DATE LOGGED 15/06/81
DATE PROCESSED 15/06/81

0520

SHORT SPACED DENSITY CPS
CAL GM/CC 1.15 | 1.74
CALIPER cm.
NATURAL GAMMA CPS
CAL 0 API | 100 API
LONG SPACED DENSITY CPS
CAL GM/CC 1.15 | 1.74
NEUTRON CPS
CAL 20% | 13% | 1.9%
SELF POTENTIAL mV
RESISTANCE Ohmm

DEPTH (M.)



LIGNITIC SANDS
LIGNITIC
LIGNITIC
MICACEOUS
LITHIC-QUARTZ-MICACEOUS SECONDARY CALCITE ACCESSORY WHITE MICA

LEGEND
LITHOLOGY REFERENCE

LIGNITE
SAND
CLAY
CARB. SAND/STONE
CARB. CLAY
CALCRETE
CARB. SILT/STONE

CRA EXPLORATION PTY LIMITED

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 51

REF. Kimba SI 53-7	
SCALE: 1:500	
AUTHOR: M.J.N.F.	REPORT: 10307
DATE: DECEMBER 1981	PLAN No SAa 1301

GEOEX PTY LTD COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

LOGGING SPEEDS:
DENSITY PROBE 5 M/MIN
NEUTRON PROBE 8 M/MIN
DATUM ABOVE GROUND LEVEL .58 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER:38105.20

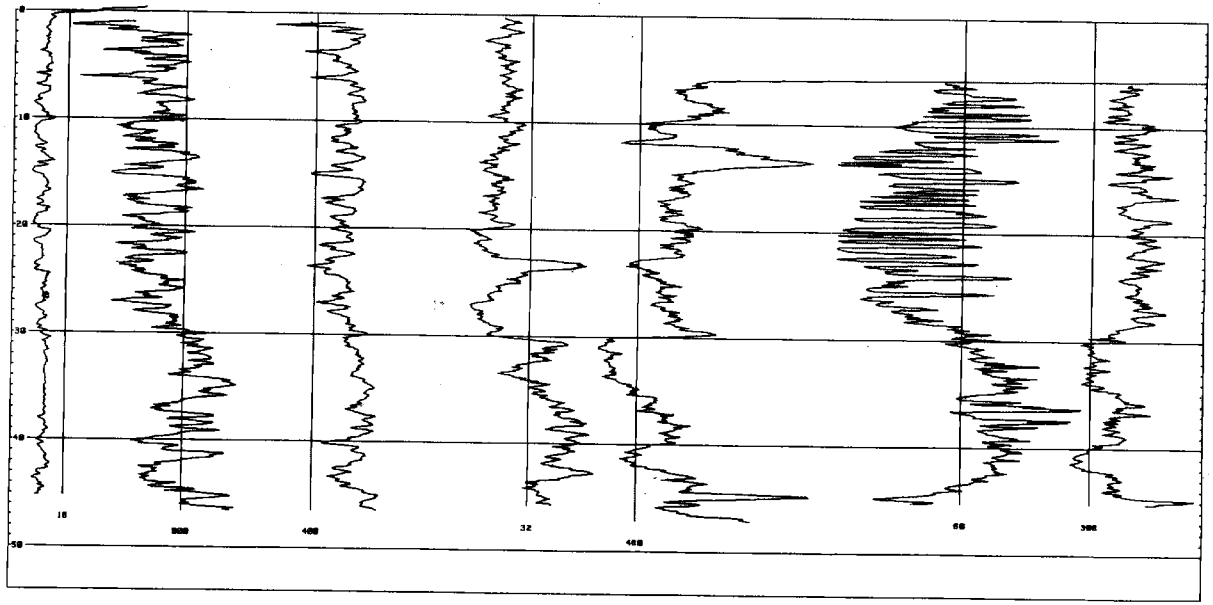
PLOTTING SCALE: 1:200
PLOTTING 1 Point IN :3
FILTERING :
SHORT DENSITY....5
LONG DENSITY.....5
CALIPER.....2
NATURAL GAMMA....15
NEUTRON.....5
SELF POTENTIAL...3
RESISTANCE.....5

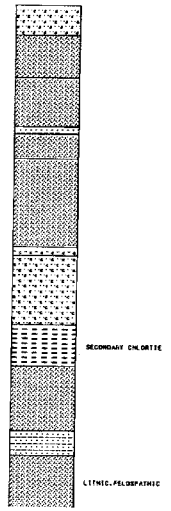
BOREHOLE NO. 81LRM52
DEPTH LOGGED 47.12 M.
DATE LOGGED 17/06/81
DATE PROCESSED 17/06/81

0521

SHORT SPACED DENSITY CPS
CAL GM/CC 1.19 1.74
CALIPER cm.
NATURAL GAMMA CPS
CAL @ API 100 API
SELF POTENTIAL mV
RESISTANCE Ohms
LONG SPACED DENSITY CPS
CAL GM/CC 1.19 1.74
NEUTRON CPS
CAL 26% 18% 1.5%

DEPTH (M.)





LEGEND
LITHOLOGY REFERENCE
CLAY
SAND
SILT
CARB. SAND/STONE
CARB. SILT/STONE
CALCRETE

C R A EXPLORATION PTY LIMITED

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 52

REF. Kimba SI 53-7	
SCALE: 1:500	
AUTHOR: M.J.N.F.	REPORT: 10307
DATE : DECEMBER 1981	PLAN No SAa1302

GEOEX
PTY LTD COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

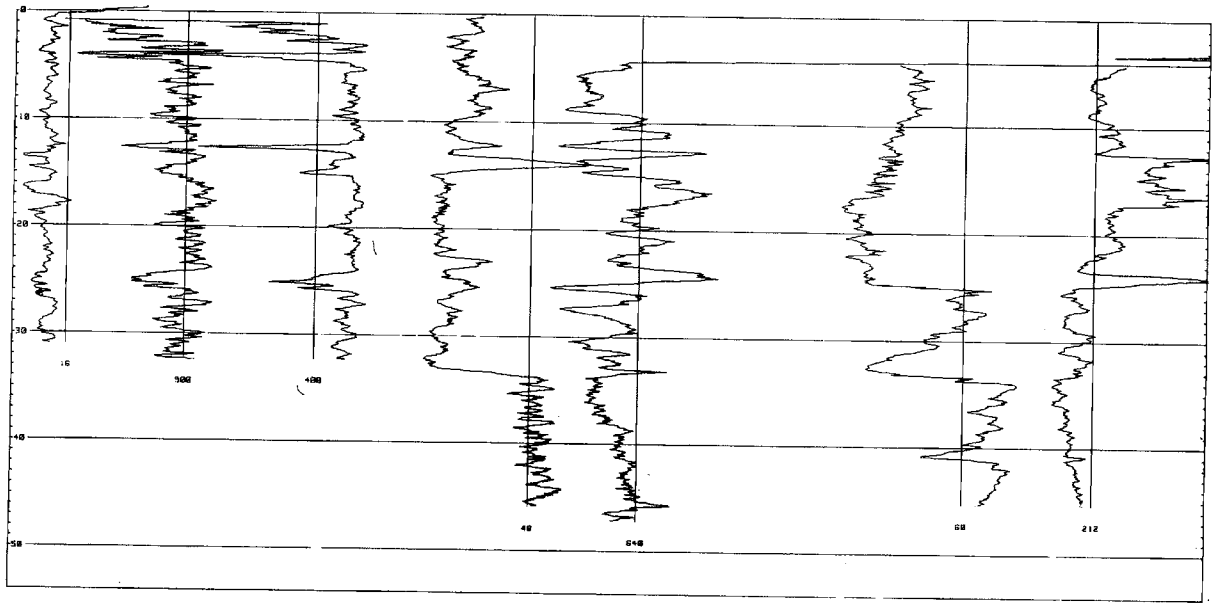
LOGGING SPEEDS:
DENSITY PROBE 5 M/MIN
NEUTRON PROBE 5 M/MIN
DATUM ABOVE GROUND LEVEL .98 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER:38105.28

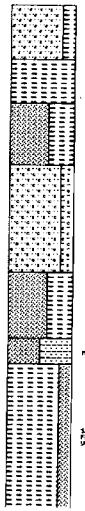
PLOTTING SCALE: 1:200
PLOTTING 1 Point IN :3
FILTERING :
SHORT DENSITY. . .5
LONG DENSITY. . .5
CALIPER. 2
NATURAL GAMMA. . .15
NEUTRON. 5
SELF POTENTIAL. . .3
RESISTANCE. 5

BOREHOLE NO. 81LRM53
DEPTH LOGGED 47.18 M.
DATE LOGGED 17/06/81
DATE PROCESSED 17/06/81

SHORT SPACED DENSITY CPS
CAL GM/CC 1.15 1.74
CALIPER cm.
NATURAL GAMMA CPS
CAL 0 API 100 API
SELF POTENTIAL mV
RESISTANCE Ohms
LONG SPACED DENSITY CPS
CAL GM/CC 1.15 1.74
NEUTRON CPS
CAL 28% 19% 1.9%

DEPTH (M.)





KAOLINITE
SECONDARY CHLORITE FELDSPATHIC-QUARTZOSE WEATHERED BASEMENT

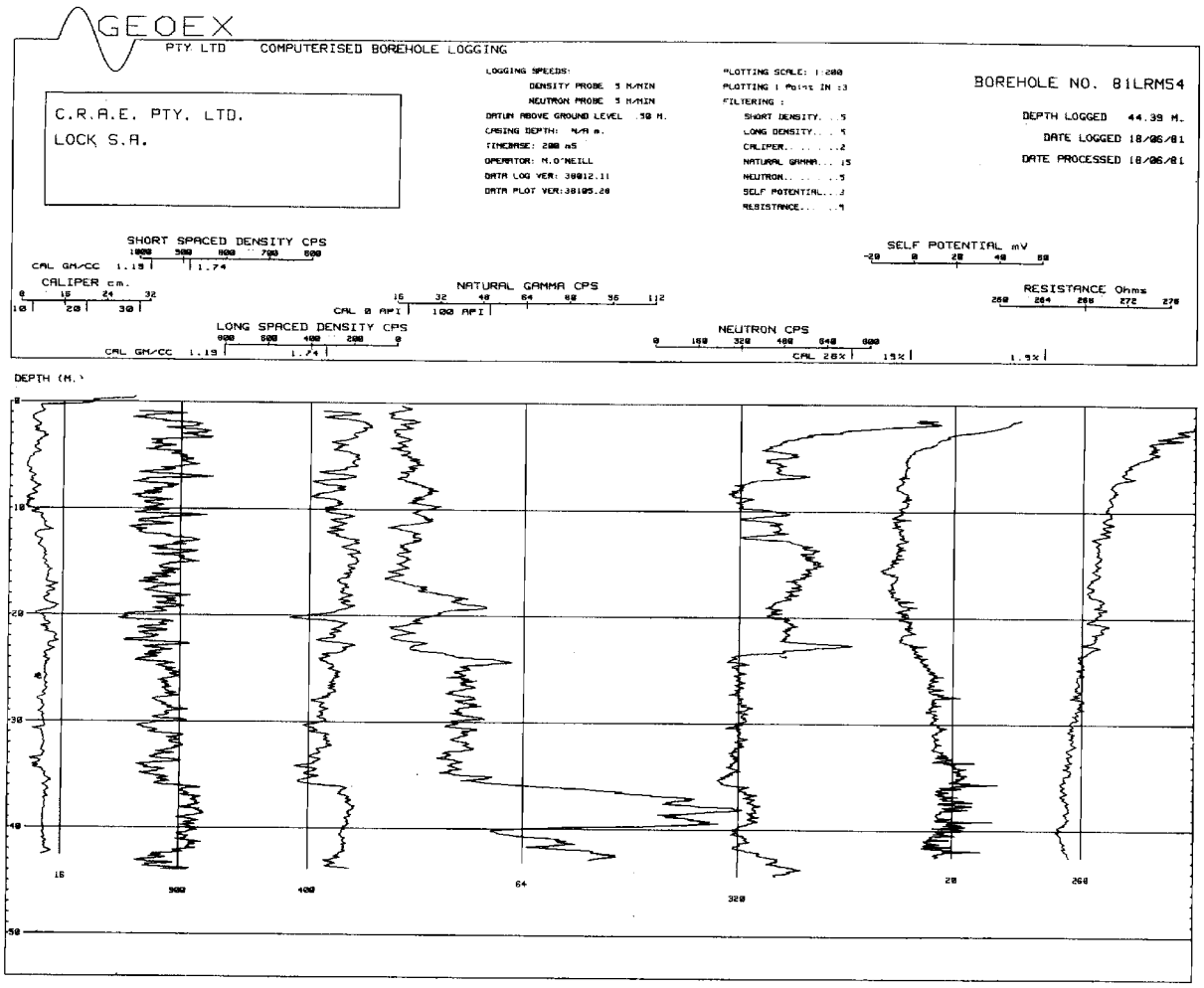
LEGEND
LITHOLOGY REFERENCE
CLAY
SAND
SILT
CARB. SAND/STONE
CARB. SILT/STONE
CALCRETE

0522

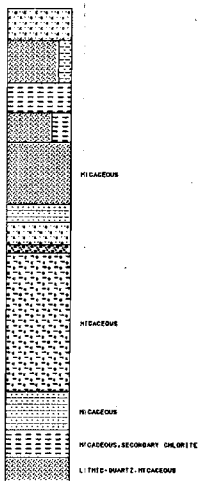
CRA EXPLORATION PTY LIMITED

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 53

REF. Kimba SI 53-7	
SCALE : 1: 500	
AUTHOR : M.J.N.F.	REPORT : 10307
DATE : DECEMBER 1981	PLAN No SAa 1303



0523



LEGEND
LITHOLOGY REFERENCE

CLAY
PEBBLE CONG.
CARB. CLAY
CARB. SAND/STONE
SILT
CALCRETE
SAND

C R A EXPLORATION PTY LIMITED	
POLDA BASIN	
1981 DRILLING PROGRAMME	
COMPOSITE BOREHOLE LOG	
HOLE 81 LRM 54	
REF. Kimba SI 53-7	
SCALE : 1:500	
AUTHOR : M. J. N. F.	REPORT : 10307
DATE : DECEMBER 1981	PLAN No SAa1304

GEOEX PTY. LTD COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

LOGGING SPEEDS:
DENSITY PROBE 6 M/MIN
NEUTRON PROBE 5 M/MIN
DATUM ABOVE GROUND LEVEL .00 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER:38105.28

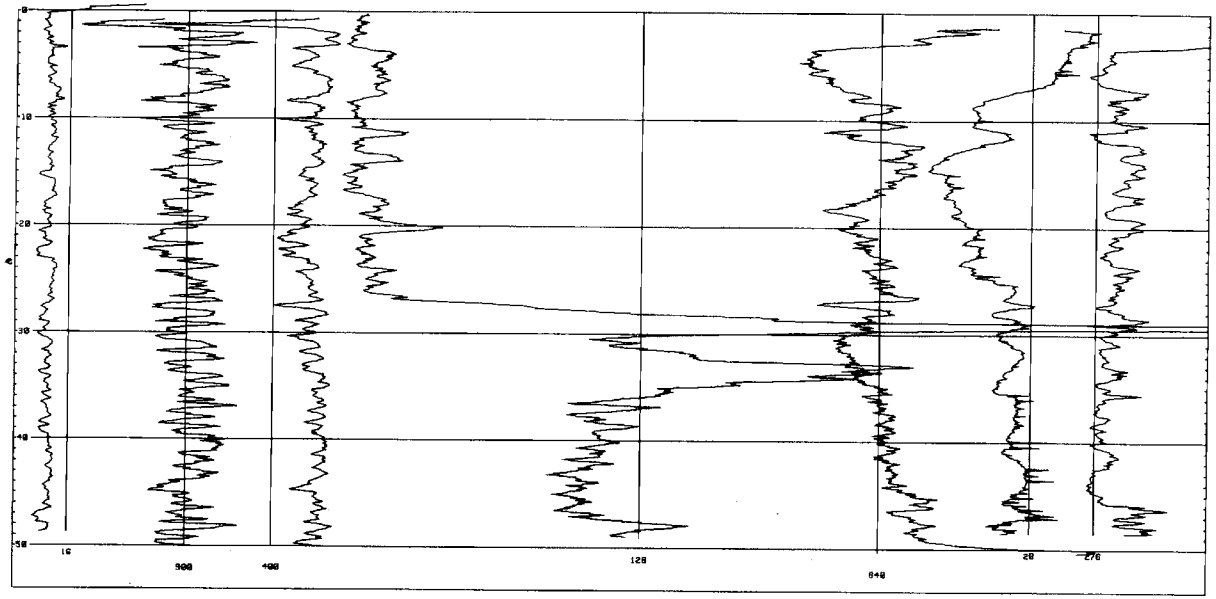
PLOTTING SCALE: 1:200
PLOTTING 1 Point IN :3
FILTERING :
SHORT DENSITY...5
LON DENSITY...5
CALIPER.....2
NATURAL GAMMA...15
NEUTRON.....5
SELF POTENTIAL...3
RESISTANCE.....5

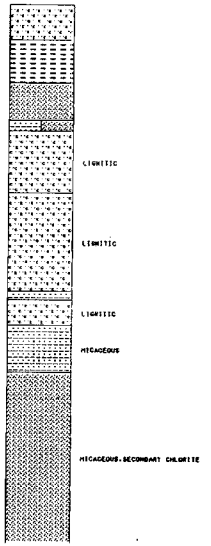
BOREHOLE NO. 81LRM55
DEPTH LOGGED 50.36 M.
DATE LOGGED 18/06/81
DATE PROCESSED 20/06/81

0524

SHORT SPACED DENSITY CPS
CAL GM/CC 1.19 1.74
CALIPER cm.
SELF POTENTIAL mV
NATURAL GAMMA CPS
CAL 0 API 100 API
RESISTANCE Ohms
LONG SPACED DENSITY CPS
CAL GM/CC 1.19 1.74
NEUTRON CPS
CAL 28% 19% 1.9%

DEPTH (M.)





LEGEND
LITHOLOGY REFERENCE

CLAY
CARB. SAND/STONE
SILT
CALCRETE
SAND

C R A EXPLORATION PTY LIMITED

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 55

REF. Kimba SI 53-7	
SCALE : 1: 500	
AUTHOR : M.J. N.F.	REPORT : 10307
DATE : DECEMBER 1981	PLAN No SAa 1305

GEOEX PTY. LTD

0525

COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

LOGGING SPEEDS:
DENSITY PROBE 5 M/MIN
NEUTRON PROBE 5 M/MIN
DATUM ABOVE GROUND LEVEL .50 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 30812.11
DATA PLOT VER:38105.28

PLOTTING SCALE: 1:200
PLOTTING 1 Point IN :3
FILTERING :
SHORT DENSITY....5
LONG DENSITY. ..5
CALIPER. 2
NATURAL GAMMA... 15
NEUTRON. 5
SELF POTENTIAL..3
RESISTANCE.....5

BOREHOLE NO. 81LRM56
DEPTH LOGGED 120.29 M.
DATE LOGGED 27/06/81
DATE PROCESSED 27/06/81

SHORT SPACED DENSITY CPS
CAL GM/CC 1.19 1.74
CALIPER cm.
SELF POTENTIAL mV
NATURAL GAMMA CPS
CAL 0 API 100 API
RESISTANCE Ohms
LONG SPACED DENSITY CPS
CAL GM/CC 1.19 1.74
NEUTRON CPS
CAL 25% 19% 1.9%

DEPTH (M.)

LIGNITIC
LIGNITIC CARBONACEOUS
CARBONACEOUS
LITHIC-QUARTZ
CARBONACEOUS
LIGNITIC
LIGNITIC
QUARTZO-FELDSPATHIC
QUARTZO-FELDSPATHIC
CARBONACEOUS
CARBONACEOUS
FELDSPATHIC-QUARTZOSE WEATHERED FELDSPAR GRANITE METAMORPHIC FRAGMENTS

LEGEND
LITHOLOGY REFERENCE

LIGNITE
SAND
CLAY
CARB. SAND/STONE
CARB. CLAY
CALCRETE
SILT

C R A EXPLORATION PTY. LIMITED

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 56

REF. Kimba SI 53-7	
SCALE: 1:500	
AUTHOR: M.J.N.F.	REPORT NO: 10307
DATE: DECEMBER 1981	PLAN NO: SAa 1306

GEOEX
PTY LTD COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

LOGGING SPEEDS:
DENSITY PROBE 5 M/MIN
NEUTRON PROBE 5 M/MIN
DATUM ABOVE GROUND LEVEL .50 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER:38105.28

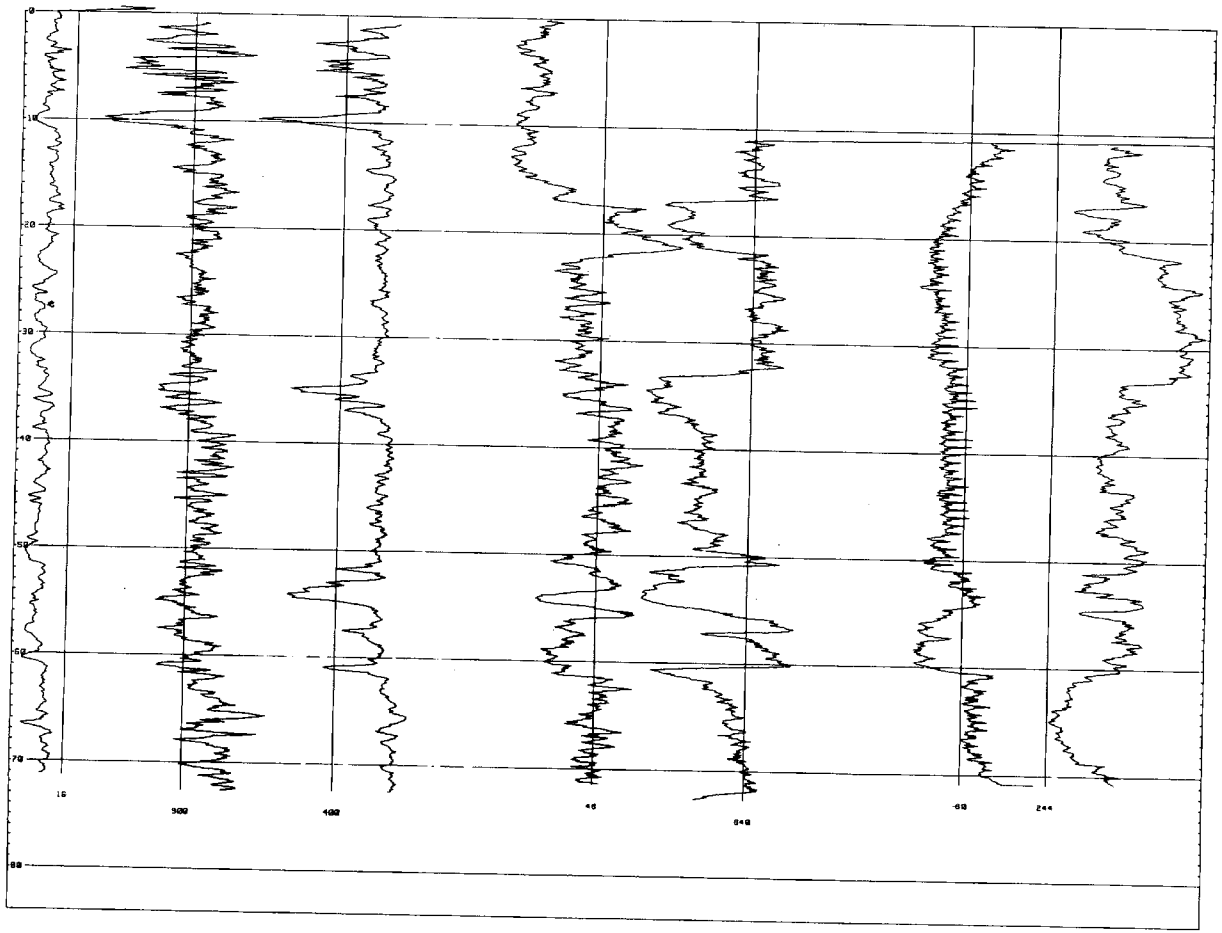
PLOTTING SCALE: 1:200
PLOTTING 1 Point IN :5
FILTERING :
SHORT DENSITY... 5
LONG DENSITY ... 5
CALIPER..... .2
NATURAL GAMMA....5
NEUTRON..... ..5
SELF POTENTIAL...3
RESISTANCE..... 5

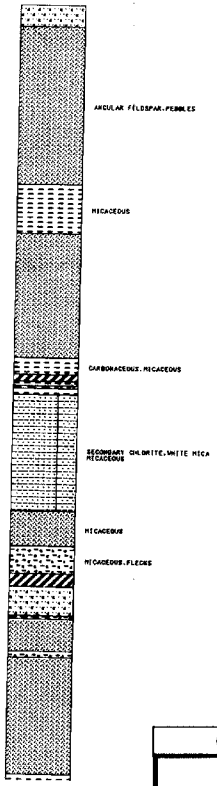
BORE HOLE NO. 8 LRM57
DEPTH LOGGED 72.72 M.
DATE LOGGED 29/06/81
DATE PROCESSED 29/06/81

0526

SHORT SPACED DENSITY CPS
CAL GM/CC 1.19 1.74
CALIPER cm.
LONG SPACED DENSITY CPS
CAL GM/CC 1.19 1.74
NATURAL GAMMA CPS
CAL 0 API 100 API
NEUTRON CPS
CAL 25% 15% 1.9%
SELF POTENTIAL mV
RESISTANCE Ohms

DEPTH (M.)





LEGEND
LITHOLOGY REFERENCE

LIGNITE
CLAY
CARB. CLAY
SILT
CARB. SILT/STONE
SAND
CARB. SAND/STONE
CALCRETE

C R A EXPLORATION PTY LIMITED

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 57

REF. Kimba SI 53-7	
SCALE : 1:500	
AUTHOR : M.J.N.F.	REPORT : 10307
DATE : DECEMBER 1981	PLAN No SAa 1307

GEOEX PTY LTD COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

LOGGING SPEEDS:
DENSITY PROBE 5 M/MIN
NEUTRON PROBE 6 M/MIN
DATUM ABOVE GROUND LEVEL .50 M.
CASING DEPTH: N/A m.
TIMEBASE: 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER:38105.28

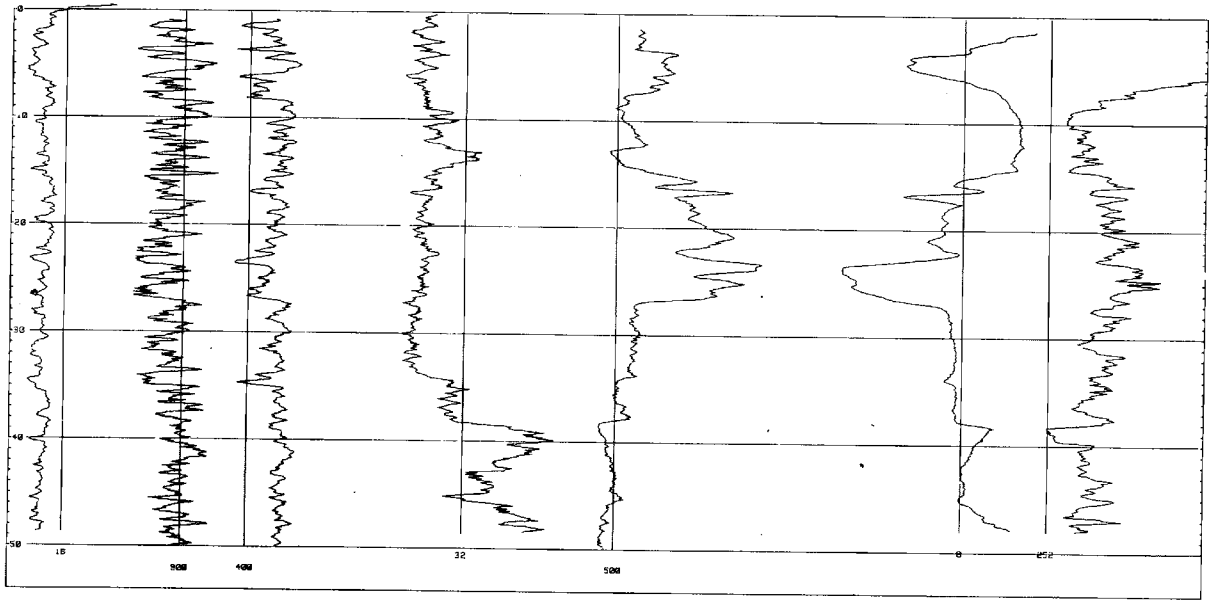
PLOTTING SCALE: 1 :200
PLOTTING 1 Point IN 1
FILTERING :
SHORT DENSITY. 5
LONG DENSITY. .5
CALIPER. .2
NATURAL GAMMA. .5
NEUTRON. .5
SELF POTENTIAL. .3
RESISTANCE. .5

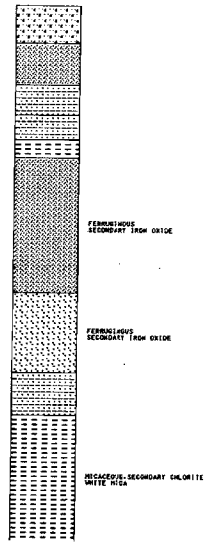
BOREHOLE NO. 81LRM58
DEPTH LOGGED 50.05 M.
DATE LOGGED 30/06/81
DATE PROCESSED 03/07/81

0527

SHORT SPA 1 DENSITY CPS
CAL GM/CC 1.19 1.74
CALIPER cm.
LONG SPACED DENSITY CPS
CAL GM/CC 1.19 1.74
NATURAL GAMMA CPS
CAL 0 API 100 API
NEUTRON CPS
SELF POTENTIAL mV
RESISTANCE Ohms

DEPTH (M.)





LEGEND
LITHOLOGY REFERENCE
CLAY
SANDSTONE
SILT
CALCRETE
SAND

C R A EXPLORATION PTY LIMITED

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 58

REF. Kimba SI 53 - 7	
SCALE : 1:500	
AUTHOR : M.J.N.F.	REPORT : 10307
DATE : DECEMBER 1981	PLAN No SAa 1308

GEOEX PTY LTD

0528

COMPUTERISED BOREHOLE LOGGING

BOREHOLE NO. 81LRM65

C.R.A.E. PTY LTD
LOCK AREA
OPERATOR: M.O'NEILL
DATAPLOT VER. 6803.10

LOGGING SPEED: 5 M./MIN.
DATUM ABOVE GROUND LEVEL 0.00 M.
WATER LEVEL: 15.6
CASING DEPTH:

TOTAL DEPTH LOGGED: 115.2 M.
DATE: 18/07/81

SHORT DENSITY CPS
1100 1000 900 800 700
CAL GM/CC 1.19 1.74

CALIPER CM.
10 15 20 30

GAMMA CPS
20 40 60 80 100 120
CAL API 0 100

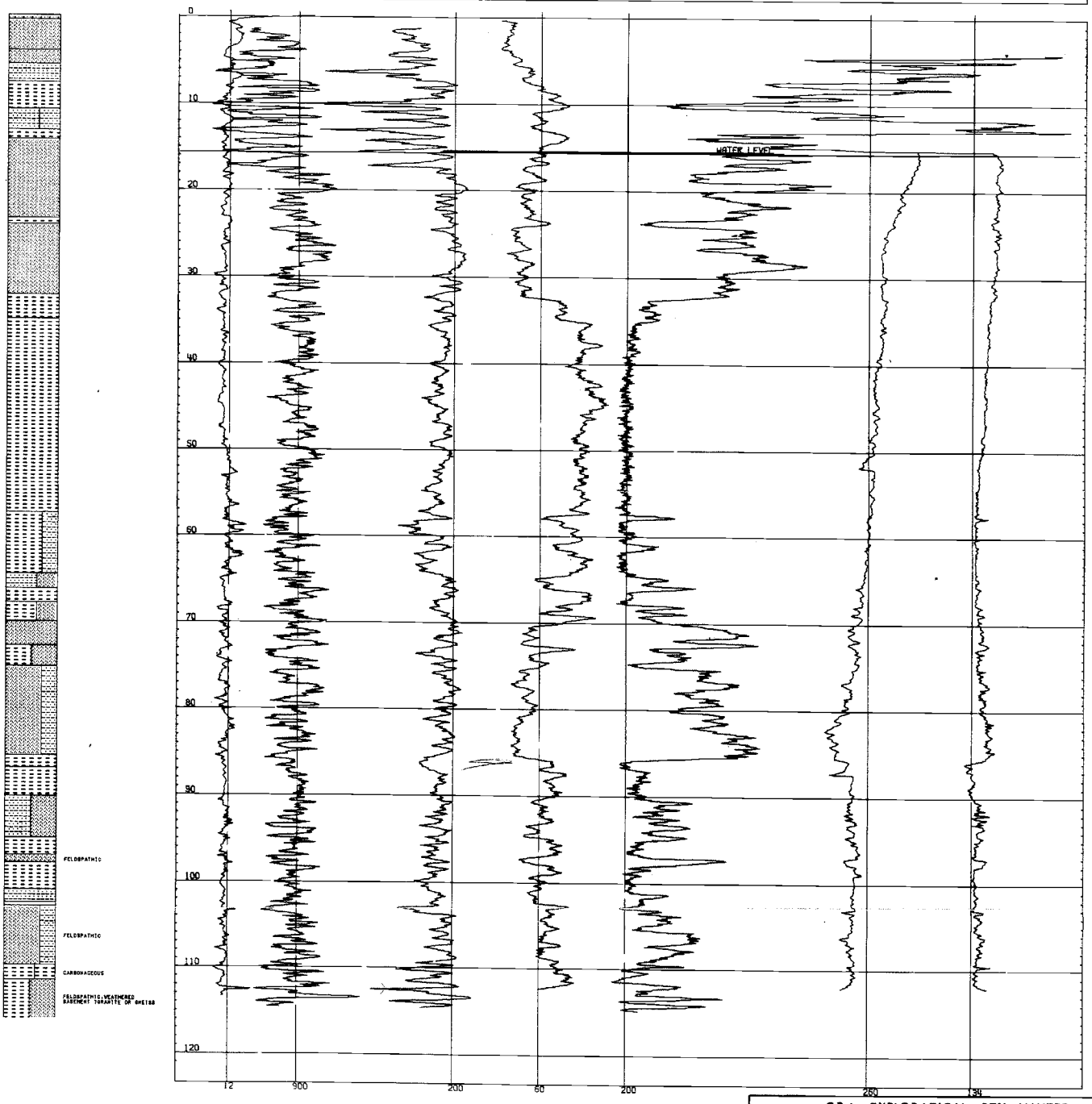
LONG DENSITY CPS
1000 800 600 400 200 0
CAL GM/CC 1.19 1.74

NEUTRON CPS
0 100 200 300 400 500 600
CAL

RESISTANCE OHMS
122 126 130 134 138 142

SELF-POTENTIAL MVOLTS
100 140 180 220 260 300

DEPTH (M)



LEGEND

LITHOLOGY REFERENCE

CLAY
SAND
SILT
CALCRETE

HOLE 65

CRA EXPLORATION PTY. LIMITED.

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 65

REF.	Kimba SI 53-7		
SCALE	1 : 500		
AUTHOR	M.J.F.	Report No	10307
DATE	Dec. 1981	PLAN No.	S.A.a 1315

GEOEX PTY LTD

COMPUTERISED BOREHOLE LOGGING

BOREHOLE NO. 81LRM66

C.R.A.E. PTY LTD
LOCK AREA
OPERATOR: M.O'NEILL
DATAPLOT VER. 6803.10

LOGGING SPEED: 5 M./MIN.
DATUM ABOVE GROUND LEVEL: 0.00 M.
WATER LEVEL: 0.0
CASING DEPTH:

TOTAL DEPTH LOGGED: 104.6 M.
DATE: 18/07/81

SHORT DENSITY CPS
1100 1000 900 800 700
CAL GM/CC 1.19 1.74

RESISTANCE OHMS
102 106 110 114 118 122

SELF-POTENTIAL MVOLTS
140 180 220 260 300 340

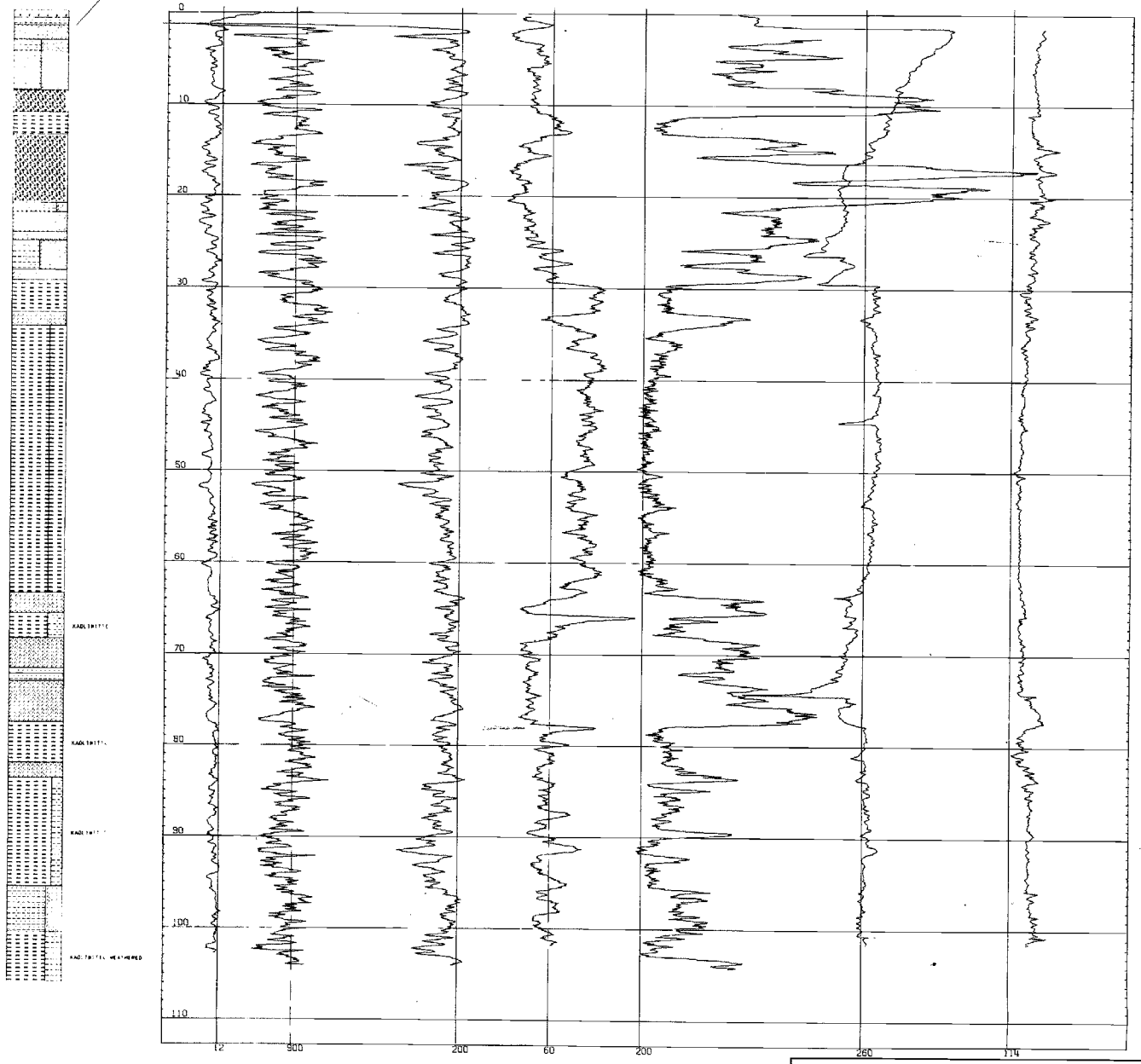
CALIPER CM.
10 15 20 30

GAMMA CPS
20 40 60 80 100 120
CAL API 0 100

LONG DENSITY CPS
1000 800 600 400 200 0
CAL GM/CC 1.19 1.74

NEUTRON CPS
0 100 200 300 400 500 600
CAL #1 #2 #3

DEPTH (M)



LITHOLOGY REFERENCE

CLAY
PEBBLE CONG.
SILT
CALCRETE
SAND

HOLE 66

CRA EXPLORATION PTY. LIMITED.

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 66

REF.	Kimba SI 53-7		
SCALE	1 : 500		
AUTHOR	M. J. F.	Report No	10307
DATE	Dec. 1981	PLAN No.	SAa 1316

GEOEX PTY LTD

COMPUTERISED BOREHOLE LOGGING

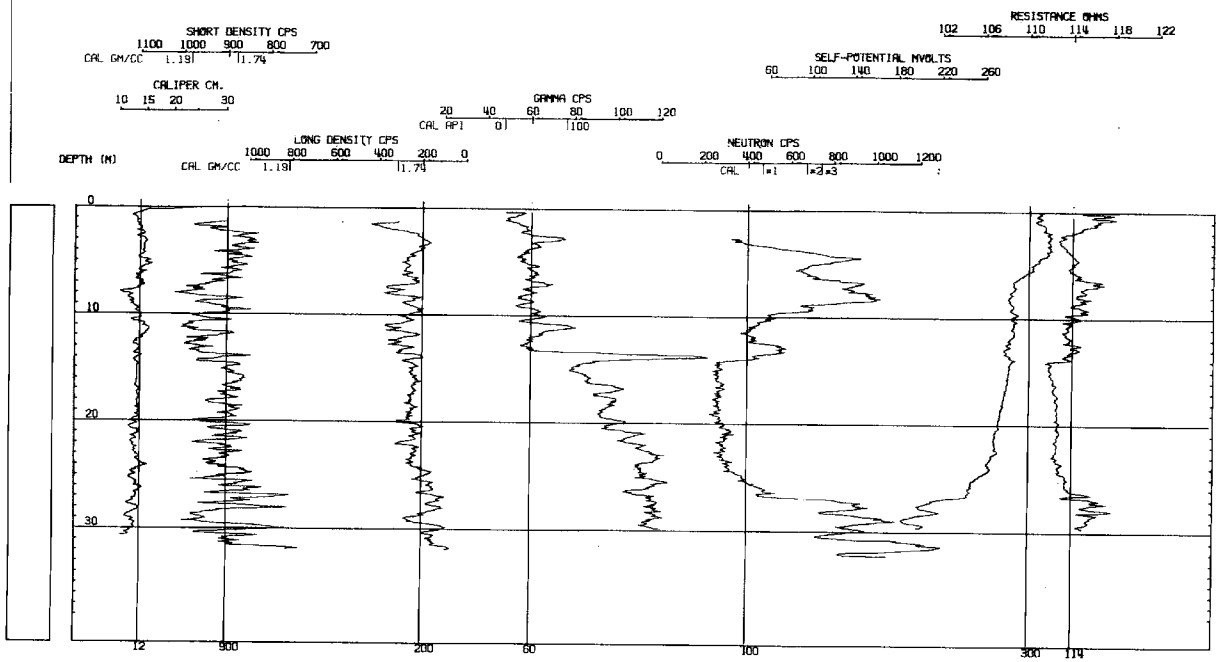
BOREHOLE NO. 81LRM69

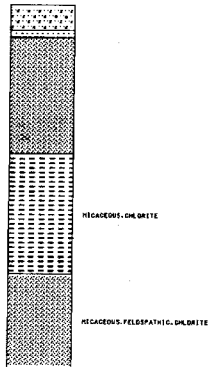
C.R.A.E. PTY LTD
LOCK AREA
OPERATOR: M.O'NEILL
DATAPLOT VER. 6803.10

LOGGING SPEED: 5 M./MIN.
DATUM ABOVE GROUND LEVEL: 0.00 M.
WATER LEVEL: 0.0
CASING DEPTH:

TOTAL DEPTH LOGGED: 32.7 M.
DATE: 21/07/8

0530





LEGEND

LITHOLOGY REFERENCE

CLAY
SAND
SILT
CALCRETE

C R A EXPLORATION PTY LIMITED

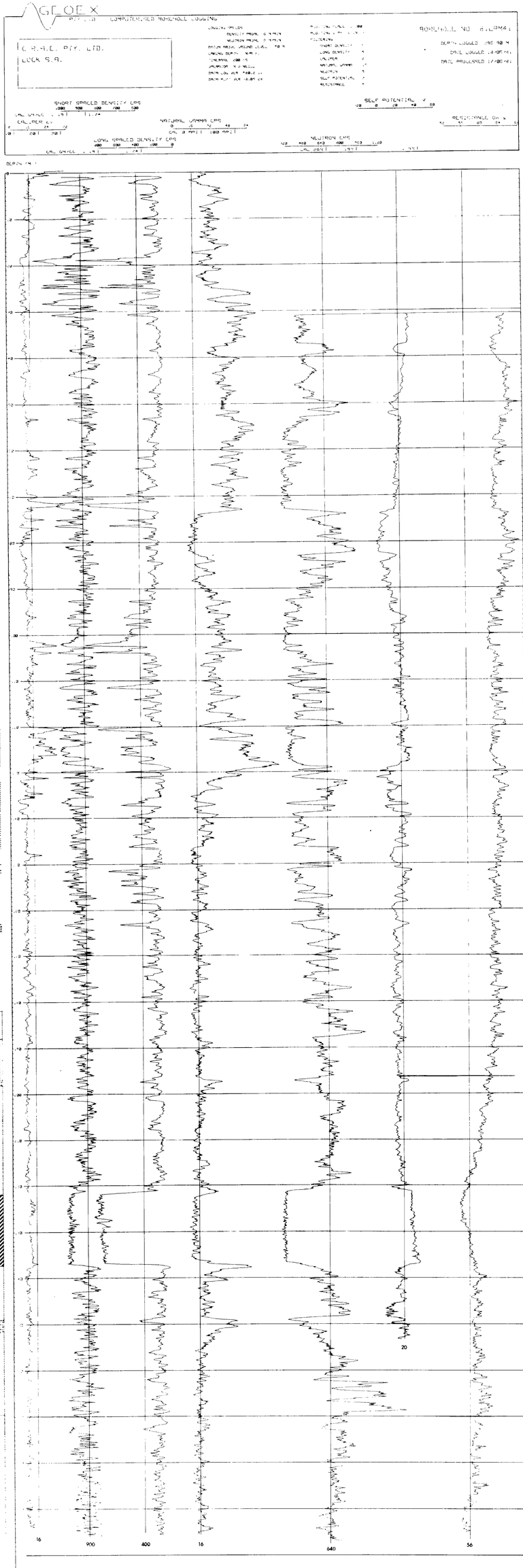
POLDA BASIN

1981 DRILLING PROGRAMME

COMPOSITE BOREHOLE LOG

HOLE 81 LRM 69

REF. Kimba SI 53-7	
SCALE : 1:500	
AUTHOR : M.J.N.F.	REPORT : 10307
DATE : DECEMBER 1981	PLAN No SAa1322



CRA EXPLORATION PTY LIMITED.		
POLDA BASIN 1981 DRILLING PROGRAMME COMPOSITE BOREHOLE LOG HOLE 81 LRM 41		
REF.	Kimba SI 53-7	
SCALE	1 : 500	
AUTHOR	M. J. F.	Report No. 10307
DATE	Dec. 1981	PLAN No. SAa 1290

ENV. 3973-66

GEOEX PTY LTD — COMPUTERISED BOREHOLE LOGGING

C.R.A. EXPL. PTY. LTD.
LOCK S.A.

LOGGING SPEEDS
DENSITY PROBE 6 M/MIN
NEUTRON PROBE 5 M/MIN
DATUM ABOVE GROUND LEVEL 0.00 M
CASING DEPTH N/A M
TIMEBASE 200 MS
OPERATOR M.J. NEILL
DATA LOGGER 4807 11
DATA PLOT VER 4820 /2

PLOTTING SCALE 1:200
PLOTTING DATUM
PLOTTING:
SHORT DENSITY
LONG DENSITY
RESIST.
NATURAL GAMMA
NEUTRON
SELF POTENTIAL
BOREHOLE NO 81L41C
DEPTH LOGGED 239.67 M.
DATE LOGGED 14/07/81
DATE PROCESSED 14/07/81

SHORT SPACED DENSITY CPS
1000 900 800 700 600
CALIBR 2.1
2.1 2.0 1.9
LONG SPACED DENSITY CPS
400 300 200 100 0
CAL 2.65 2.0 1.4
NATURAL GAMMA CPS
0 20 40 60 80
CAL 0 40 100 160
NEUTRON CPS
0 160 320 480 640
CAL 28% 19% 9%
RESISTANCE OHMS
88 92 96 100 104

DEPTH (M)

10 20 30 40 50 60 70 80 90 100 110 20 30 140 150 160 170 180 190 200 210 220 230 240

FELDSPATHIC
KAOLINITIC
PYRITE
MICACEOUS. PYR
LIGNITIC PYRITE
MICA
MICA
MICACEOUS CARBONACE
MICA
MICA
MICACEOUS CARBONACE

LITHOLOGY REFERENCE

LIGNITE
LIGNITIC CLAY
GNEISS SAND
CLAY
MUDSTONE
CARB CLAY
CARB MUDSTONE
SILTSTONE
CARB SILTSTONE
SAND
PEBBLE CONG
CARB SANDSTONE
CALCRETE
CORE LOSS/NO SAMPLE

ENV. 3973-67.

CRA EXPLORATION PTY. LIMITED

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81L41C

Ref: Kimba SI 53-7	
Author: M.J.F.	Scale: 1:500
Drawn:	Report No: 10307
Date: DECEMBER 1981	Plan No: SAa 1291

GEOEX
PTY LTD COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY. LTD.
LOCK S.A.

LOGGING SPEEDS:
DENSITY PROBE 5 M/MIN
NEUTRON PROBE 5 M/MIN
DATUM ABOVE GROUND LEVEL .50 M.
CASING DEPTH N/A m
TIMEBASE 200 mS
OPERATOR: M.O'NEILL
DATA LOG VER: 38012.11
DATA PLOT VER 38105.28

PLOTTING SCALE 1 200
PLOTTING 1 Point IN :4
FILTERING :
SHORT DENSITY. 5
LONG DENSITY 5
CALIPER 2
NATURAL GAMMA 15
NEUTRON. 5
SELF POTENTIAL 3
RESISTANCE. 5

BOREHOLE NO. 81LRM59
DEPTH LOGGED 151 52 M.
DATE LOGGED 03/07/81
DATE PROCESSED 12/07/81

SHORT SPACED DENSITY CPS
1000 900 800 700 600
GM CC 1 19 1 74

CALIP-R cm
8 16 24 32
10 20 30

NATURAL GAMMA CPS
0 16 32 48 64 80 96
CAL 0 API 100 API

SELF POTENTIAL mV
-160 -120 -80 -40 0

RESISTANCE Ohms
240 244 248 252 256

LONG SPACED DENSITY CPS
800 600 400 200 0
CAL GM/CC 1 19 1.74

NEUTRON CPS
160 320 480 640 800 960
CAL 26% 19% 1 9%

DEPTH (M.)

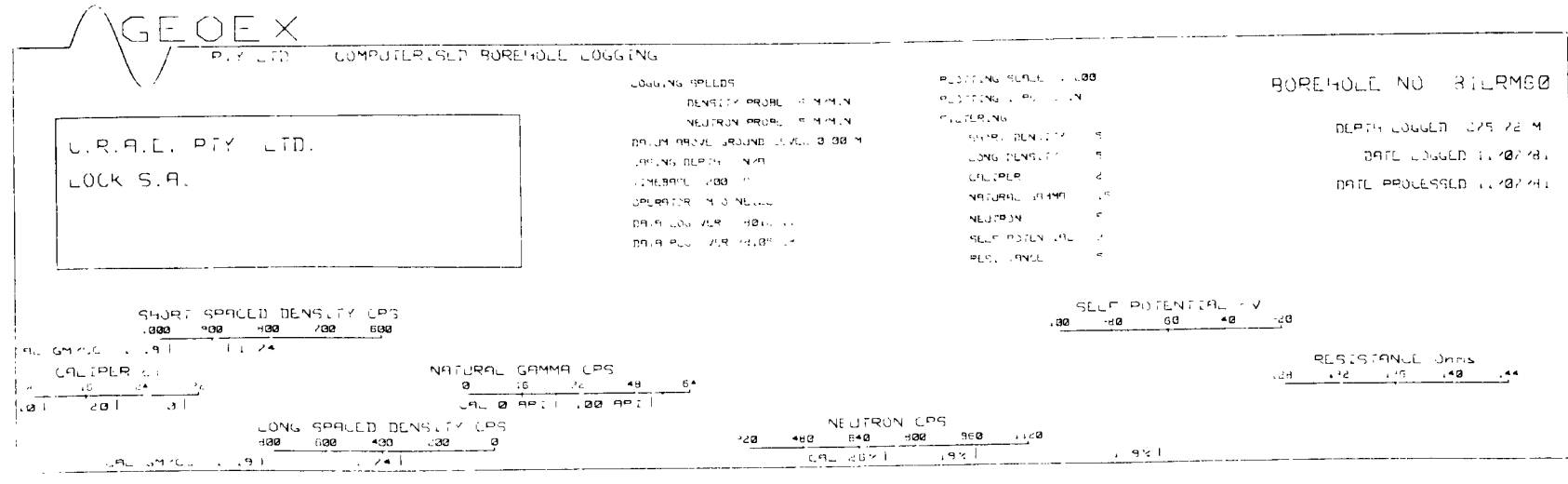
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150

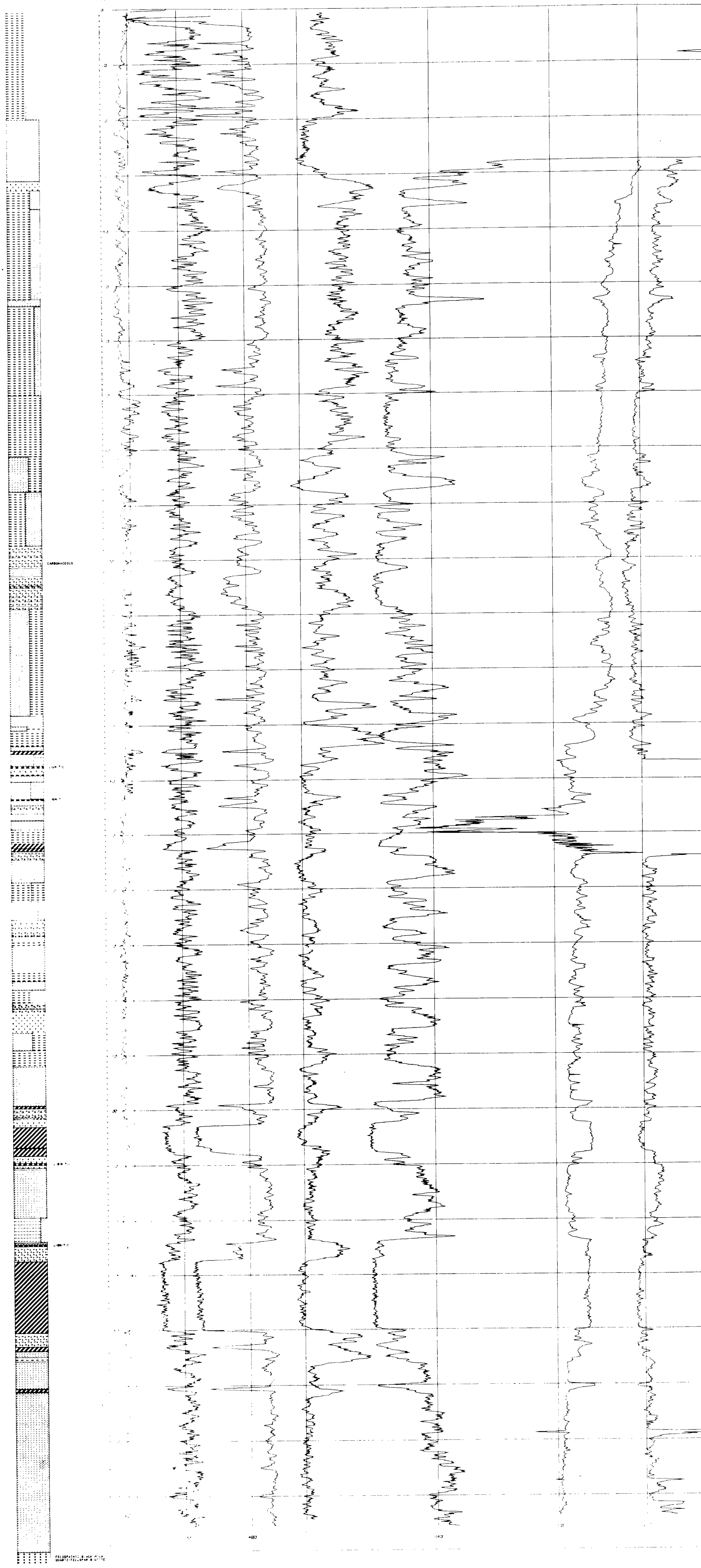
900 400 48 480 -80 248

MICACEOUS
MICACEOUS
MICACEOUS
CARBONACEOUS
MICACEOUS

ENV. 3973-68

CRA EXPLORATION PTY. LIMITED	
POLDA BASIN 1981 DRILLING PROGRAMME COMPOSITE BOREHOLE LOG HOLE 81 LRM 59	
REF Kimba SI 53-7	
SCALE 1 : 500	
AUTHOR M J F.	Report No 10307
DATE Dec. 1981	Plan No SAa 1309





ENV 3973-69

C R A EXPLORATION PTY. LIMITED	
POLDA BASIN 1981 DRILLING PROGRAMME COMPOSITE BOREHOLE LOG **HOLE 81 LRM 60**	
REF. Kimba SI 53-7	
SCALE: 1: 500	
AUTHOR: M.J.N.F.	REPORT NO.: 10307
DATE: DECEMBER 1981	PLAN NO.: 1310

GEOEX PTY LTD

BOREHOLE NO. 81LRM61

COMPUTERISED BOREHOLE LOGGING

C.R.A.E. PTY LTD

LOCK AREA

OPERATOR: M.O'NEILL

DATAPLOT VER. 6803.10

LOGGING SPEED 5 M./MIN.

DATUM ABOVE GROUND LEVEL 0.00 M.

WATER LEVEL 2.7

CASING DEPTH.

TOTAL DEPTH LOGGED. 165.9 M.

DATE. 15/07/81

RESISTANCE OHMS
126 130 134 138 142 146

SHORT DENSITY CPS
1100 1000 900 800 700
CAL GM/CC 1.19 1.74

SELF-POTENTIAL MVOLTS
220 260 300 340 380 420

CALIPER CM.
10 15 20 30

GAMMA CPS
0 20 40 60 80 100
CAL API 0 100

LONG DENSITY CPS
1000 800 600 400 200 0
CAL GM/CC 1.19 1.74

NEUTRON CPS
200 300 400 500 600 700 800 900
CAL #1 #2 #3

DEPTH (M)

WATER LEVEL

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170

FELDSPATHIC MICACEOUS

LIGNITIC

LIGNITIC

MICACEOUS

MICACEOUS

MICACEOUS

MICACEOUS

MICACEOUS

MICACEOUS ACCESSORY BLACK MICA

FELDSPATHIC MICACEOUS ACCESSORY BLACK MICA

12 900 200 40 500 340 138

EOCENE

LITHOLOGY REFERENCE

CLAY

SAND

CARB CLAY

CALCRETE

SILT

HOLE 61

ENV. 3973-70.

CRA EXPLORATION PTY. LIMITED.

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 61

REF.	Kimba SI 53-7	
SCALE	1 : 500	
AUTHOR	M. J. F.	Report No 10307
DATE	Dec. 1981	PLAN No. SAa 1311

GEOEX PTY LTD

COMPUTERISED BOREHOLE LOGGING

BOREHOLE NO. 81LRM62

C.R.A.E. PTY LTD

LOCK AREA

OPERATOR. M.O'NEILL

DATAPLOT VER. 6803.10

LOGGING SPEED 5 M./MIN.

DATUM ABOVE GROUND LEVEL 0.00 M.

WATER LEVEL

CASING DEPTH

TOTAL DEPTH LOGGED 200.8 M.

DATE. 15/07/81

SHORT DENSITY CPS
1100 1000 900 800 700
CAL GM/CC 1.19 1.74

CALIPER CM.
10 15 20 30

GAMMA CPS
0 20 40 60 80 100
CAL API 0 1100

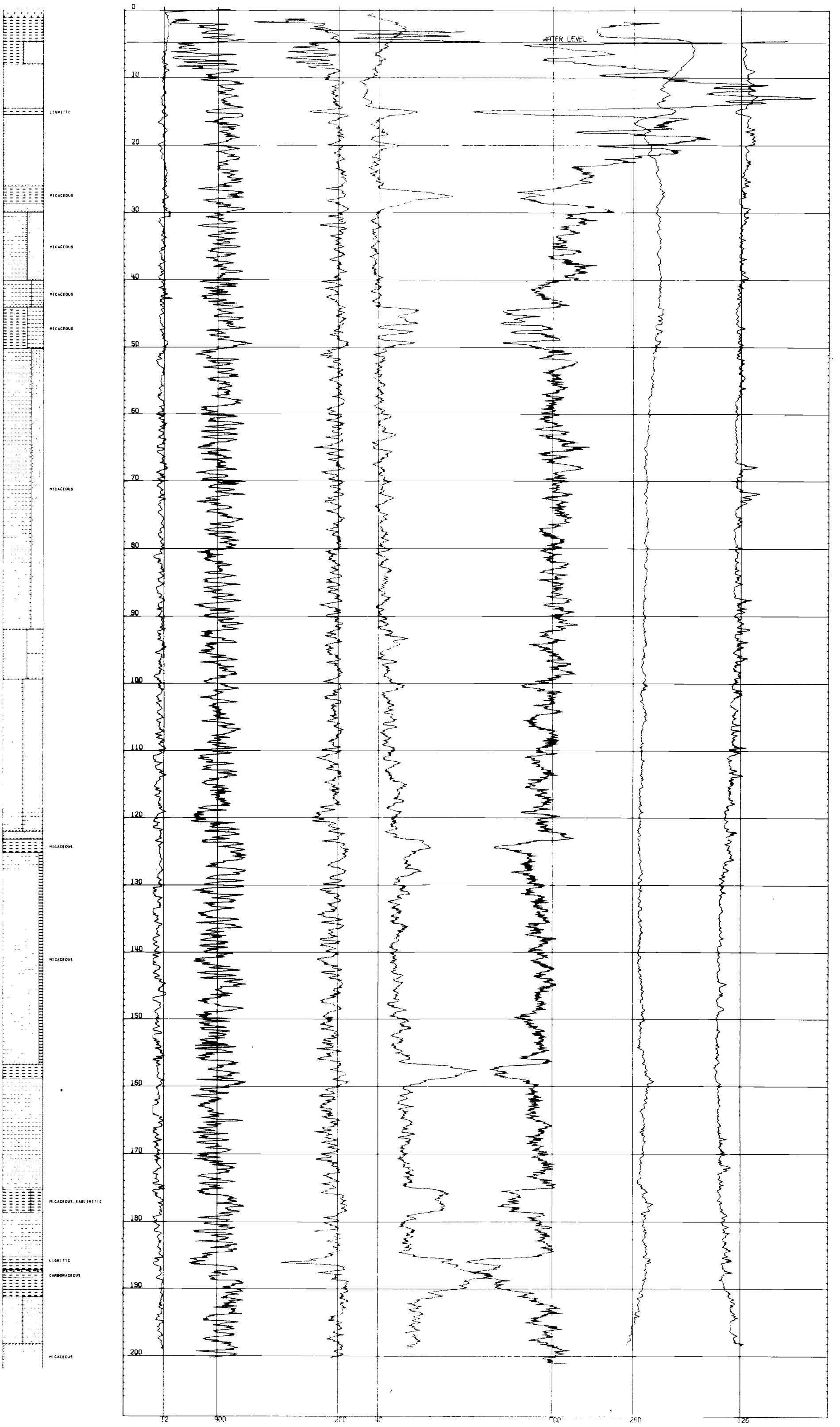
LONG DENSITY CPS
1000 800 600 400 200 0
CAL GM/CC 1.19 1.74

RESISTANCE OHMS
114 118 122 126 130 134

SELF-POTENTIAL MVOLTS
140 180 220 260 300 340

NEUTRON CPS
200 300 400 500 600 700 800 900
CAL I#1 I#2 I#3

DEPTH (M)



LEGEND

LITHOLOGY REFERENCE

CLAY
SAND
SILT
CALCRETE

ENV. 3973-71.

C R A EXPLORATION PTY LIMITED

POLDA BASIN

1981 DRILLING PROGRAMME

COMPOSITE BOREHOLE LOG

HOLE 81 LRM 62

REF.	Kimba SI 53-7	
SCALE	1:500	
AUTHOR	M.J.F.	REPORT No. 10307
DATE	Dec. 1981	PLAN No. SAa 1312

GEOEX PTY LTD

COMPUTERISED BOREHOLE LOGGING

BOREHOLE NO. 81LRM63

C.R.A.E. PTY LTD
LOCK AREA
OPERATOR. M.O'NEILL
DATAPLOT VER. 6803.10

LOGGING SPEED 5 M./MIN.
DATUM ABOVE GROUND LEVEL 0.00 M.
WATER LEVEL. 10.6
CASING DEPTH.

TOTAL DEPTH LOGGED. 167.9 M.
DATE. 15/07/81

SHORT DENSITY CPS
1100 1000 900 800 700
CAL GM/CC 1.19 1.74

RESISTANCE OHMS
106 110 114 118 122 126

SELF-POTENTIAL MVOLTS
140 180 220 260 300 340

CALIPER CM.
10 15 20 30

GAMMA CPS
CAL API 0 100

LONG DENSITY CPS
1000 800 600 400 200 0
CAL GM/CC 1.19 1.74

NEUTRON CPS
100 200 300 400 500 600 700 800
CAL #1 #2 #3

DEPTH (M)

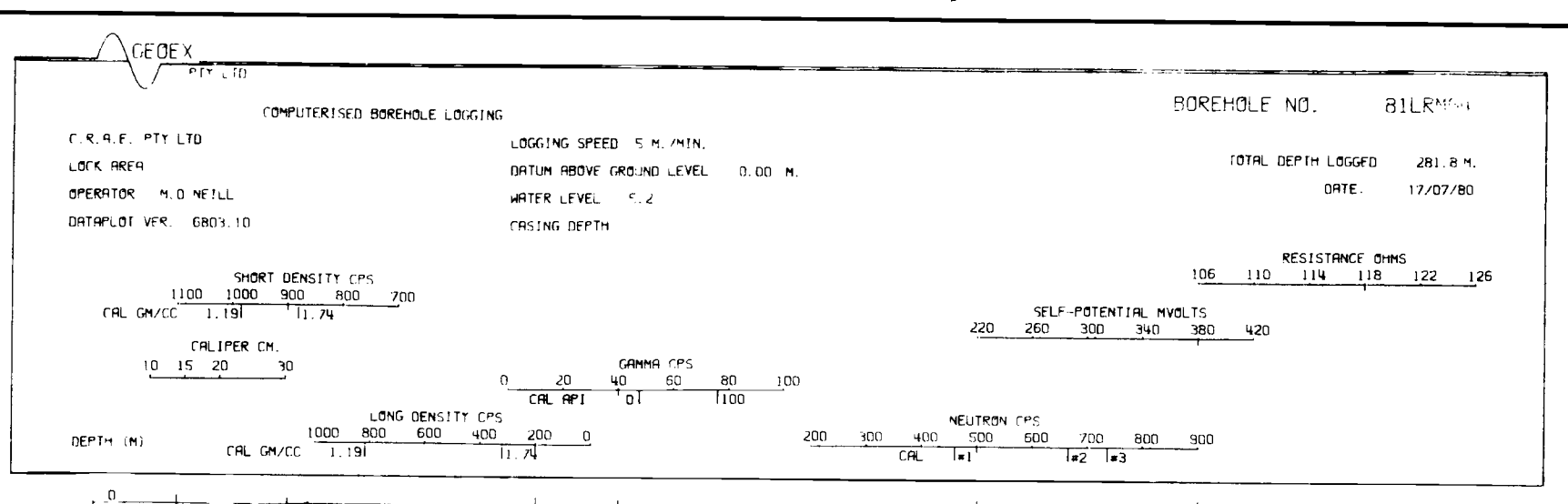
WATER LEVEL

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170

12 900 200 60 400 260 118

ENV 3973-72

CRA EXPLORATION PTY. LIMITED.	
POLDA BASIN 1981 DRILLING PROGRAMME COMPOSITE BOREHOLE LOG HOLE 81 LRM 63	
REF. Kimba SI 53-7	
SCALE 1 : 500	
AUTHOR M. J. F.	Report No 10307
DATE Dec. 1981	PLAN No. SAa 1313



CRA EXPLORATION PTY. LIMITED.

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 64

REF.	Kimba SI 53-7		
SCALE	1 : 500		
AUTHOR	M. J. F.	REPORT No	10307
DATE	Dec. 1981	PLAN No.	SAa 1314

ENV. 3973-73.

GEOEX PTY LTD

COMPUTERISED BOREHOLE LOGGING

BOREHOLE NO. 81LRM67

C.R.A.E. PTY LTD
LOCK AREA
OPERATOR M.O'NEILL
DATAPLOT VER. 6803.10

LOGGING SPEED 5 M./MIN.
DATUM ABOVE GROUND LEVEL 0.00 M
WATER LEVEL 35.6
CASING DEPTH

TOTAL DEPTH LOGGED 224.5 M.
DATE 19/07/81

SHORT DENSITY CPS
1100 1000 900 800 700
CAL GM/CC 1.19 1.74

CALIPER CM.
10 15 20 30

GAMMA CPS
20 40 60 80 100 120
CAL API 0 130

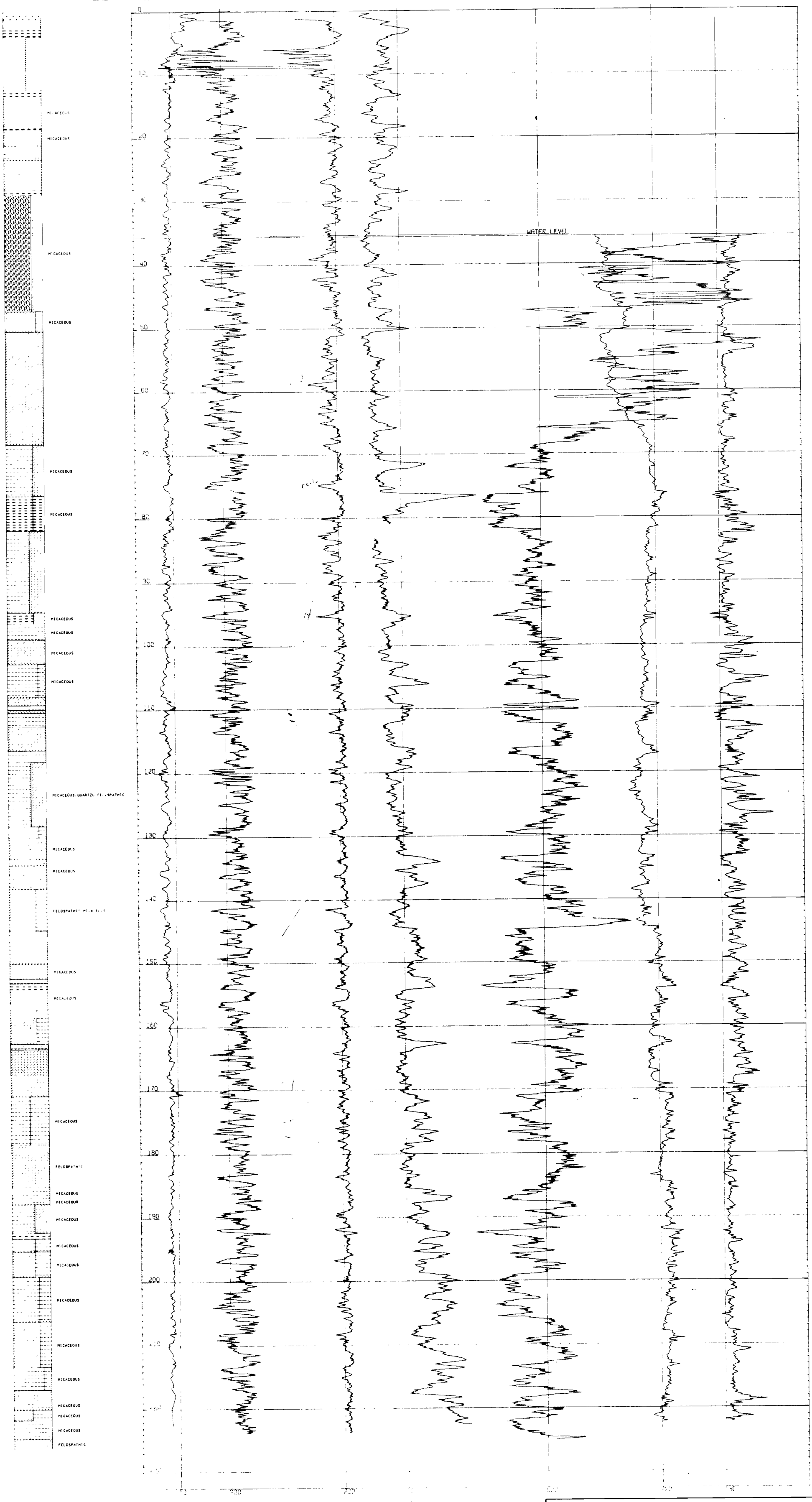
LONG DENSITY CPS
1000 800 600 400 200 0
CAL GM/CC 1.19 1.74

RESISTANCE OHMS
118 122 126 130 134 138

SELF-POTENTIAL MVOLTS
100 140 180 220 260 300

NEUTRON CPS
300 400 500 600 700 800 900 1000
CAL #1 #2 #3

DEPTH (M)


0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
WATER LEVEL
MICACEOUS
MICACEOUS
MICACEOUS

GEOEX PTY LTD

COMPUTERISED BOREHOLE LOGGING

BOREHOLE NO. 81LRM68

C.R.A.E. PTY LTD
LOCK AREA
OPERATOR. M.O'NEILL
DATAPLOT VER. 6803.10

LOGGING SPEED 5 M./MIN.
DATUM ABOVE GROUND LEVEL 0.00 M.
WATER LEVEL 0.0
CASING DEPTH.

TOTAL DEPTH LOGGED 159.1 M.
DATE. 22/07/81

SHORT DENSITY CPS
1100 1000 900 800 700
CAL GM/CC 1.19 1.74

CALIPER CM.
10 15 20 30

GAMMA CPS
20 40 60 80 100 120
CAL API 0 100

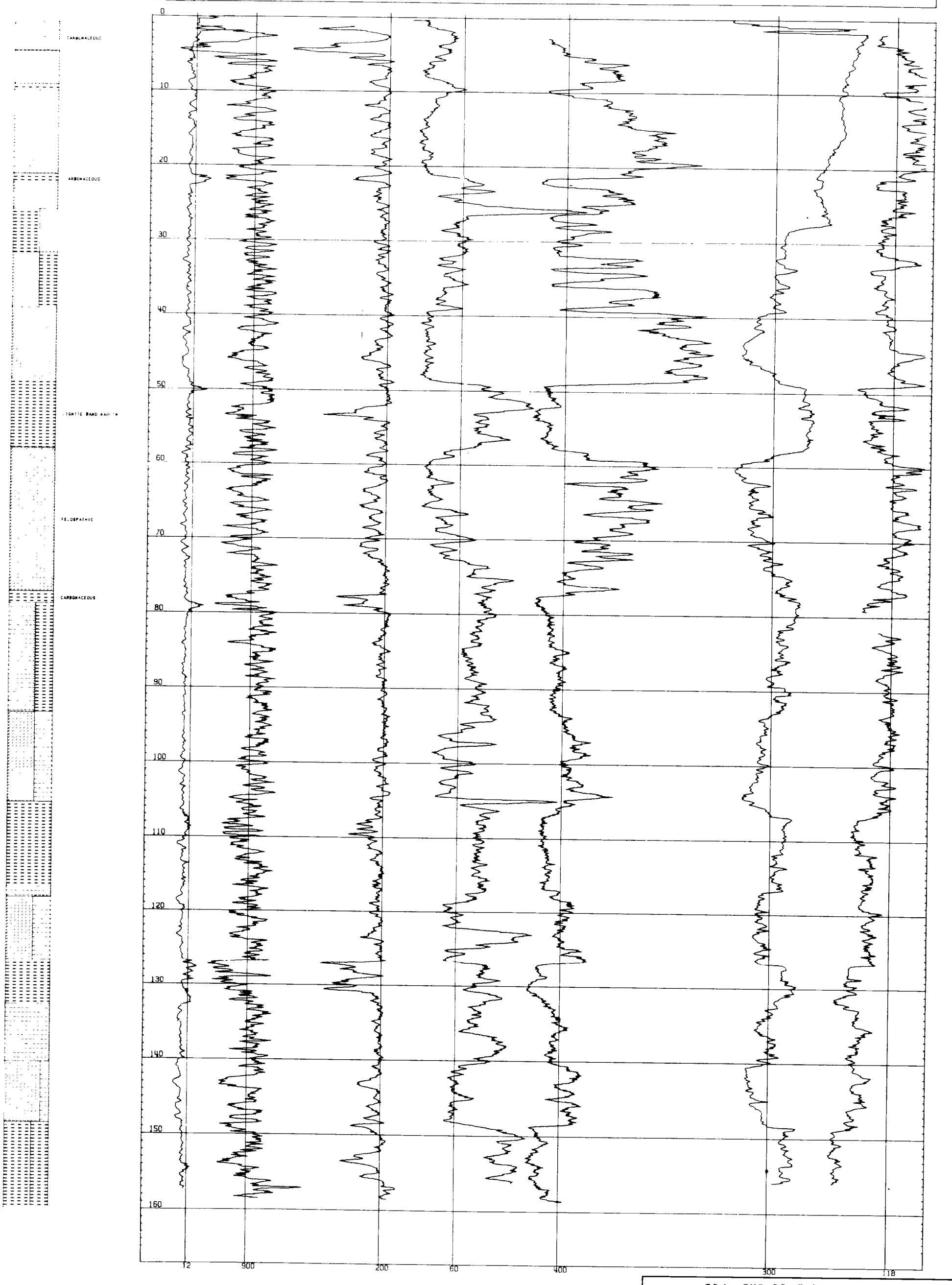
LONG DENSITY CPS
1000 800 600 400 200 0
CAL GM/CC 1.19 1.74

NEUTRON CPS
0 200 400 600 800 1000 1200
CAL #1 #2 #3

RESISTANCE OHMS
98 102 106 110 114 118

SELF-POTENTIAL MVOLTS
180 220 260 300 340 380

DEPTH (M)



LITHOLOGY REFERENCE

CLAY
SAND
SILT
SANDSTONE

HOLE 68

ENV. 3973-75.

CRA EXPLORATION PTY. LIMITED.

POLDA BASIN
1981 DRILLING PROGRAMME
COMPOSITE BOREHOLE LOG
HOLE 81 LRM 68

REF.	Kimba SI 53-7	
SCALE	1:500	
AUTHOR	M. J. F.	REPORT No. 10307
DATE	Dec. 1981	PLAN No. SAa 1318

0531

APPENDIX 3

STRATIGRAPHIC ANALYSIS

The Polda Basin contains a variable sequence of sediments ranging in age from Pre-Cambrian to Recent. The Stratigraphic sequence is not well established. Detailed study of the stratigraphy was not undertaken during coal exploration, however a great deal of sub-surface information was accumulated during drilling.

Brief descriptions of the main stratigraphic units within the Polda Basin follow.

PRE-PERMIAN BASEMENT

Crystalline basement intersected consists of schists, gneisses, granites and minor quartzite. ?Archean chlorite and biotite schist, gneiss and minor granite occur at relatively shallow depths (16-58m) in the Sheringa and western McLachlan area (Plan SAa 1286).

A thin veneer of coarse grained, Pre-Cambrian, arkosic grits and conglomerates (Harris and Foster, 1974) overlies crystalline basement in the Sheringa area. A maximum thickness of six metres is developed in hole 80LRM36.

In the northern McLachlan area basement structure contours show a broad shelf sloping to the north west (Plan SAa 1285). Basement intersected in 81LRM47 probably reflects a pre-depositional basement high. Chlorite schists and gneiss are overlain by feldspathic grits which reach maximum thickness of about 16 metres in hole 81LRM55.

In the Tuckey area biotite granitic gneiss was intersected in seven holes at shallow depths (<80m) on the upthrown side of the east-west striking, northern basin margin fault. Gravity modelling and basement profiling over the fault in this area indicates depths to basement of approximately 1000m on the downthrown side of the fault zone.

Micaceous quartzite was intersected in holes along the southern margin of the basin. Depths to basement in this area vary from 169 metres to 202 metres. From regional gravity data (McInerney, 1977) shallowing is expected in a south westerly direction.

PERMO-CARBONIFEROUS "BASEMENT"

Permo-Carboniferous sediments were intersected in the area west of E.T.S.A. E.L. 434 (80L30C). The unit is poorly bedded in parts and consists of light green, weathered pebbly claystones, sandy conglomeratic claystones and feldspathic sandy lenses. The rock fragments consist of slightly altered to highly weathered granite, schist and gneiss fragments.

Large pyrite nodules up to 3cm are common in the more sandy laminae.

The thickness of this unit is unknown, however a stratigraphic hole, Lock No. 1 intersected a minimum thickness of 170 metres. This unit was considered to be "economic basement".

JURASSIC

Poorly sorted, poorly consolidated, grey to dark grey and black carbonaceous sands, silts, clays and minor coals of the "Polda Formation" were intersected in a number of boreholes. Palynological examination of selected samples by Harris (Appendix 4) indicate deposition took place in a non-marine fluviatile environment.

The "Polda Formation" unconformably overlies basement. The formation is only thinly developed in the Sheringa E.L. area and thickens considerably to the north and east in the main part of the basin, attaining a thickness of 50 metres in hole 80LRM30 and greater than 130 metres in 80LRM13.

Clay and coal sequences alternate with sand and silt sequences in a manner typical of fluvial deposition. Coal seams occur in, above, below and often grade vertically into clay.

The clays are grey, dark brown to black (depending on carbonaceous content), commonly micaceous, stiff and finely laminated and may contain thin coaly partings and fragments. Minor sandy material occurs as lenses or disseminated throughout the clay.

The coal is dull brown to black, with minor thin, hard, brittle, bright bands. Chips of this material frequently appeared in cuttings. Soft brown carbonaceous clays often form thin partings within the coal. Coal quality is very variable (refer Section 6.1.6).

The sands are poorly sorted and consist of fine to very coarse grained, subangular to subrounded material. Colour is variable from white, light to dark grey and light to dark brown. Consolidation increases with the percentage of clay and silt matrix. Angular to rounded, gravel size, quartzose material occurs as bands and sporadically distributed within the sands. Poorly developed graded bedding and cross bedding is sometimes present.

EOCENE

The Eocene Poelpena Formation unconformably overlies the "Polda Formation" and consists predominantly of sands, sandy clays, with variable proportions of clay, lignite and silt.

Although a number of distinct units could be correlated between adjacent holes, definite lithological boundaries were not apparent over the entire area. Rapid lateral facies changes result from deposition in a fluviatile environment.

Thickness of the formation varies considerably, from a minimum of 22 metres in 81LRM49 in the north of McLachlan E.L. 670, where it onlaps Pre-Cambrian basement, to more than 290 metres in 81LRM41.

Sands and lignite are the chief lithologies at the base of the formation in the deeper part of the basin. Elsewhere sand, silt, clay, sandy clay and minor lignite alternate.

The sands consist of unconsolidated, poorly sorted material. Grain size generally varies from fine to granular but is pebbly in parts, particularly towards the base of the formation. Roundness varies from subangular to subrounded. Colour is variable from grey, through light grey to brown and dark brown.

A variable amount of clay and silt is commonly dispensed throughout the sands. Clay and silt bands are also intercolated within the sands. Minor light green to grey, fine to coarse sands occur higher in the sequence.

Fine cross bedding and lamination were recognised in core. Quartz is the predominant mineral, however feldspar, pyrite and white mica are common in accessory amounts. Pyrite often occurs as an intergranular cement.

Clays are best developed around the basin margins. These clays are brown to dark brown, usually stiff and contain carbonaceous root traces and coaly fragments. Accessory pyrite and mica are common to abundant in most clay units. Typically the clays are silty to sandy and display a variety of sedimentary structures. Dark grey laminated, slightly silty mudstone bands are occassionally developed within the clays.

Silt is a minor lithology within the formation and is generally grey to dark brown, sandy, micaceous, unconsolidated with abundant disseminated carbonaceous material.

Large thicknesses of lignite are developed in the deeper parts of the basin near 81LRM41. Thin lignite bands are common but like the clays were deposited mainly around the basin margins. Typically the lignite is dark red-brown, hard, brittle and very woody in parts. Plant fragments are abundant.

A further clay, sand and sandstone sequence occurs near the top of the Poelpena Formation. These sediments may represent the Miocene sediments of Harris and Foster (1974). They are up to 50 metres thick in the north of the Tuckey E.L. 687. The clays are firm and mottled red-brown, red, green-grey, orange, cream and white coloured. Sandy bands are common. Angular quartzite, pegmatite and feldspar fragments are often present.

The off-white, red, red-grey, orange, brown and pink coloured sands consist of poorly sorted, fine to coarse grained, angular to subrounded, feldspathic quartzose material. Except where ferruginous and siliceous cements have partially consolidated some zones in the northern McLachlan area around 81LRM44,45 and 46, the material is essentially unconsolidated.

QUARTERNARY SEDIMENTS

Quaternary sediments comprise the lower member of the Bridgewater Formation and the Ripon Calcrete.

The Bridgewater Formation consists of mottled yellow to red brown, calcareous, silty or sandy clays and yellow to white fine to medium grained unconsolidated sands. These sands are well sorted with subangular to subrounded grains. Massive hard calcrete nodules occur scattered throughout the section.

The Bridgewater Formation is mainly present in the eastern end of the basin where it is up to 9 metres thick.

The Ripon calcrete is best developed to the west and north of Lock. It consists of hard, pink to brown calcrete interbedded with, or underlain by cream calcareous clays. Concretionary structures characterise the calcrete.

APPENDIX 4

PALYNOLOGICAL REPORT

PALYNOLOGY OF 29 SAMPLES FROM THE POLDA BASIN, EYRE PENINSULA, SOUTH AUSTRALIA

0537

by

W K Harris

Consulting Geologist - Palynology

W K HARRIS AND ASSOCIATES

0538

PALYNOLOGICAL REPORT

CLIENT: CRA Exploration Pty Ltd

STUDY: Palynology of selected samples from boreholes in the Polda Basin.

AIMS: Age determination of sediments and specifically differentiation between Jurassic, Eocene and Late Tertiary Units.

INTRODUCTION

Twenty-nine samples were selected from a batch of about forty samples for palynological examination. The rejected samples consisted mainly of coarse sands and red or white clays. Both these lithotypes were considered unsuitable for study because of the lack of palynomorphs in the sands due to winnowing effects and because of oxidation in the clays.

The samples received routine palynological preparation and the age determinations are presented in Table 1.

OBSERVATIONS AND INTERPRETATIONS

Most samples yielded adequate assemblages of spores and pollen to enable a confident assignment of age. Four samples however were barren of spores and pollen but did contain appreciable amounts of organic matter. The age determination of these samples is based on an interpretation of the kerogen components and consequently same caution is warranted in interpreting the age of these samples.

Apart from the samples from 80L5C and 80L30C which are cores, all determinations and subjects to problems of downhole contamination. However most samples did not show obvious mixing of assemblages and the ages quoted are regarded as being more or less reliable.

0539

Early Tertiary assemblages are characterised by an abundance of *Nothofagidites* spp. together with *Haloragacidites harrisii*, a prominent proteaceous component supported by a reasonably diverse assemblage of angiosperm pollen. These assemblages are readily recognised as Eocene in age and have been reported widely throughout the basin and elsewhere on Eyre Peninsula.

A more precise subdivision of the Eocene assemblages is becoming clearer and the assemblages reported here are akin to those of the Middle to Late Eocene rather than the distinctly different Middle Eocene units recognised in Polda No 1 Well. The younger unit has more in common with the marginal marine carbonaceous units occurring in the western parts of the Polda Basin. A characteristic of this time in the Eocene is the development of widespread lignites throughout southern Australia which is much wider and thicker than that of the Middle Eocene.

The assemblages are entirely non-marine and the lithotypes and palynology would suggest deposition in paludal and lacustrine environments associated with meandering stream belts. The presence of marginal marine sediments of similar age to the west would indicate a flood plain environment bordering coasted deltaic sequences.

The Jurassic assemblages are more or less identical with those reported elsewhere in the basin and are dominated by *Tsugaepollenites* spp. together with *Murospora florida Contignisporites cooksonii* and a wide variety of pteridophyte spores. Occasional specimens of the non-marine dinoflagellate *Fusiformacysta* sp. are encountered. The age of this assemblage is Middle to Late Jurassic and deposition took place in a non-marine fluvial environment. The presence of dinoflagellates may indicate some lacustrine influence. A ? Tertiary age is indicated for 80LRM3 (132-134m) on rather limited evidence. The assemblage resembles these from the Pliocene but is very limited in diversity and it would be unwise to be dogmatic about

TABLE I

0540

Summary of Palynological Data

BOREHOLE NO.	DEPTH IN METRES	SAMPLE NO.	AGE
80L 5C	60.28	WM 468	Eocene
80L 5C	65.32	WM 469	Eocene
80L 5C	69.3	WM 470	Eocene
80L 30C	46.93	WM 471	Eocene
80L 30C	50.05	WM 473	Eocene
80L 30C	52.0	WM 474	Late Jurassic
80L 30C	58.50	WM 475	Late Jurassic
80L 30C	61.35	WM 476	Late Jurassic
80L 30C	62.4	WM 478	Late Jurassic
80L 30C	62.8	WM 478	Late Jurassic
RM 8	64-66	WM 483	? Eocene
RM 19	38-40	WM 484	Eocene
RM 21	34-36	WM 485	Eocene
80L RM15	72-74	WM 486	Late Jurassic
80L RM15	114-116	WM 487	Late Jurassic
80L RM7	64-66	WM 488	? Late Jurassic
80L RM39	26-28	WM 489	Late Jurassic
80L RM9	32-34	WM 491	Barren
80L RM3	132-134	WM 492	? Tertiary
80L RM25	102-105	WM 493	Late Jurassic
RM 30	108-110	WM 494	? Late Jurassic
RM 23	48-50	WM 496	Late Jurassic
RM 23	76-78	WM 497	Late Jurassic
RM 23	120-122	WM 495	Late Jurassic
RM 37	20-22	WM 498	Late Jurassic
RM 5	114-116	WM 499	Eocene
RM 7	36-38	WM 500	Eocene
RM 4	122-124	WM 501	Late Jurassic

its age. There is also the possibility of downhole contamination.

No other late Tertiary nor Permian sediments have been identified in the samples submitted.

W K Harris

Consulting Geologist - Palynology

29/5/81

0542

81LRM41

CRAEX AA88605
WESMINE AA8879429/5/81 WPG/326

THE EXPLORATION MANAGER

ATTN. MR. D. MCBAIN

C.R.A. EXPLORATION

ALL FOUR SAMPLES SUBMITTED BY YOU RECENTLY ARE OF EOCENE AGE

AND PROBABLE MIDDLE EOCENE

REGARDS

WAYNE HARRIS

CRAEX AA38605
WESMINE AA33794

TELEX TELEX TELEX TELEX TELEX TELEX

0543

APPENDIX 5

ANALYTICAL RESULTS FOR LIGNITE SEAMS

80L5C, 80L30C AND 81L41C

SGS Australia Pty. Ltd.

Laboratories Division

0544

COAL ANALYSIS REPORT

REPORT No.: SL 1584 DATE IN: 8.12.81 DATE OUT: 3.2.82

CLIENT: C.R.A. Exploration CLIENT REFERENCE:

ADDRESS: P.O. Box 254, Norwood 5067

RESULTS TO: Mr. Duncan McBain COPY TO:

SAMPLE REFERENCE: D.P.O. 135, D.P.O. 136, D.P.O. 137

81 LRM41C

	ANALYSIS	891348 891349 891350	891351 891352	891353 891354 891355 891356	891357 891358 891359	891360 891361	891362 891363
	Total Moisture %						
	Moisture %						
	Ash %	9.6	10.9	8.3	8.5	11.9	14.1
	Volatile Matter %	50.7	48.3	48.7	49.2	46.0	44.6
	Fixed Carbon %	39.7	40.8	43.0	42.3	42.1	41.3
*	Specific Energy	25.26	24.58	24.98	24.72	23.56	22.84
**	" Mj/kg "	12.58	11.56	11.84	11.74	10.80	10.80
***	" "	10.92	9.88	10.18	10.06	9.14	9.26
	Total Sulphur %	2.81	2.67	2.20	1.82	1.74	1.93
	Carbon %	63.39	61.51	63.22	63.21	61.23	59.87
	Hydrogen %	4.95	4.66	4.55	4.78	4.27	4.20
	Nitrogen %	0.49	0.54	0.57	0.61	0.60	0.64
	Oxygen %						
	Chlorine %	0.66	0.67	0.61	0.66	0.71	0.79
	Sodium %	1.41	1.36	1.45	1.54	1.56	1.70
	Calcium %	0.80	0.87	0.86	0.93	1.02	1.23
	Magnesium %	0.71	0.79	0.79	0.81	0.88	0.97
	Iron %	0.40	0.48	0.25	0.09	0.21	0.23
	Iron in Ash %	4.2	4.8	3.1	1.16	1.82	2.1
	Pyritic Iron%	<0.01	0.04	<0.01	0.01	<0.01	0.07

DETERMINED IN ACCORDANCE WITH: AS 1038 + ETSA method for acid soluble elements

BASIS RESULTS REPORTED ON: Dry basis apart from the specific energy which is on the following:

* Gross dry
** Gross wet
*** Net wet

H. Read

Harold Read - Manager
Coal Exploration Services

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The Australian
Mineral Development
Laboratories

Flemington Street, Frewville,
South Australia 5063
Phone Adelaide 79 1662
Telex AA 82520

Please address all
correspondence to
P.O. Box 114 Eastwood
SA 5063
In reply quote:

0545

amdel

3/1/6/0 - AC 2318/81

23 March 1981

NATA CERTIFICATE

REPORT COMPLETE

Mr M Flitcroft
CRA Exploration Pty Ltd
PO Box 1705
PORT AUGUSTA SA 5700

REPORT AC 2318/81

YOUR REFERENCE:	DPO No B 0456
IDENTIFICATION:	As listed
DATE RECEIVED:	30 October 1980

D.K. Rowley
Manager
Analytical Chemistry Division

for Norton Jackson
Managing Director

cc PO Box 254
NORWOOD SA 5067
(Invoice)

dam

Pilot Plant: Osman Place
Thebarton S.A.
Telephone 43 8053
Branch Laboratory: Perth

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ANALYSIS % Dry Coal Basis

SAMPLE MARK	CARBON C	HYDROGEN H	NITROGEN N	SULPHUR S	SODIUM Na	SPECIFIC ENERGY J/g	
889301	56.60	3.75	0.55	5.16	0.47	21900	— 30 Eoc
889302	35.57	3.69	0.49	2.91	0.38	15200	Jur
03	43.59	4.48	0.76	2.82	0.35	18960	Jur
04	62.30	3.15	0.81	3.40	1.63	23700	— 5 Eoc
05	60.86	3.71	1.04	3.20	1.46	23200	Eoc
06	56.07	2.95	0.74	3.35	1.32	21040	Eoc
METHOD:	----------	----------	S2	----------	----------	S3	

	Moist	Vol Matter	Ash	S%	Spec energy MJ/kg
Jur Eocene Coal	26	24	35	2.0	9.0
Jur Eocene Coal	49-58	18-24	6-13	1.7-2.6	9.5-10.9
Yallourn	60-70	16-19	0.5-1.5	0.2-0.5	6-9

COPY ONLY

0547

3/1/6/0 - AC 2318/81

15th December, 1980.

PART REPORT 1

Mr. M. Flitcroft,
C.R.A. Exploration Pty. Limited,
P.O. Box 1705,
PORT AUGUSTA. S.A. 5700

REPORT AC 2318/81

YOUR REFERENCE: DPO No. B 0456

IDENTIFICATION: As listed

DATE RECEIVED: 30th October, 1980

D.K. Rowley
Manager
Analytical Chemistry Division

for Norton Jackson
Managing Director

cc P.O. Box 254,
Norwood. S.A. 5067
(Invoice)

glj

AMDEL ANALYTICAL SERVICES 12-12-80 JOB AN 2318/81 PAGE 1

PROXIMATE COAL ANALYSIS CODE S1 RESULTS IN PERCENTAGES

	80L30C	48.16-51.02	58.49-59.8	60.12-62.84
		889301	889302	889303
SAMPLE AS RECEIVED				
MOISTURE		51.44	26.42	26.93
VOLATILE MATTER		22.26	26.63	31.44
FIXED CARBON		19.38	13.69	16.15
ASH		6.92	33.26	25.47
		100.00	100.00	100.00
MOISTURE FREE				
VOLATILE MATTER		45.84	36.19	43.03
FIXED CARBON		39.91	18.61	22.11
ASH		14.25	45.20	34.86
		100.00	100.00	100.00

	80L5C	60.28-63.08	63.08-65.82	65.82-69.04
		889304	889305	889306
SAMPLE AS RECEIVED				
MOISTURE		55.57	53.46	53.30
VOLATILE MATTER		21.76	22.23	19.98
FIXED CARBON		17.21	18.45	18.56
ASH		5.46	5.87	8.15
		100.00	100.00	100.00
MOISTURE FREE				
VOLATILE MATTER		48.97	47.76	42.79
FIXED CARBON		38.74	39.64	39.75
ASH		12.29	12.60	17.46
		100.00	100.00	100.00

SGS Australia Pty. Ltd.

0549

RECEIVED 27 NOV 1981

Laboratories Division

COAL ANALYSIS REPORT

REPORT No.: SL 1276 DATE IN: 22/9/81 DATE OUT: 25/11/81

CLIENT: CRA Exploration Pty Ltd CLIENT REFERENCE:

ADDRESS: 31 Osmond Terrace, Norwood, SA 5067

RESULTS TO: M Flitcroft COPY TO: 1) C.S. Gloe
54 Raglan Street
Preston Vic 3072
2) CRAE, PO Box 254
Norwood 5067

SAMPLE REFERENCE:

JL41C

221·76-238·09

Sample No.	Total moisture % (as received)	Ash % (Dry basis)	
891345	-	82.1	
891346	-	78.5	
891347	-	74.7	
891348	49.6	11.4	·31m
891349	50.1	9.1	1·61m
891350	50.6	9.6	
891351	53.7	10.5	2m
891352	52.2	10.7	
891353	52.8	8.3	
891354	52.6	10.0	2·45m
891355	50.9	8.2	
891356	54.9	8.9	
891357	52.0	8.1	
891358	52.7	9.6	3m
891359	52.9	8.9	
core loss 891360	53.9	12.4	
core loss. 891361	55.1	11.0	1·55m
red brown 891362	52.6	12.1	
891363	52.2	14.8	2·2m
891364	45.4	34.2	
891365	-	82.9	

Determined in accordance with: AS1038

Total Moisture in accordance with: AS2434.1

H. Read

Harold Read
Manager - Coal Exploration Services

NATA

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RESULTS TO: M Flitcroft COPY TO: 1) C.S. Gloe
54 Raglan Street
Preston Vic 3072

SAMPLE REFERENCE:

2) CRAE, PO Box 254
Norwood 5067

FISCHER CARBONISATION ASSAY

SAMPLE NO:	891345	891346	891347	891348	891349
Coke Residue %	87.4	84.4	80.2	52.4	50.2
Tar %	2.4	2.9	3.7	10.5	11.9
Water (of Decomposition)	2.2	2.4	3.6	7.2	7.2
Gas (plus errors)	5.6	6.7	8.1	15.7	16.5
%Moisture in the analysis sample (determined by entrainment with tollene)	2.4	3.6	4.4	14.2	14.2

Determined in Accordance with ISO R647 on an "air-dried basis"

H. Read

Harold Read-Manager of
Coal Exploration Services

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Preston Vic 3072
2) CRAE, PO Box 254
Norwood 5067

SAMPLE REFERENCE:

FISCHER CARBONISATION ASSAY

SAMPLE NO:	891350	891351	891352	891353	891354
Coke Residue %	47.6	52.2	52.4	53.6	52.4
Tar %	9.8	9.2	8.3	8.0	9.4
Water (of Decomposition)	8.6	7.3	7.4	9.1	9.0
Gas (plus errors)	16.2	17.0	17.5	15.8	16.2
%Moisture in the analysis sample (determined by entrainment with tollene)	17.8	14.3	14.4	13.5	13.0

Determined in Accordance with ISO R647 on an "air-dried basis"

H. Read

Harold Read-Manager of
Coal Exploration Services

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CLIENT: CRA Exploration Pty Ltd CLIENT REFERENCE:

ADDRESS: 31 Osmond Terrace, Norwood, SA 5067

RESULTS TO: M Flitcroft COPY TO: 1) C.S. Gloe
54 Raglan Street
Preston Vic 3072

SAMPLE REFERENCE:

2) CRAE, PO Box 254
Norwood 5067

FISCHER CARBONISATION ASSAY

SAMPLE NO:	891355	891356	891357	891358	891359
Coke Residue %	50.8	52.8	52.8	52.6	52.8
Tar %	9.8	7.5	7.7	8.3	8.3
Water (of Decomposition)	8.3	9.1	9.1	8.3	8.4
Gas (plus errors)	17.6	16.5	16.3	16.7	16.3
%Moisture in the analysis sample (determined by entrainment with tollene)	13.5	14.1	14.1	14.1	14.2

Determined in Accordance with ISO R647 on an "air-dried basis"

H. Read

Harold Read-Manager of
Coal Exploration Services

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RESULTS TO: M Flitcroft COPY TO: 1) C.S. Gloe
54 Raglan Street
Preston Vic 3072

SAMPLE REFERENCE: 2) CRAE, PO Box 254
Norwood 5067

FISCHER CARBONISATION ASSAY

SAMPLE NO:	891360	891361	891362	891363	891364
Coke Residue %	54.2	54.2	55.0	53.8	63.0
Tar %	6.5	4.6	3.5	7.1	5.3
Water (of Decomposition)	8.3	7.9	8.1	8.1	4.5
Gas (plus errors)	16.1	17.2	17.7	16.3	13.5
%Moisture in the analysis sample (determined by entrainment with tollene)	14.9	16.1	15.7	14.7	13.7

Determined in Accordance with ISO R647 on an "air-dried basis"

H. Read

Harold Read-Manager of
Coal Exploration Services

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Laboratories Division

COAL ANALYSIS REPORT

REPORT No.: SL 1276 DATE IN: 22/9/81 DATE OUT: 25/11/81

CLIENT: CRA Exploration Pty Ltd CLIENT REFERENCE:

ADDRESS: 31 Osmond Terrace, NOrwood, SA 5067

RESULTS TO: M Flitcroft COPY TO: 1) C.S. Gloe
54 Raglan Street
Preston Vic 3072

SAMPLE REFERENCE:

2) CRAE, PO Box 254
Norwood 5067

FISCHER CARBONISATION ASSAY

SAMPLE NO:	891365				
Coke Residue %	92.4				
Tar %	0.6				
Water (of Decomposition)	2.5				
Gas (plus errors)	1.4				
%Moisture in the analysis sample (determined by entrainment with tollene)	3.1				

Determined in Accordance with ISO R647 on an "air-dried basis"

H. Read

Harold Read-Manager of
Coal Exploration Service

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APPENDIX 6

GEOCHEMICAL ANALYTICAL RESULTS

C.R.A. EXPLORATION PTY. LTD.
ANALYTICAL RESULT SHEET

Laboratory: COMLABS PTY LTD Lab. rept. no. JOB COM 811670 CR.A. D.P.O. no. B 0130 Date: 3 NOV 81

0556

Less than detection Limit ⊖

Method Detection limit												XRF1 4	XRF1 4	XRF1 10	XRF1 10	AAS1 2	AAS1 4	AAS1	AAS1 4	AAS3 1	AAS3 4	AAS5A 0.05
Sample Number	Metal Content (ppm)											U	Sn	W	Ta	Cu	Pb	Zn	Co	Ag	Mo	Au
891013												–	–	–	–	4	–	8	–	–	4	–
891014												–	–	–	–	4	–	6	–	–	8	–
891015												–	4	–	15	2	–	10	–	–	–	–
891016												–	4	–	–	12	12	14	–	–	–	–
891017												–	6	–	–	20	16	12	–	–	–	–
891018												–	8	–	20	16	20	30	4	–	–	–
891019												4	–	20	–	70	46	115	4	–	–	–
891020												6	–	15	–	48	12	55	16	–	–	–
891021												–	–	–	–	2	–	230	20	–	–	–
891022												–	6	–	–	2	–	65	–	–	–	–
891023												–	8	–	15	–	–	310	–	–	4	–
891024												–	–	–	–	2	4	400	–	–	–	–
891025												–	4	–	–	6	–	24	–	–	–	–
891026												–	6	–	–	4	–	26	–	–	–	–
891027												–	6	–	–	–	–	10	–	–	–	–
891028												–	4	–	–	6	4	18	–	–	–	–
891029												–	6	–	–	12	10	14	8	–	–	–
891030												–	4	–	–	12	12	10	–	–	–	–
891031												4	4	–	–	14	20	8	–	–	–	–
891032												4	–	–	–	20	46	30	8	–	–	–
891033												–	6	–	–	20	96	16	8	–	–	–
891034												–	4	–	–	16	65	42	12	–	–	–
891035												4	–	–	–	18	80	24	12	–	–	–
891036												6	–	–	–	12	30	40	12	–	–	–
891037												4	–	–	–	10	16	8	8	–	–	–
891038												6	–	–	–	10	14	8	4	–	–	–
891039												8	–	15	15	12	10	42	8	–	–	–
891040												4	–	–	15	10	8	28	8	–	–	–

C.R.A. EXPLORATION PTY. LTD.
ANALYTICAL RESULT SHEET

0557 Page no. 2 of 2.

Laboratory: COMLABS PTY LTD Lab. rept. no. JOB COM 811670 CR.A. D.P.O. no. B 0130 Date: 3 NOV 81

Less than detection Limit ⊖

Method / Detection limit											XRFI 4	XRFI 4	XRFI 10	XRFI 10	AASI 2	AASI 4	AASI	AASI 4	AAS3 1	AAS3 4	AAS5A 0.05
Sample Number	Metal Content (ppm)										U	Sn	W	Ta	Cu	Pb	Zn	Co	Ag	Mo	Au
891041											4	–	15	–	10	4	28	4	–	–	–
891042											–	6	–	–	18	–	24	4	–	–	–
891043											–	–	–	–	12	8	26	4	–	4	–
891044											6	8	15	–	–	12	48	–	–	4	–
891045											10	8	–	–	–	10	26	4	–	–	–
891046											6	4	–	–	2	30	14	4	–	–	–
891047											6	4	–	–	–	48	20	40	–	4	–
891048											8	4	15	–	–	40	18	32	–	–	–
891049											–	–	–	15	–	–	4	8	–	12	–
891050											–	–	–	–	–	–	10	4	–	12	–
891051											–	–	–	–	–	–	6	4	–	4	–
891052											4	4	–	–	–	–	10	–	–	8	–
891053											16	4	–	15	10	6	10	–	–	4	–
891054											8	4	–	15	8	6	16	–	–	–	–
891055											12	4	15	–	4	6	14	–	–	–	–
891056											8	8	15	–	4	–	14	4	–	–	–

C.R.A. EXPLORATION PTY. LTD.
ANALYTICAL RESULT SHEET

0558

Laboratory: COMLABS PTY LTD Lab. rept. no. JOB COM 811673 CR.A. D.P.O. no. B 0133 Date: 3 NOV 81

POLDA BASIN Less than detection Limit ⊟ Cummins

Method Detection limit												XRF1 4	XRF1 4	XRF1 10	XRF1 10	AAS1 2	AAS1 4	AAS1	AAS1 4	AAS3 1	AAS3 4	AAS3A 0.05
Sample Number	Metal Content (ppm)											U	Sn	W	Ta	Cu	Pb	Zn	Co	Ag	Mo	Au
891240												—	4	15	—	22	10	12	4	—	4	—
891241												—	4	—	—	4	6	10	—	—	—	—
891242												—	—	—	—	6	12	12	4	—	—	—
891243												—	8	—	—	4	18	105	—	—	—	—
891244												—	4	15	—	4	12	8	—	—	—	—
891245												—	—	—	—	6	10	55	—	—	—	—
891246												—	—	—	—	4	14	460	—	—	—	—
891247												—	—	—	—	6	—	28	—	—	—	—
891248												—	—	—	—	6	16	20	—	—	—	—
891249												—	—	—	—	4	30	65	—	—	—	—
891250												—	—	—	—	6	18	22	—	—	—	—
891251												—	—	—	—	8	8	16	—	—	—	—
891252												—	—	15	—	8	10	16	—	—	—	—

C.R.A. EXPLORATION PTY. LTD.
ANALYTICAL RESULT SHEET

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Laboratory: COMLABS PTY LTD Lab. rept. no. JOB COM 811672 CR.A. D.P.O. no. B 0132 Date: 30 OCT 81

McLACHLAN E.L. 670

POLDA BASIN 81LRM67. Less than detection Limit ⊟

Method												XRFI	XRFI	XRFI	XRFI	AASI	AASI	AASI	AASI	AAS3	AAS3	AASSA
Detection limit												4	4	10	10	2	4		4	1	4	0.05
Sample Number	Metal Content (ppm)											U	Sn	W	Ta	Cu	Pb	Zn	Co	Ag	Mo	Au
891127												–	4	–	20	10	–	18	–	–	–	–
891128												–	6	–	–	8	–	16	–	–	–	–
891129												–	–	–	–	6	–	10	–	–	–	–
891130												–	–	–	–	6	8	195	–	–	–	–
891131												–	4	15	–	4	8	16	–	–	–	–
891132												–	–	–	–	6	6	18	–	–	–	–
891133												–	8	–	–	4	18	12	–	–	–	–
891134												–	–	–	–	4	18	10	–	–	–	–
891135												–	6	15	–	4	18	6	–	–	–	–
891136												–	6	–	15	6	20	8	–	–	–	–
891137												–	6	15	–	14	18	8	–	–	–	–
891138												–	–	15	–	4	20	8	–	–	–	–
891139												–	4	–	–	6	16	10	–	–	–	–
891140												–	–	–	–	4	14	6	–	–	–	–
891141												–	–	–	–	6	22	6	–	–	–	–
891142												–	6	–	–	4	26	8	–	1	–	–
891143												–	–	–	–	4	18	6	–	–	–	–
891144												–	4	–	–	4	12	6	–	–	–	–
891145												–	6	15	–	2	14	10	–	–	–	–
891146												–	–	–	–	2	18	12	–	–	–	–
891147												–	8	–	–	2	18	8	–	–	–	–
891148												–	–	15	–	2	18	10	–	–	–	–
891149												–	–	–	–	2	20	8	–	–	–	–
891150												–	–	–	–	4	12	6	–	–	–	–
891151												–	4	–	–	6	16	6	–	–	–	–
891152												–	–	–	–	6	18	10	–	–	–	–
891153												–	–	–	–	4	14	10	–	–	–	–
891154												–	6	–	15	4	14	40	–	–	–	–

C.R.A. EXPLORATION PTY. LTD.
ANALYTICAL RESULT SHEET

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Laboratory: COMLABS PTY LTD Lab. rept. no. JOB COM 811672 CR.A. D.P.O. no. B 0132 Date: 30 OCT 81

McLACHLAN E.L. 670

POLDA BASIN 81LRM67. Less than detection Limit ⊟

Method Detection limit											XRFI 4	XRFI 4	XRFI 10	XRFI 10	AASI 2	AASI 4	AASI	AASI 4	AAS3 1	AAS3 4	AASSA 0.05
Sample Number	Metal Content (ppm)										U	Sn	W	Ta	Cu	Pb	Zn	Co	Ag	Mo	Au
8911 55											—	—	—	—	4	12	18	—	—	—	—
8911 56											—	4	—	—	4	12	80	—	—	—	—
8911 57											—	4	15	—	4	14	8	—	—	—	—
8911 58											—	—	—	—	4	10	8	—	—	—	—
8911 59											—	—	—	—	6	16	8	—	—	—	—
8911 60											—	4	15	—	6	14	10	—	—	—	—
8911 61											—	—	—	—	200	18	6	—	—	—	—
8911 62											10	—	—	—	570	14	6	8	—	—	—
8911 63											—	4	15	—	290	18	10	—	—	—	—
8911 64											6	4	—	—	530	12	8	16	—	—	—
8911 65											10	4	15	—	430	22	28	60	—	—	—
8911 66											—	6	—	—	150	16	30	24	—	—	—
8911 67											4	—	—	—	220	22	30	50	—	—	—
8911 68											—	—	15	—	160	18	30	28	—	—	—
8911 69											—	—	15	15	75	12	26	16	—	—	—
8911 70											—	—	15	15	180	16	28	24	—	—	—
8911 71											—	—	—	15	65	20	32	28	—	—	—
8911 72											—	—	—	15	105	18	26	20	—	—	—
8911 73											—	4	—	—	115	16	22	16	—	—	—
8911 74											—	4	—	—	48	20	30	24	—	—	—
8911 75											—	—	—	—	44	16	38	16	—	—	—
8911 76											—	8	—	—	42	16	30	16	—	—	—
8911 77											—	4	—	—	46	22	230	20	—	—	—
8911 78											—	—	—	—	44	18	32	24	—	—	—
8911 79											—	—	15	—	36	18	30	20	—	—	—
8911 80											—	—	—	15	38	18	44	20	—	—	—
8911 81											—	4	15	15	34	18	34	20	—	—	—
8911 82											—	—	—	15	28	20	36	20	—	—	—

C.R.A. EXPLORATION PTY. LTD.
ANALYTICAL RESULT SHEET

0561

Laboratory: COMLABS PTY LTD Lab. rept. no. JOB com 811672 CR.A. D.P.O. no. B 0132 Date: 30 OCT 81

McLACHLAN E.L. 670

POLDA BASIN 81LRM67. Less than detection Limit ⊟

Method Detection limit												XRF1 4	XRF1 4	XRF1 10	XRF1 10	AAS1 2	AAS1 4	AAS1	AAS1 4	AAS3 1	AAS3 4	AASSA 0.05
Sample Number	Metal Content (ppm)											U	Sn	W	Ta	Cu	Pb	Zn	Co	Ag	Mo	Au
891183												—	—	—	—	50	16	60	16	—	—	—
891184												—	—	—	—	48	14	44	12	—	—	—
891185												—	6	—	15	28	16	55	12	—	—	—
891186												—	4	—	—	36	16	36	12	—	—	—
891187												—	—	15	—	28	16	36	16	—	—	—
891188												—	—	—	—	24	14	38	12	—	—	—
891189												—	8	15	—	20	12	28	8	—	—	—
891190												—	—	—	—	20	14	30	12	—	—	—
891191												—	—	15	—	18	14	32	8	—	—	—
891192												—	6	—	—	28	10	30	8	—	—	—
891193												—	—	—	—	24	50	2100	8	—	—	—
891194												—	6	—	15	24	16	70	8	—	—	—
891195												—	4	—	—	30	12	50	8	—	—	—
891196												—	—	—	—	22	14	36	8	—	—	—
891197												—	4	—	15	32	14	38	16	—	—	—
891198												—	—	—	—	24	14	44	16	—	—	—
891199												—	—	15	—	24	8	30	12	—	—	—
891200												—	10	15	15	42	12	28	20	—	—	—
891201												—	—	15	—	16	8	22	4	—	—	—
891202												—	—	—	—	75	14	24	48	—	—	—
891203												—	4	—	—	16	12	40	12	—	—	—
891204												—	6	—	—	20	12	36	12	—	—	—
891205												—	—	15	—	18	10	28	8	—	—	—
891206												—	4	—	20	20	14	34	12	—	—	—
891207												—	4	15	—	10	—	16	—	—	—	—
891208												—	—	—	—	10	—	18	—	—	—	—
891209												—	4	—	—	12	4	18	—	—	—	—
891210												—	—	15	15	10	4	12	—	—	—	—

C.R.A. EXPLORATION PTY. LTD.
ANALYTICAL RESULT SHEET

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Laboratory: COMLABS PTY LTD Lab. rept. no. JOB COM 811672 CR.A. D.P.O. no. B 0132 Date: 30 OCT 81

McLACHLAN E.L. 670

POLDA BASIN 81LRM67. Less than detection Limit ⊟

Method Detection limit												XRFI 4	XRFI 4	XRFI 10	XRFI 10	AASI 2	AASI 4	AASI	AASI 4	AAS3 1	AAS3 4	AASSA 0.05
Sample Number	Metal Content (ppm)											U	Sn	W	Ta	Cu	Pb	Zn	Co	Ag	Mo	Au
891211												—	—	—	—	12	6	18	—	—	—	—
891212												—	8	—	—	14	6	24	—	—	—	—
891213												—	—	—	—	14	4	18	4	—	—	—
891214												—	8	20	—	14	10	22	8	—	—	—
891215												—	6	20	—	16	12	44	8	—	—	—
891216												—	—	25	15	20	10	96	12	—	—	—
891217												—	4	25	—	14	8	22	8	—	—	—
891218												—	—	35	—	10	4	28	4	—	—	—
891219												—	—	30	—	12	6	28	8	—	—	—
891220												—	—	20	—	14	12	28	12	—	—	—
891221												—	4	25	15	18	14	280	8	—	—	—
891222												—	—	15	15	12	4	50	4	—	—	—
891223												—	—	25	—	16	14	32	8	—	—	—
891224												—	6	15	—	14	10	150	8	—	—	—
891225												—	—	25	—	14	12	65	8	—	—	—
891226												—	4	25	—	12	10	65	8	—	—	—
891227												—	—	15	15	14	12	90	12	—	—	—
891228												—	—	15	—	14	12	65	12	—	—	—
891229												—	6	25	—	16	12	55	8	—	—	—
891230												—	—	20	—	14	10	65	8	—	—	—
891231												—	6	20	15	16	10	44	8	—	—	—
891232												—	4	—	—	10	10	40	8	—	—	—
891233												—	—	20	—	8	6	90	4	—	—	—
891234												—	—	—	—	8	6	55	4	—	—	—
891235												—	—	20	—	10	10	70	4	—	—	—
891236												—	—	—	—	12	14	100	4	—	—	—
891237												—	—	15	—	10	10	70	4	—	—	—
891238												—	—	15	—	10	10	50	8	—	—	—
891239												—	8	—	—	14	14	75	4	—	—	—

C.R.A. EXPLORATION PTY. LTD.
ANALYTICAL RESULT SHEET

0563

Laboratory: COMLABS PTY LTD Lab. rept. no. 811671 CR.A. D.P.O. no. B 0131 Date: 29 OCT 81

TUCKEY E.L. 687.

POLDA BASIN. 81LRM63 Less than detection Limit ⊟

Method												XRF1	XRF1	XRF1	XRF1	AAS1	AAS1	AAS1	AAS1	AAS3	AAS3	AAS3A
Detection limit												4	4	10	10	2	4		4	1	4	0.05
Sample	Metal Content (ppm)																					
Number												U	Sn	W	Ta	Cu	Pb	Zn	Co	Ag	Mo	Au
891057												—	—	—	—	6	18	160	4	—	4	0.05
891058												30	—	—	—	14	24	70	16	—	6	—
891059												16	4	—	—	18	20	26	24	—	8	—
891060												8	—	15	—	14	18	44	12	—	6	—
891061												—	—	—	15	8	12	390	4	—	4	—
891062												4	6	—	—	12	10	34	8	—	6	—
891063												—	8	—	15	8	14	115	8	—	6	—
891064												4	—	20	—	8	16	115	4	—	6	—
891065												—	—	15	—	6	12	90	8	—	10	—
891066												4	6	—	—	4	16	410	4	—	4	—
891067												—	6	—	—	4	8	36	—	—	—	—
891068												—	—	—	—	4	6	48	—	—	—	—
891069												—	—	—	—	6	10	270	—	—	—	—
891070												—	—	—	—	6	10	160	—	—	—	—
891071												—	—	—	—	4	6	100	—	—	—	—
891072												—	10	—	—	2	6	70	—	—	—	—
891073												—	—	—	—	2	12	380	—	—	—	—
891074												—	4	15	—	2	4	85	—	—	—	0.05
891075												—	4	—	—	6	—	38	—	—	—	—
891076												—	6	—	—	4	—	60	—	—	—	—
891077												—	—	—	—	4	—	55	—	—	—	—
891078												—	—	—	—	4	—	26	—	—	—	—
891079												—	—	15	—	2	6	160	—	—	—	—
891080												—	—	—	—	2	—	30	—	—	—	—
891081												—	—	—	—	8	6	44	—	—	—	—
891082												—	—	—	—	10	8	115	—	—	—	—
891083												—	4	—	—	14	20	115	—	—	—	—
891084												—	—	—	—	20	30	130	—	—	—	—

C.R.A. EXPLORATION PTY. LTD.
ANALYTICAL RESULT SHEET

Laboratory: COMLABS PTY LTD Lab. rept. no. 811671 CR.A. D.P.O. no. B 0131 0564 Date: 29 OCT 81

TUCKEY E.L. 687.

POLDA BASIN. 81LRM63 Less than detection Limit ⊟

Method Detection limit												XRF1 4	XRF1 4	XRF1 10	XRF1 10	AAS1 2	AAS1 4	AAS1	AAS1 4	AAS3 1	AAS3 4	AAS3A 0.05
Sample Number	Metal Content (ppm)											U	Sn	W	Ta	Cu	Pb	Zn	Co	Ag	Mo	Au
891085												—	—	—	—	20	28	210	—	—	—	—
891086												—	—	—	15	42	26	75	20	—	—	—
891087												—	4	—	—	24	36	20	12	—	—	—
891088												4	10	—	—	30	34	180	8	—	—	0.10
891089												4	6	15	—	26	42	70	8	—	—	0.10
891090												4	8	—	—	24	40	145	8	—	—	0.10
891091												4	10	—	—	40	40	135	8	—	—	0.05
891092												—	8	—	—	36	30	75	20	—	—	—
891093												—	4	—	20	20	34	410	16	—	—	—
891094												—	—	15	—	16	30	110	12	—	—	—
891095												—	—	—	—	18	30	120	12	—	—	—
891096												—	—	—	—	4	38	580	4	—	—	—
891097												—	—	—	—	—	26	80	—	—	—	—
891098												—	—	15	—	8	42	38	4	—	—	—
891099												—	6	—	—	18	36	120	—	—	—	—
891100												—	8	—	—	18	36	130	4	—	—	—
891101												—	—	15	—	22	34	60	8	—	—	0.05
891102												—	4	—	—	18	30	110	4	—	—	—
891103												—	4	15	—	18	34	380	20	—	—	—
891104												—	—	—	—	32	26	210	16	—	—	0.05
891105												4	—	—	—	18	26	270	24	—	—	0.05
891106												—	—	15	—	16	28	340	16	—	—	0.10
891107												—	—	—	—	14	28	210	16	—	—	—
891108												—	6	—	15	12	26	350	12	—	—	0.05
891109												—	6	—	—	8	12	36	4	—	—	—
891110												—	—	—	—	8	10	60	8	—	—	0.10
891111												—	—	—	—	6	6	40	4	—	—	—
891112												—	—	—	—	4	20	410	—	—	—	0.10

C.R.A. EXPLORATION PTY. LTD.
ANALYTICAL RESULT SHEET

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Laboratory: COMLABS PTY LTD Lab. rept. no. 811671 CR.A. D.P.O. no. B 0131 Date: 29 OCT 81

TUCKEY E.L. 687.

POLDA BASIN. 81LRM63 Less than detection Limit ⊟

Method Detection limit											XRF1 4	XRF1 4	XRF1 10	XRF1 10	AAS1 2	AAS1 4	AAS1	AAS1 4	AAS3 1	AAS3 4	AASSR 0.05
Sample Number	Metal Content (ppm)										U	Sn	W	Ta	Cu	Pb	Zn	Co	Ag	Mo	Au
891113											–	–	–	–	–	10	46	–	–	–	–
891114											–	4	–	–	–	30	16	–	–	–	–
891115											–	6	–	–	10	26	20	–	–	–	0.05
891116											–	–	–	–	6	34	14	–	–	–	–
891117											–	–	–	–	14	34	70	–	–	–	–
891118											–	4	–	–	16	42	30	–	–	–	–
891119											–	–	–	–	14	32	38	–	–	–	–
891120											–	6	–	–	14	30	70	4	–	–	–
891121											–	–	–	–	14	32	36	8	–	–	–
891122											–	4	–	–	16	24	50	8	–	–	–
891123											–	–	15	–	20	28	46	12	–	–	–
891124											–	–	–	–	18	30	105	12	–	–	–
891125											–	4	–	–	16	34	140	12	–	–	–
891126											–	6	–	–	14	22	200	12	–	–	0.05

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CRA EXPLORATION PTY. LIMITED

SEVENTH QUARTERLY REPORT ON POLDA BASIN, SOUTH AUSTRALIA, MCLACHLAN E.L. 670, TUCKEY E.L. 687 AND SHERINGA E.L. 688 FOR THE PERIOD ENDING 10TH MAY, 1982.

The contents of this report remain the property of C.R.A. Exploration Pty. Limited and may not be published in whole or in part nor used in a company prospectus without the written consent of the Company.

AUTHOR: D.R. MCBAIN

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DATE: 12TH MAY, 1982.

SUBMITTED BY: D.R. McBain

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1. SUMMARY

A review of the data from the CRAE 1980 and 1981 drilling programmes is in progress. Partial surrender of the Polda Basin tenements is envisaged shortly.

2. CONCLUSIONS & RECOMMENDATIONS

The review of drilling data will be completed shortly.

Areas of no further interest will be recommended for partial surrender.

3. INTRODUCTION

The Polda Basin tenements, covering 4,168 square kilometres, comprise three E.L.'s - McLachlan E.L. 670, Tuckey E.L. 687 and Sheringa E.L. 688 (see Plan No. SAa 840). These three exploration licences extend from Sheringa on the west coast of the Eyre Peninsula, through Lock to Rudall in the east.

McLachlan E.L. 670 was granted to CRA Exploration Pty. Limited on 7th July, 1980, with Tuckey E.L. 687 and Sheringa E.L. 688 on 11th August, 1980, for a period of twelve months. Subsequently, the E.L.'s were granted for a further twelve months. This report details work carried out by CRA Exploration Pty. Limited, in the quarter to 10th May, 1982.

4. WORK CARRIED OUT

4.1 Data Review and Assessment

Subsequent to the presentation of the Sixth quarterly report, the data from the CRAE 1980 and 1981 drilling programmes was further assessed. The review of this data will shortly be completed. It is envisaged that a partial surrender of the Polda tenements will then be undertaken.

D.R. McBAIN

DRM/lmc

0569

KEYWORDS

Kimba SI 53-7, Coal-lignite, Drill-rotary, Data review.

LOCATION

Kimba SI 53-7 1:250 000

LIST OF PLANS

Plan No.	Title	Scale
SAa 840	Polda Basin - 1980 - 1981 drill hole location plan	1:250 000

CRA EXPLORATION PTY. LIMITED

EIGHTH QUARTERLY REPORT ON MCLACHLAN E.L. 670

FOR THE PERIOD ENDING 10TH AUGUST 1982

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AUTHOR: I.D. FINCH

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DATE: 9TH SEPTEMBER 1982

SUBMITTED BY: I.D. FINCH

ACCEPTED BY: A.H. Kennedy

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1. SUMMARY

The north eastern part of McLachlan E.L. 670 has been recognised as having potential for stratiform/stratabound mineralization of the Broken Hill/Aggenys type.

Three stored S.A.D.M.E. diamond holes from the Warramboo area and eleven percussion holes from the Kopi area were inspected and grab sampled. One sample from the percussion hole KR4 returned anomalous base metal and silver geochemistry.

46.2 line kilometres of ground magnetics was completed and the data geophysically and geologically assessed.

A R.A.B. scout drilling programme was aborted after five holes failed to penetrate running sands and lignitic clays within the Tertiary overburden.

An amended programme, using the reverse circulation style of drilling, is planned.

2. INTRODUCTION

McLachlan E.L. 670 was granted to CRA Exploration Pty. Limited on the 7th July 1980. Tuckey E.L. 687 and Sheringa E.L. 688 were granted on the 11th August 1980 and hither to the three have, by agreement with S.A.D.M.E., been reported upon jointly as "The Polda Basin".

Following extensive exploration for coal within these E.L.'s during 1980/81 tenement holdings were rationalised in May 1982. The Sheringa E.L. was relinquished. The southern portions of Tuckey E.L. and McLachlan E.L. were also relinquished. At this time application was made to S.A.D.M.E. for retention of an areally modified McLachlan E.L. Approval is awaited.

Details of relinquishment and work carried out on the three E.L.'s up to the time of surrender are contained in the "Report on the Surrender of Sheringa E.L. 688 and Partial Surrender of McLachlan E.L. 670 and Tuckey E.L. 687, Polda Basin South Australia - 17th May 1982" by D.R. McBain.

If granted, the remaining portions of Tuckey and McLachlan E.L.'s will now be reported upon individually.

The current McLachlan E.L.A. (210/82) is bounded as follows... (See plan SAa 1802).

Commencing at a point being the intersection of latitude 33°20'S and longitude 135°20'E, thence east to the north west corner of the Hambidge Conservation Park, thence generally south eastwards along the boundary of the park to longitude 135°55'E, thence south to 33°35'S, thence west to 135°40'E, thence north to 33°30'S, thence west to 135°20'E and thence north to the point of commencement.

This report details the work carried out on McLachlan E.L. 670 during the quarter to the 10th August 1982.

3. CONCLUSIONS

In the north west of McLachlan E.L. 670 potential exists for stratiform/stratabound base metal deposits.

The high amplitude magnetic features in areas ME 1, 2 and 4 represent magnetite rich (?B.I.F.) horizons similar to those at Warramboo.

Basement rocks do not outcrop. Tertiary overburden in the east of the area is in the region of 50 to 60 metres. Lithologies vary from aeolian sands and calcrete to thick lignite and lignitic sands and clays. The depth to basement can be expected to increase to the west.

Sulphide mineralization in the form of chalcopyrite, pyrite and covellite is present in at least one of the four diamond drill holes at Warramboo. Anomalous basemetal and silver geochemistry also occurs in at least one of the Kopi percussion holes (KR4).

4. RECOMMENDATIONS

(1) A more detailed petrological and geochemical analysis of existing, diamond, percussion, rotary mud and R.A.B. holes from the Kopi and Warramboo areas should be undertaken.

(2) An amended scout drilling programme using the reverse circulation method should be implemented. Emphasis should be placed on obtaining a wide range of basement lithological and geochemical data.

(3) The majority of holes should be drilled in the MEl area in the vicinity of the S.A.D.M.E.'s hole, KR4.

5. WORK CARRIED OUT

5.1 General

A review of all coal exploration drilling in the E.L. was undertaken and the findings incorporated in the "Report on the Surrender of Sheringa E.L. 688 and Partial Surrender of McLachlan E.L. 670 and Tuckey E.L. 687, Polda Basin, South Australia" - 17th May 1982, by D.R. McBain.

Simultaneously a review of base metal potential within the E.L. was undertaken. The north and eastern parts of the E.L. exhibit potential for stratiform/stratabound - type base metal deposits.

A re-application for an areally modified E.L. 670 was submitted on 21st May 1982.

5.2 Geophysics

As part of the appraisal of base metal potential, a study was made of the detailed aeromagnetic survey flown by the S.A.D.M.E. during their search for iron ore in the 1960's.

Three linear magnetic features occur within the north east corner of the E.L. to the east of Kopi siding.

Percussion and diamond drilling of the Warramboo magnetic anomaly by S.A.D.M.E., 10 kilometres to the north of E.L. 670 showed it to be due to B.I.F. type sediments containing up to 30% magnetite. The features to the east of Kopi have similar magnetic signatures and are thus considered to be due to similar rock types.

Preliminary modelling indicates that the depth to basement is about 50 to 60 metres in the east of the E.L. This increases steadily westwards. Limited borehole data tends to confirm the geophysical model.

Thirteen lines of ground magnetics was carried out for an aggregate of 46.2 kilometres. Line positions are shown on plan no. SAa 1805 and magnetic profiles presented in Appendix III.

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5.3 Geochemistry

Twenty eight grab samples were taken from three of the four diamond holes drilled at Warramboo and twenty five from the eleven percussion holes drilled in the Kopi region.

Analyses were carried out for copper, lead, zinc, nickel, cadmium, manganese, chrome, silver, molybdenum, vanadium and mercury. The results are contained in Appendix I.

Routine petrological determinations were carried out on nine selected core samples from the Warramboo holes. The findings are summarised in Appendix II.

Geochemical results of note include an assay return of 1130 p.p.m. copper from the base of a conglomerate between 293 feet and 294 feet in hole W.D.3. Petrologically the sample contained the sulphides chalcopyrite, pyrite and covellite, as well as the oxides magnetite and hematite.

Anomalous copper, lead, zinc, nickel and silver geochemistry (610 p.p.m., 24 p.p.m., 550 p.p.m., 160 p.p.m. and 7 p.p.m. respectively) was obtained from a sample from KR4 in the Kopi area. (See plan no. SAa 1805).

5.4 Drilling

Following ground recovery of the main magnetic anomalies a total of 40 R.A.B. scout holes were planned to investigate basement geochemistry and lithologies.

Holes 82KRAB1 and 5 were drilled in the ME1 area (see plan no. SAa 1805) at 4800N/14320E and 4800N/13380E respectively. Both holes passed through unconsolidated sands before intersecting water, lignite and lignitic clays at approximately 24 metres. Both holes were abandoned at 30 metres due to a loss of circulation.

Holes 82KRAB2, 3 and 4 were drilled on line 1 in the ME2 area at 7150N, 7650N and 9430N respectively. In each case a fine, yellow, unconsolidated sand was intersected at about 20 metres. This running sand caused circulation losses and each of the holes was abandoned at approximately 25 metres following unsuccessful attempts at binding the inside walls with water and foam.

The programme was abandoned after the fifth hole failed to penetrate the Tertiary sands.

No drill logs Possible due to drilling problems.

CCJ

6. FUTURE WORK

A new programme will be formulated using the reverse circulation method of drilling. Costs will be consequently higher than for the original R.A.B. drilling. The overall programme will therefore be reappraised in order to maximise the data return from the reduced meterage.

Drilling is expected to commence in the coming quarter.

I.D. FINCH

IDF/dp

KEYWORDS

Kimba SI53-7, Copper, Iron, Lead, B.I.F., Assays-geochem., Drill-rotary.

LOCATION

Kimba SI53-7 1:250 000

LIST OF PLANS

Plan No.	Title	Scale
SAa 1802	Polda Basin, Location Map, McLachlan E.L. 670	1:250 000
SAa 1805	McLachlan E.L. 670, S.A. Ground Magnetics & Drillhole Location Plan	1:100 000

LIST OF APPENDICES

Appendix I	Analytical Report
Appendix II	Petrographic Summary
Appendix III	Ground Magnetic Profiles

135°30'

136°00'

Warramboo

EYRE HIGHWAY

135°20'

33°20'

Kopi Siding

Cadnia - Pt. Lincoln Railway

HAMBIDGE CONS. PARK

33°29'

33°30'

33°30'

McLACHLAN E.L. 670

33°00'

Mc Lachlan

Lock

33°35'

135°40'

135°55'

Warrachie

LOCATION DIAGRAM
FOR McLACHLAN E.L. 670

SCALE

KILOMETRES 5 0 5 10 15 20 25 30 KILOMETRES

CRA EXPLORATION PTY. LIMITED

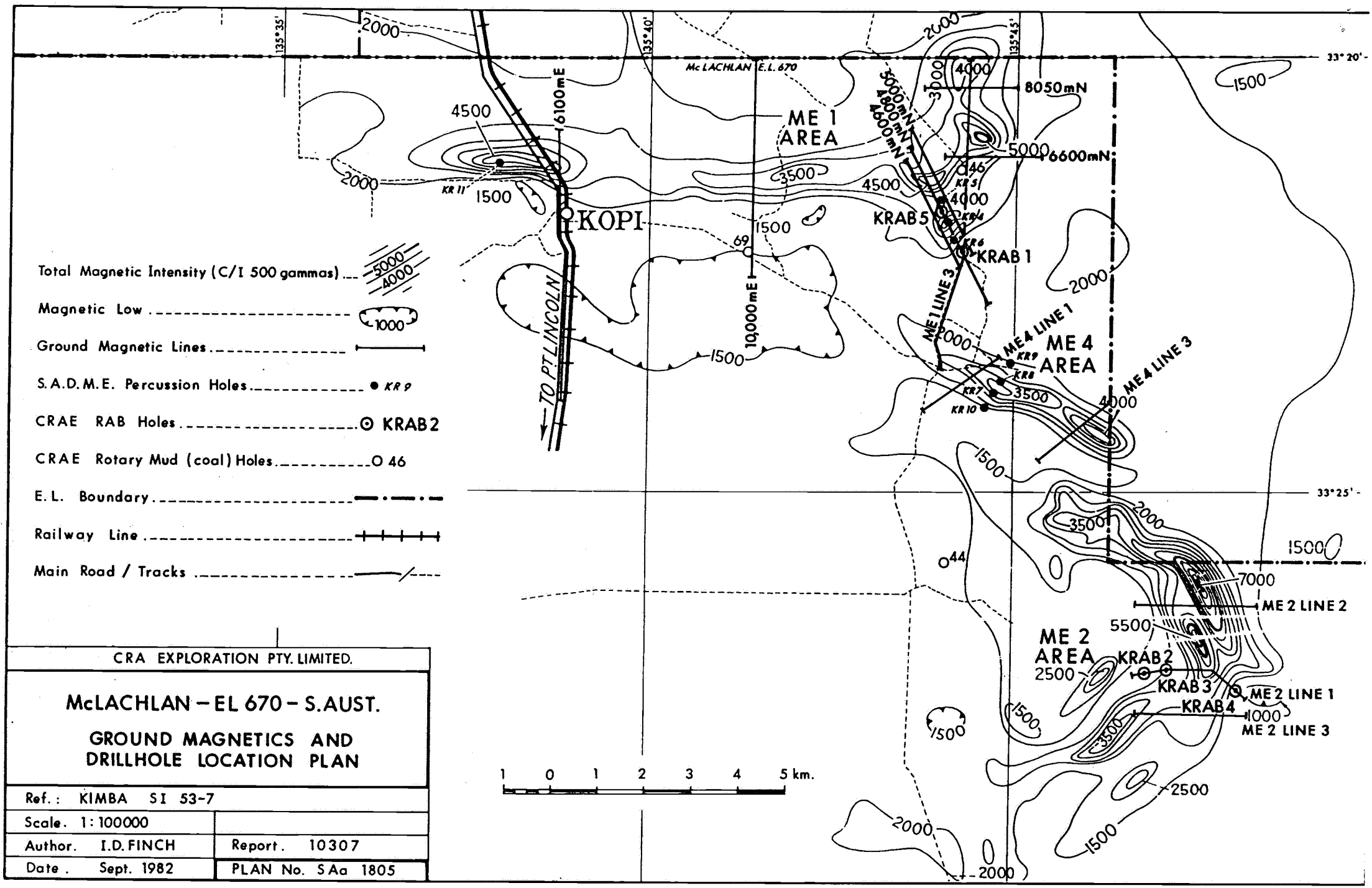
POLDA BASIN

LOCATION MAP

McLACHLAN E.L. 670

011

Reference: KIMBA SI53-7	
Author: I.D. FINCH	Scale: 1:250,000
Drawn: S.J.B.	Report No: 10307
Date: SEPTEMBER 1982	Plan No: SAa 1802



CRA EXPLORATION PTY. LIMITED.

McLACHLAN – EL 670 – S.AUST.

GROUND MAGNETICS AND DRILLHOLE LOCATION PLAN

Ref.: KIMBA SI 53-7	
Scale. 1:100000	
Author. I.D.FINCH	Report. 10307
Date. Sept. 1982	PLAN No. SAa 1805

APPENDIX I

ANALYTICAL REPORT

DEPARTMENT OF MINES AND ENERGY—SOUTH AUSTRALIA

P.O. Box 151, Eastwood, S.A. 5063.

013

REMOVAL OF DRILL HOLE SAMPLES

The following samples have been supplied to:

Name: I. FINCH Telephone No.: 428871

Company/Section: CRA EXPLORATION PTY LTD

Address: 31, OSMOND TCE. NORWOOD

This removal of samples was approved by: .....

DRILL HOLE NAME AND NUMBER	DRILLING SPONSOR	DEPTH AND INTERVAL	TYPE OF SAMPLE	OFFICE USE
WD 3	S.A.D.M.E.	293' - 294'	CORE.	
"	"	324' - 324'9"	"	
"	"	348' - 348'3"	"	
"	"	440' - 441'	"	
"	"	475' - 475'9"	"	
"	"	508' - 508'6"	"	
"	"	590' - 590'5"	"	

Nature of work to be undertaken on sample: Sample for base metals

CONDITIONS:

1. The above samples are supplied on condition that copies of results of all work on these samples are forwarded to the Director-General, Department of Mines and Energy, as soon as they become available, and that these results be clearly marked for the attention of the Core Library Controller, Technical Information Services, Head Office.
2. Any residue material remaining after testing must be clearly labelled and returned to the Core Library Supervisor, Department of Mines and Energy, Core Library, Conyngham Street, Glenside S.A. 5065.
3. The confidentiality of information supplied is left to the discretion of the Director-General, Department of Mines and Energy.

I acknowledge receipt of the above samples and agree to meet the above conditions.

SIGNATURE: ..... WITNESS: .....

DATE: 29/3/82 DATE: 29/3/82

DMC 1

30pads33—11.78 K1560 O

DEPARTMENT OF MINES AND ENERGY—SOUTH AUSTRALIA

P.O. Box 151, Eastwood, S.A. 5063.

014

REMOVAL OF DRILL HOLE SAMPLES

The following samples have been supplied to:

Name: I. FINCH Telephone No.: 428871

Company/Section: CRAE PTY LTD

Address: 31 OSMOND TCE NORWOOD SA 5067

This removal of samples was approved by:

DRILL HOLE NAME AND NUMBER	DRILLING SPONSOR	DEPTH AND INTERVAL	TYPE OF SAMPLE	OFFICE USE
KR1	S.A.D.M.E.	100' - 110'	CHIPS	
"	"	139' - 139'6"	CORE	
KR2	"	260' - 265'	CHIPS	
"	"	271' - 271'6"	CORE	
KR3	"	70' - 80'	CHIPS	
"	"	87' - 88'	CORE	
KR4	"	120' - 128'2"	CHIPS	
"	"	128'2" - 135'	"	
KR5	"	252'5" - 252'10"	CORE	
KR5	"	250' - 254'	CHIPS	
KR6	"	185' - 189'4"	chips	
"	"	188' - 188'4"	core	
KR7	"	213' - 214'	core	
"	"	210 - 216'	chips	
"	"	180' - 190'	chips	
KR8	"	252' - 252'4"	Core	
"	"	250' - 253'6"	chips	
KR9	"	230' - 240'	chips	
"	"	292' 8" - 298'	core	
KR10	"	302' - 306'	core	
KR11	"	250' - 260'	chips	
"	"	300' - 301'	core	
"	"	303' - 304'	core	

Nature of work to be undertaken on sample: Base metal analysis

CONDITIONS:

1. The above samples are supplied on condition that copies of results of all work on these samples are forwarded to the Director-General, Department of Mines and Energy, as soon as they become available, and that these results be clearly marked for the attention of the Core Library Controller, Technical Information Services, Head Office.
2. Any residue material remaining after testing must be clearly labelled and returned to the Core Library Supervisor, Department of Mines and Energy, Core Library, Conyngham Street, Glenside S.A. 5065.
3. The confidentiality of information supplied is left to the discretion of the Director-General, Department of Mines and Energy.

I acknowledge receipt of the above samples and agree to meet the above conditions.

SIGNATURE: J. D. [illegible] WITNESS: [illegible]

DATE: 30/3/82 DATE: 30/3/82

DEPARTMENT OF MINES AND ENERGY—SOUTH AUSTRALIA

P.O. Box 151, Eastwood, S.A. 5063.

015

REMOVAL OF DRILL HOLE SAMPLES

The following samples have been supplied to:

Name: I. D. FINCH Telephone No.: 428871

Company/Section: CRA EXPLORATION PTY LTD

Address: 31, OSMOND TCE., NORWOOD

This removal of samples was approved by: .....

DRILL HOLE NAME AND NUMBER	DRILLING SPONSOR	DEPTH AND INTERVAL	TYPE OF SAMPLE	OFFICE USE
WD1	SADME	113' - 113'10"	CORE	
"	"	141' 8"	"	
"	"	150' - 150'4"	"	
"	"	156' - 156'4"	"	
"	"	163' - 164'	"	
"	"	173' - 173'3"	"	
"	"	187'2" - 187'6"	"	
"	"	194' - 194'3"	"	
"	"	195' - 200'	"	
"	"	257' - 257'4"	"	
"	"	285' - 285'6"	"	
"	"	306' - 306'5"	"	
WD2	"	204' - 204'7"	"	
"	"	269' - 269'2"	"	
"	"	578' - 578'6"	"	
WD3	"	154' - 154'5"	"	
WD3	"	162' - 162'6"	"	
"	"	201' - 201'6"	"	
"	"	220' - 220'3"	"	
"	"	250' - 250'5"	"	
"	"	280' - 280'4"	"	

Nature of work to be undertaken on sample: Analysis for base metals

CONDITIONS:

1. The above samples are supplied on condition that copies of results of all work on these samples are forwarded to the Director-General, Department of Mines and Energy, as soon as they become available, and that these results be clearly marked for the attention of the Core Library Controller, Technical Information Services, Head Office.
2. Any residue material remaining after testing must be clearly labelled and returned to the Core Library Supervisor, Department of Mines and Energy, Core Library, Conyngham Street, Glenside S.A. 5065.
3. The confidentiality of information supplied is left to the discretion of the Director-General, Department of Mines and Energy.

I acknowledge receipt of the above samples and agree to meet the above conditions.

SIGNATURE: ..... WITNESS: .....

DATE: 29/3/82 DATE: 29/3/82

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

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ANALYTICAL REPORT

JOB COM820581 O/N : B 0530

Results in ppm

	SAMPLE	Cu	Pb	Zn	Ni	Cd	Mn	Cr
WD 1	946751	16	4	28	28	<1	1700	125
	946752	50	8	60	36	<1	850	90
	946753	10	8	28	8	<1	220	44
	946754	50	<4	70	28	<1	350	120
	946755	14	4	28	8	<1	310	65
	946756	60	4	110	55	<1	400	165
	946757	16	<4	38	12	<1	270	70
	946758	10	<4	34	12	<1	1800	165
	946759	350	<4	55	75	<1	830	170
WD2	946760	14	<4	46	12	<1	1500	155
	946761	20	12	75	24	<1	270	60
	946762	65	4	80	28	<1	320	110
	946763	18	12	18	4	<1	7900	150
	946764	20	4	32	8	<1	8400	190
	946765	85	12	70	4	<1	960	40
WD3	946766	10	4	140	16	<1	5.50%	16
	946767	28	<4	40	28	<1	5500	165
	946768	8	4	75	55	<1	730	130
	946769	150	4	60	55	<1	810	270
	946770	44	4	75	32	<1	280	100
	946771	16	4	26	12	<1	1300	190
	946772	1350	8	38	32	<1	1150	95
	946773	10	<4	44	<4	<1	220	16
	946774	26	8	95	32	<1	4300	80
	946775	36	<4	34	8	<1	3800	85

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ANALYTICAL REPORT

017

JOB COM820581 O/N : B 0530

Results in ppm

	SAMPLE	Cu	Pb	Zn	Ni	Cd	Mn	Cr
MWD	946776	36	<4	26	24	<1	4800	135
	946777	18	<4	22	24	<1	4100	130
↓	946778	28	<4	40	12	<1	5400	95
KR1	946779	34	<4	32	12	<1	2800	85
	946780	32	4	50	16	<1	1100	240
KR2	946781	40	16	230	36	<1	1150	240
	946782	30	4	46	36	<1	175	55
KR3	946783	24	8	10	16	<1	65	240
	946784	28	8	120	44	<1	110	65
KR4	946785	610	24	550	100	<1	1750	120
	946786	8	4	70	20	<1	2000	50
	946787	50	12	105	60	<1	155	95
KR5	946788	44	16	100	55	<1	155	70
	946789	34	4	55	44	<1	320	50
KR6	946790	75	12	100	32	<1	75	125
	946791	6	8	95	28	<1	530	44
KR7	946792	16	8	38	12	<1	1850	100
	946793	55	12	90	28	<1	3200	105
	946794	10	28	38	16	<1	2700	50
KR8	946795	28	20	40	20	<1	240	60
	946796	6	4	60	12	<1	300	24
KR9	946797	16	12	85	24	<1	5900	36
	946798	4	<4	4	4	<1	650	12
KR10	946799	14	12	30	16	<1	930	70
	946800	75	4	60	44	<1	620	65

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018

ANALYTICAL REPORT

JOB COM820581 O/N : E 0530

Results in ppm

KR11

SAMPLE	Cu	Pb	Zn	Ni	Cd	Mn	Cr
946801	28	8	70	32	<1	1250	65
946802	36	8	70	28	<1	1600	40
946803	20	8	55	20	<1	1450	28

Method of Analysis : Cu Pb Zn Ni Cd : AAS1
Mn Cr : AAS2/2A

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ANALYTICAL REPORT

019

JOB COM820581 O/N : B 0530

Results in ppm

SAMPLE	Ag	Mo	V
946751	<1	<4	80
946752	<1	<4	190
946753	<1	4	30
946754	<1	4	110
946755	<1	<4	60
946756	<1	<4	240
946757	<1	<4	40
946758	<1	<4	60
946759	<1	<4	180
946760	<1	<4	60
946761	<1	<4	110
946762	<1	8	160
946763	<1	<4	20
946764	<1	<4	30
946765	<1	<4	130
946766	<1	<4	20
946767	<1	<4	100
946768	<1	<4	130
946769	<1	<4	170
946770	<1	<4	140
946771	<1	<4	50
946772	1	8	50
946773	<1	<4	10
946774	<1	<4	150
946775	<1	<4	40

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ANALYTICAL REPORT

020

JOB COM820581 O/N : B 0530

Results in ppm

SAMPLE	Ag	Mo	V
946776	<1	<4	70
946777	<1	<4	50
946778	<1	<4	30
946779	<1	<4	60
946780	<1	<4	70
946781	<1	<4	90
946782	<1	<4	140
946783	<1	<4	20
946784	<1	<4	90
946785	7	4	70
946786	<1	<4	60
946787	<1	<4	80
946788	<1	<4	70
946789	<1	<4	130
946790	<1	<4	30
946791	<1	<4	120
946792	<1	<4	40
946793	<1	<4	70
946794	<1	<4	40
946795	<1	<4	50
946796	<1	<4	40
946797	<1	<4	30
946798	<1	<4	10
946799	<1	<4	50
946800	<1	<4	120

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021

ANALYTICAL REPORT

JOB COM820581 O/N : B 0530

Results in ppm

SAMPLE	Ag	Mo	V
946801	<1	<4	70
946802	<1	<4	80
946803	<1	<4	70

Method of Analysis : Ag Mo V : AAS3

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ANALYTICAL REPORT

022

JOB COM820581 O/N : B 0530

Results in ppm

SAMPLE	Hg
946751	<0.05
946753	<0.05
946756	<0.05
946758	<0.05
946759	<0.05
946762	<0.05
946763	<0.05
946768	<0.05
946772	0.10
946776	<0.05
946778	<0.05
946779	<0.05
946782	<0.05
946784	<0.05
946786	<0.05
946789	<0.05
946791	<0.05
946794	<0.05
946796	<0.05
946798	<0.05
946800	<0.05
946802	<0.05

Method of Analysis : Hg : AAS7

APPENDIX II

PETROGRAPHIC SUMMARY

PETROGRAPHIC DESCRIPTION OF NINE SAMPLES

1. INTRODUCTION

Nine samples of drill core were received from CRA Exploration Pty. Limited with a request for routine petrographic description. There was also a request to indicate (1) where an original (pre-metamorphic) sedimentary depositional environment was suspected, (2) the grade of metamorphism and (3) comments on the opaques where present.

2. PROCEDURES

Standard thin sections of the nine samples were prepared and examined using a polarising microscope. Visual estimates of the volume percentages of minerals present were made and these, at best, can only be taken as approximations.

Three samples (946772, 946779 and 946794) contain significant amounts of opaque minerals. Upon consultation with Dr D.R. Kennedy polished thin sections were prepared for each of these samples and subsequently examined under reflected light.

The petrographic descriptions are contained in Section 4 of this report.

3. RESULTS

(a) Samples 946755 and 946759 both contain cordierite and therefore may be considered to have had sedimentary precursors. Samples 946772 and 946784 contain relatively high proportions of garnet, and garnet and biotite respectively. These also may have been derived from the metamorphism of a pelitic sediment. Sample 946779 may have originally contained cordierite. Its present texture suggest metamorphism of a granitoid, but it may have incorporated a sedimentary component during its pre-metamorphic history. The pre-metamorphic nature of samples 946789 and 946794 are uncertain, but the high plagioclase content may relate to a volcanogenic source.

(b) With the exception of sample 946759, all samples are gneissic with granoblastic textures. This texture, taken together with the presence of garnet, cordierite, and red-brown biotite suggests that the pro-grade metamorphic conditions reached the low pressure granulite facies (certainly in the range upper amphibolite to intermediate pressure granulite facies).

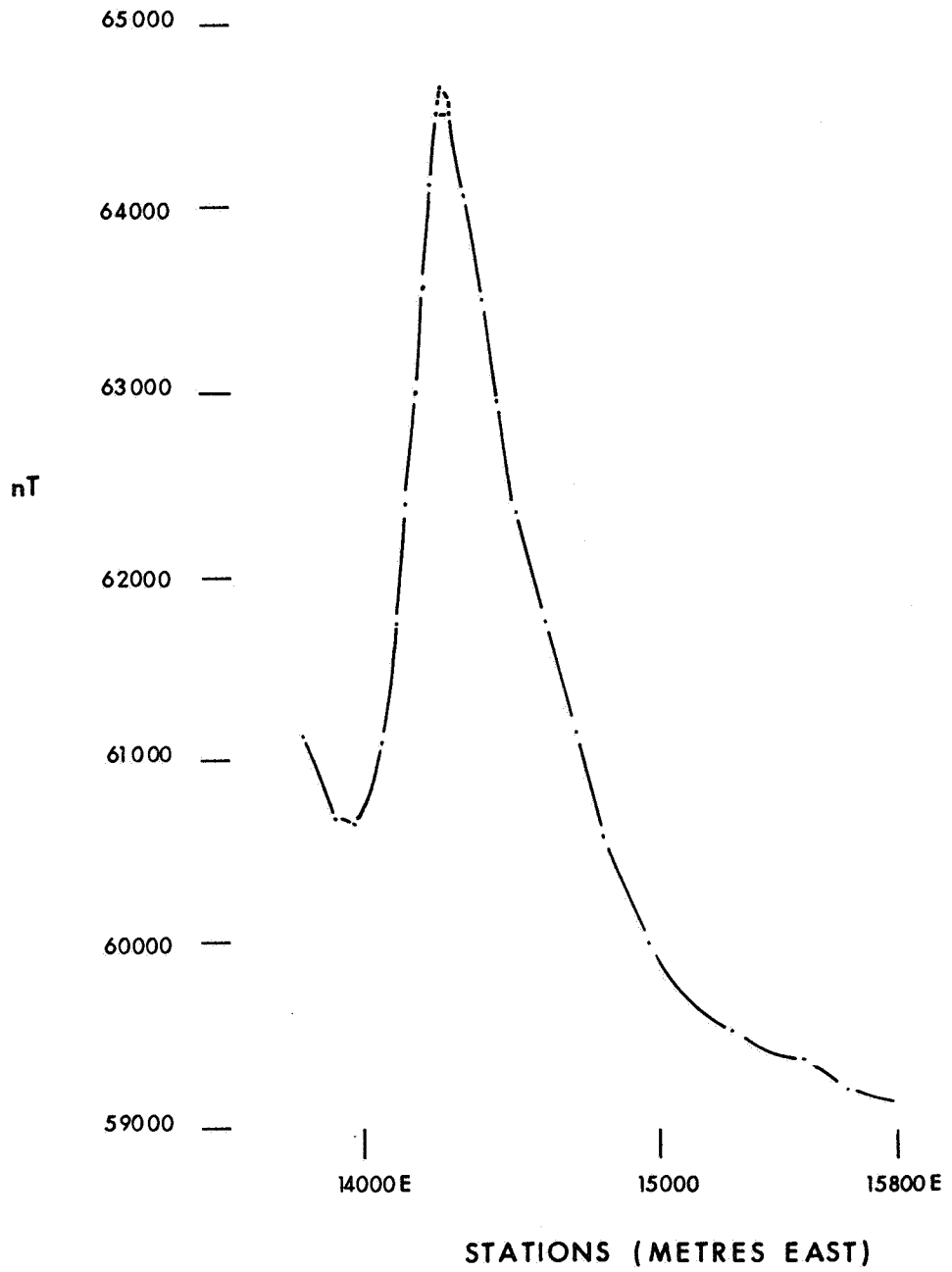
(c) Samples 946779 and 946794 both contain significant proportion of magnetite and hematite, with the hematite most likely derived from the magnetite. By analogy the opaques present in the other samples, except 946772 and 946765, are most likely very similar.

Sample 946772 has significant amounts of both oxides (magnetite and hematite) and sulphides (chalcopyrite, pyrite and covellite). The primary chalcopyrite, magnetite and ?pyrite assemblage appears to have been through two alteration/enrichment phases; firstly resulting in pyrite and hematite, and secondly, supergene covellite.

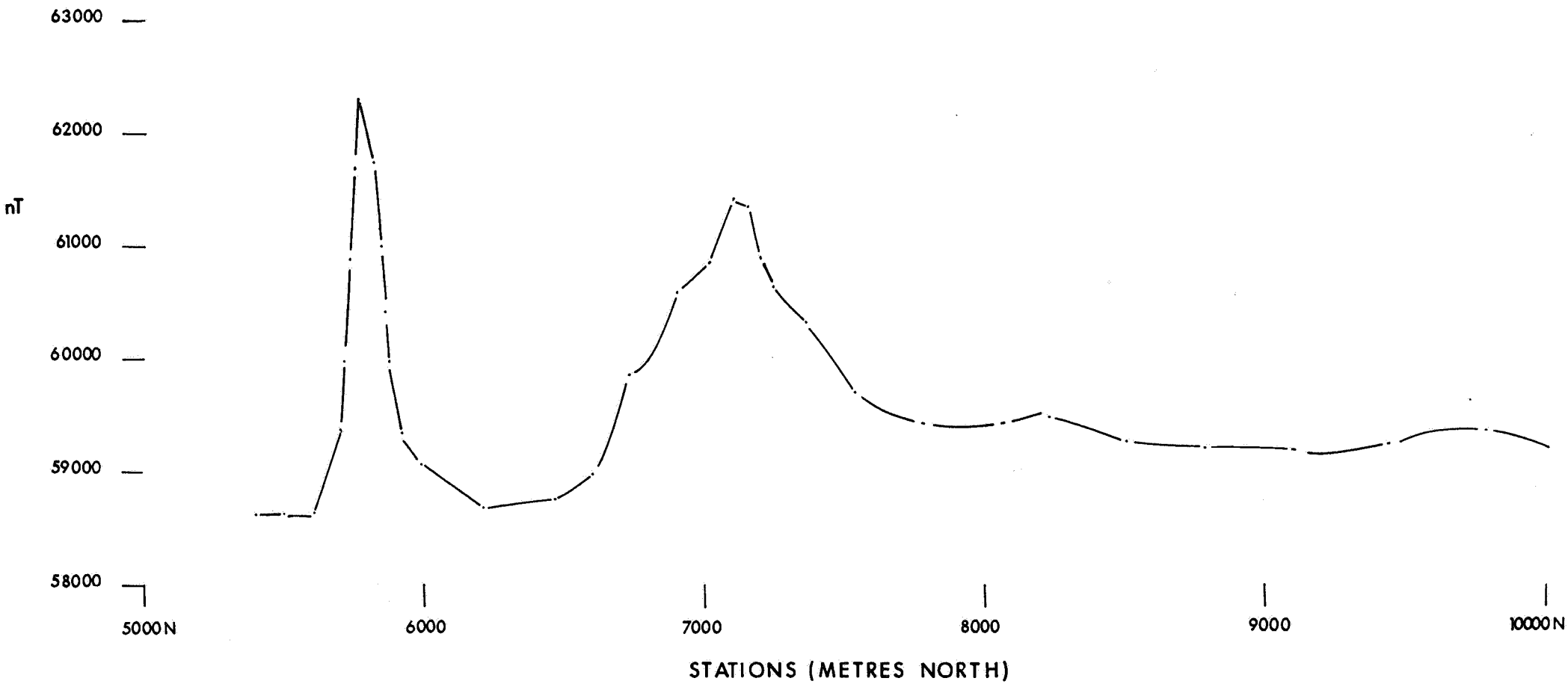
APPENDIX III

GROUND MAGNETIC PROFILES

AREA ME 1 LINE 6600 mN



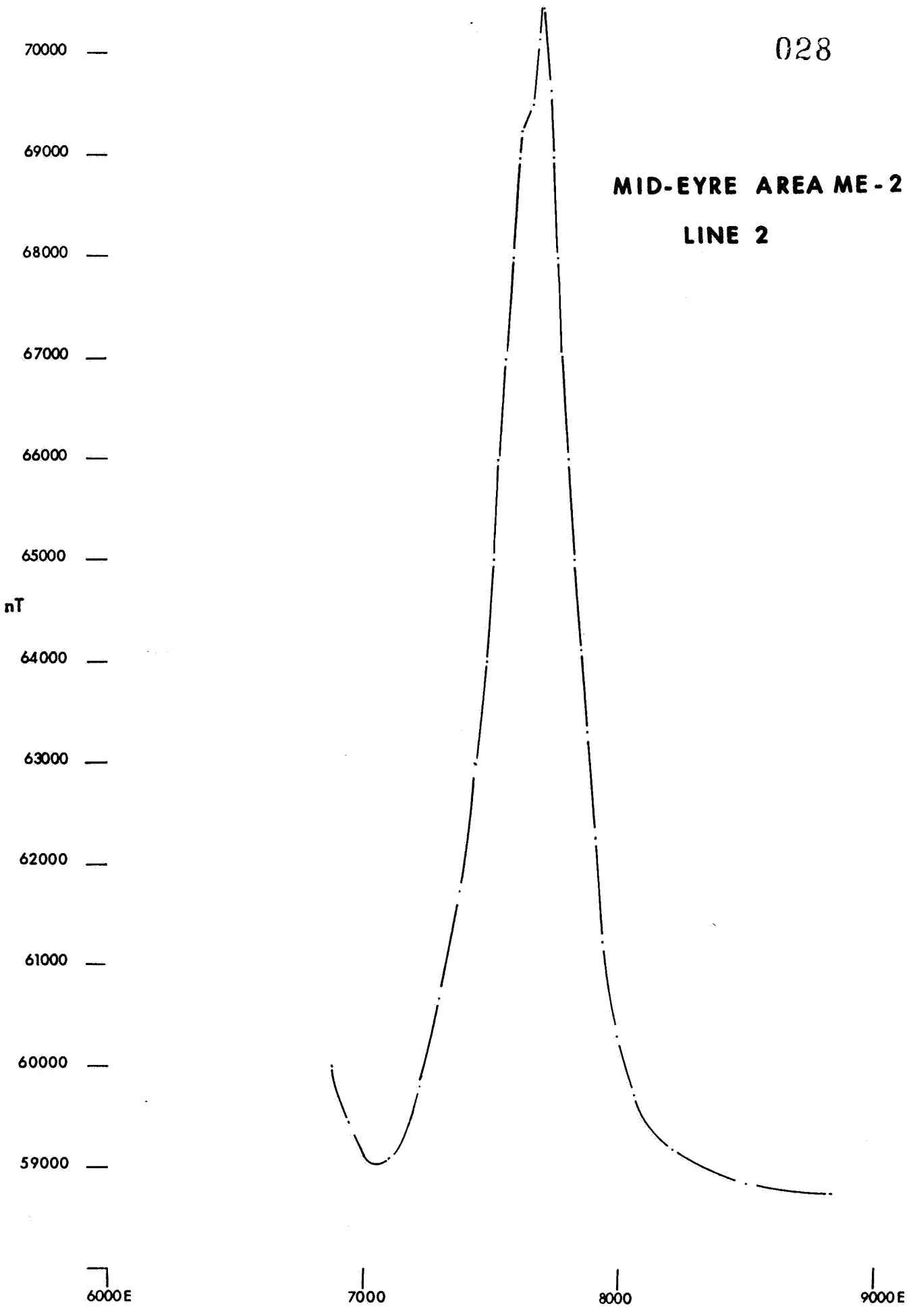
MID-EYRE ANOMALY M.E.-1 LINE 10000mE

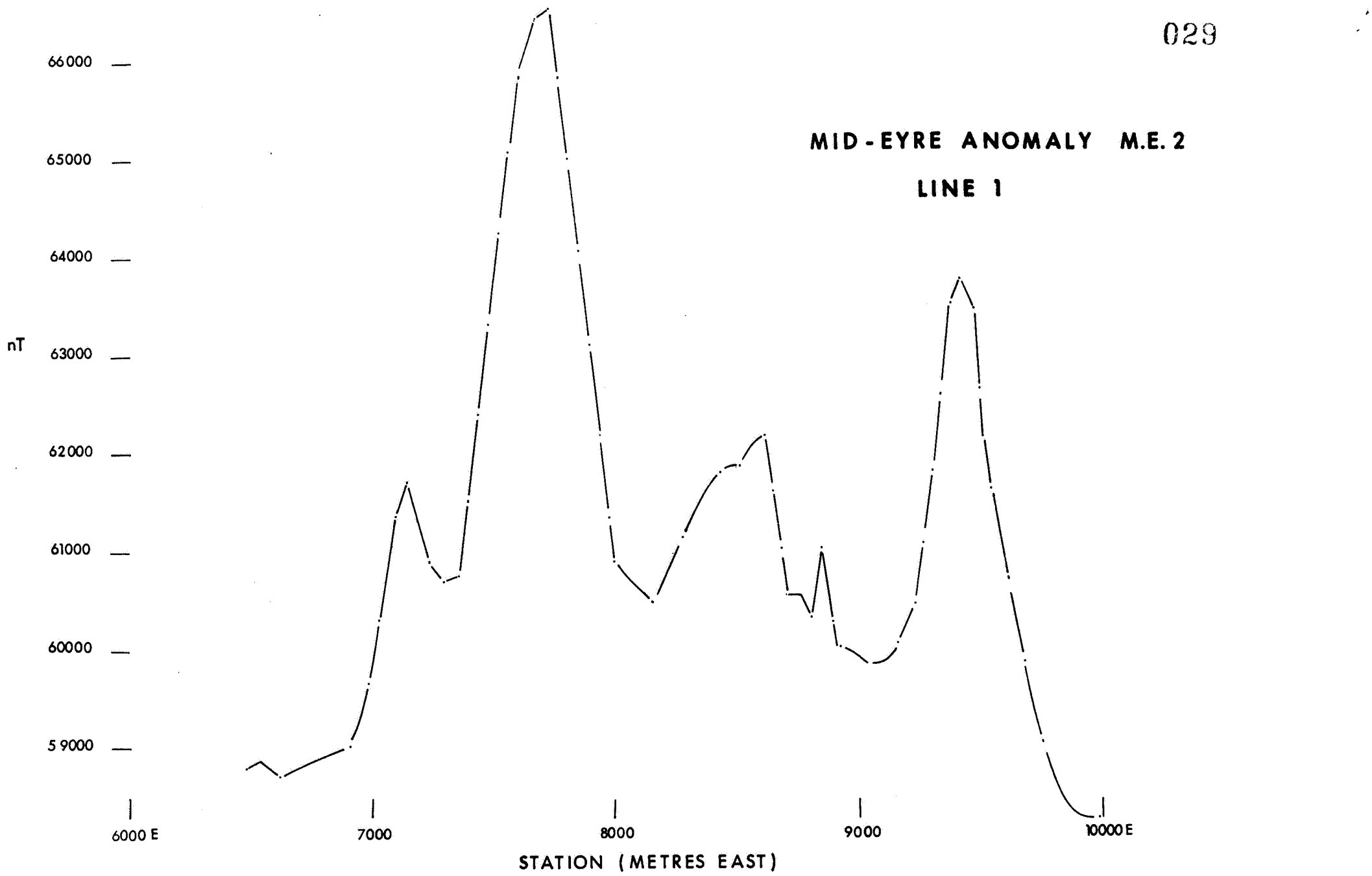


028

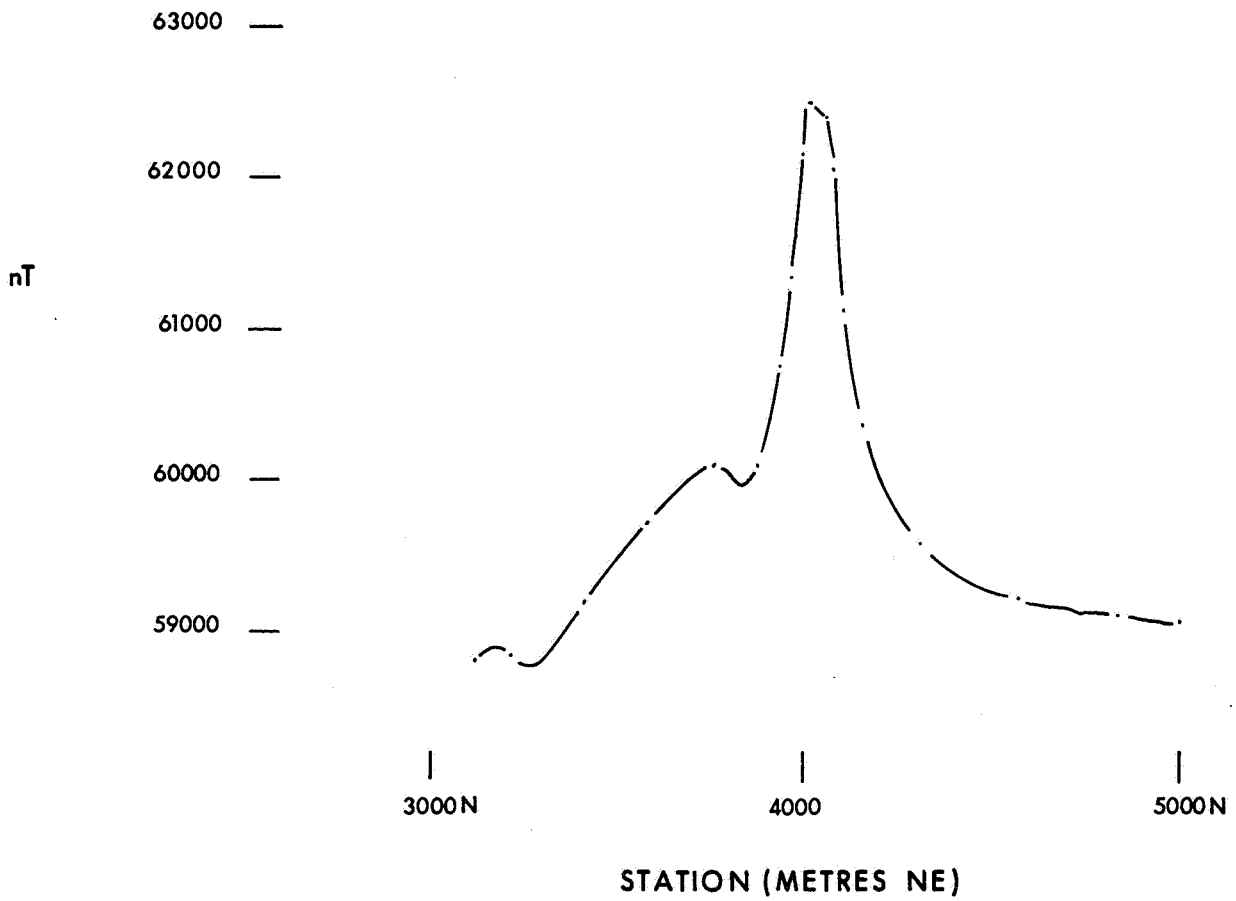
MID-EYRE AREA ME-2

LINE 2

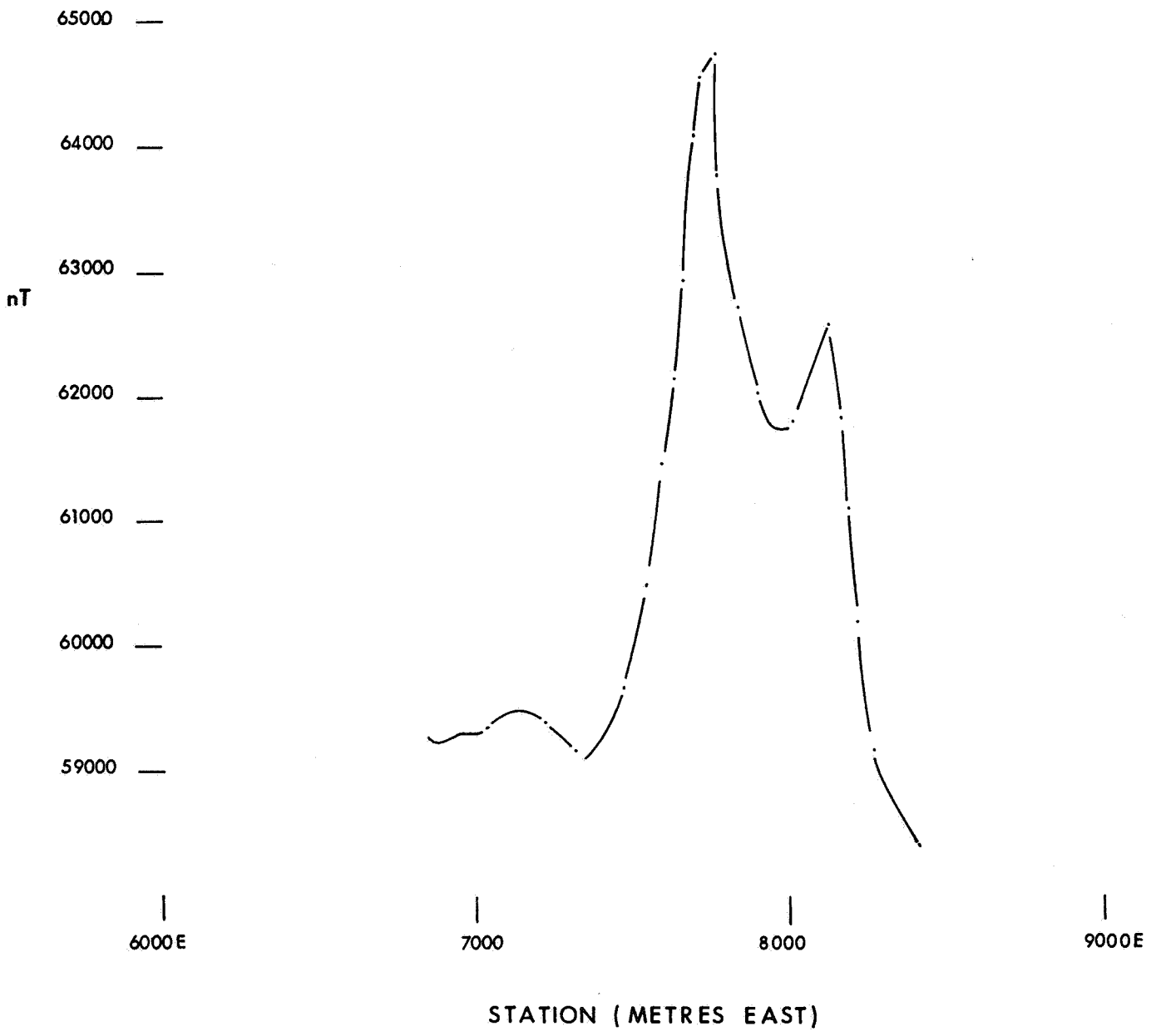



MID-EYRE ANOMALY M.E. 2
LINE 1
66000
65000
64000
63000
62000
61000
60000
5 9000
nT
6000 E
7000
8000
9000
10000 E
STATION (METRES EAST)

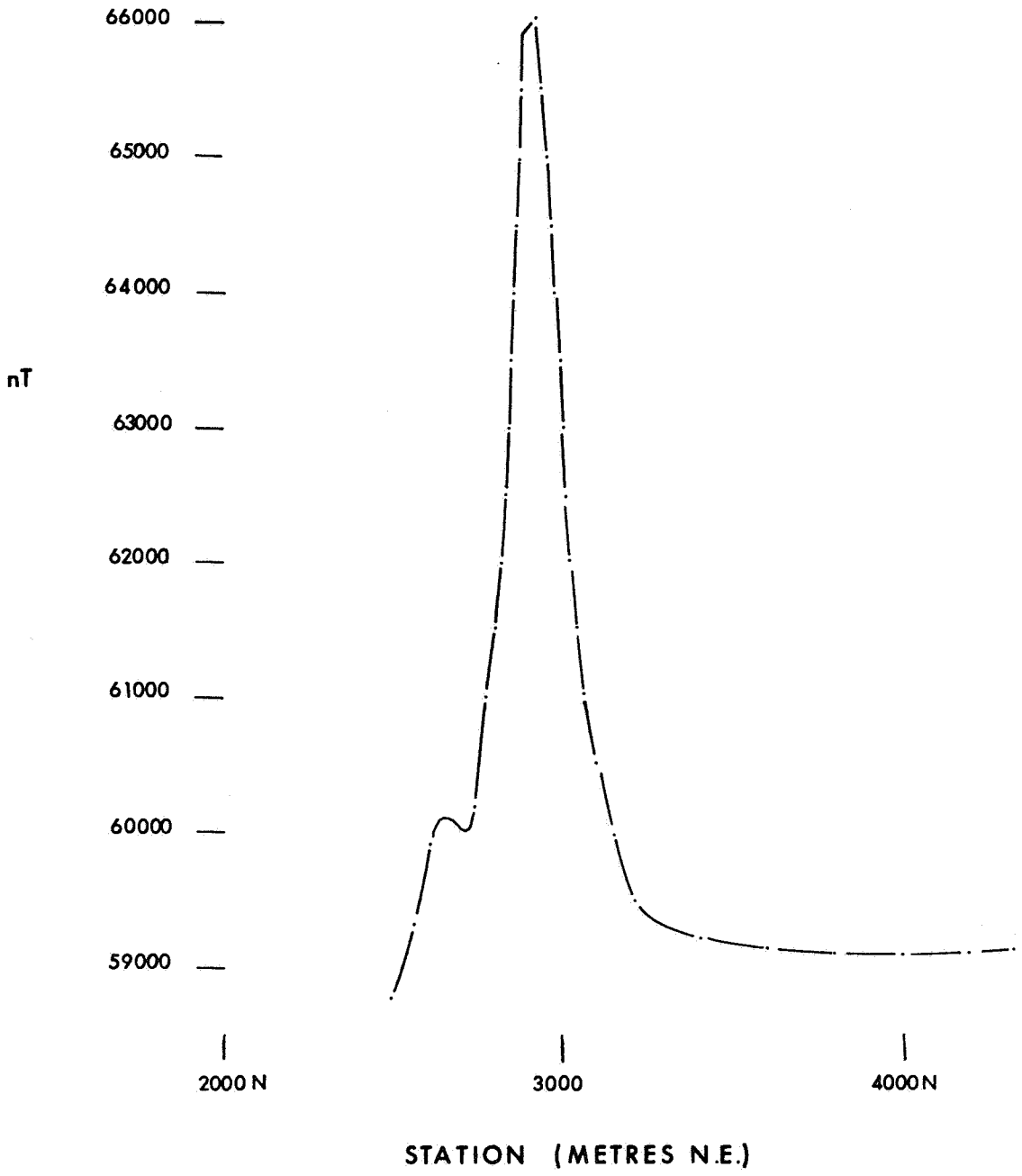
AREA ME4 LINE 1



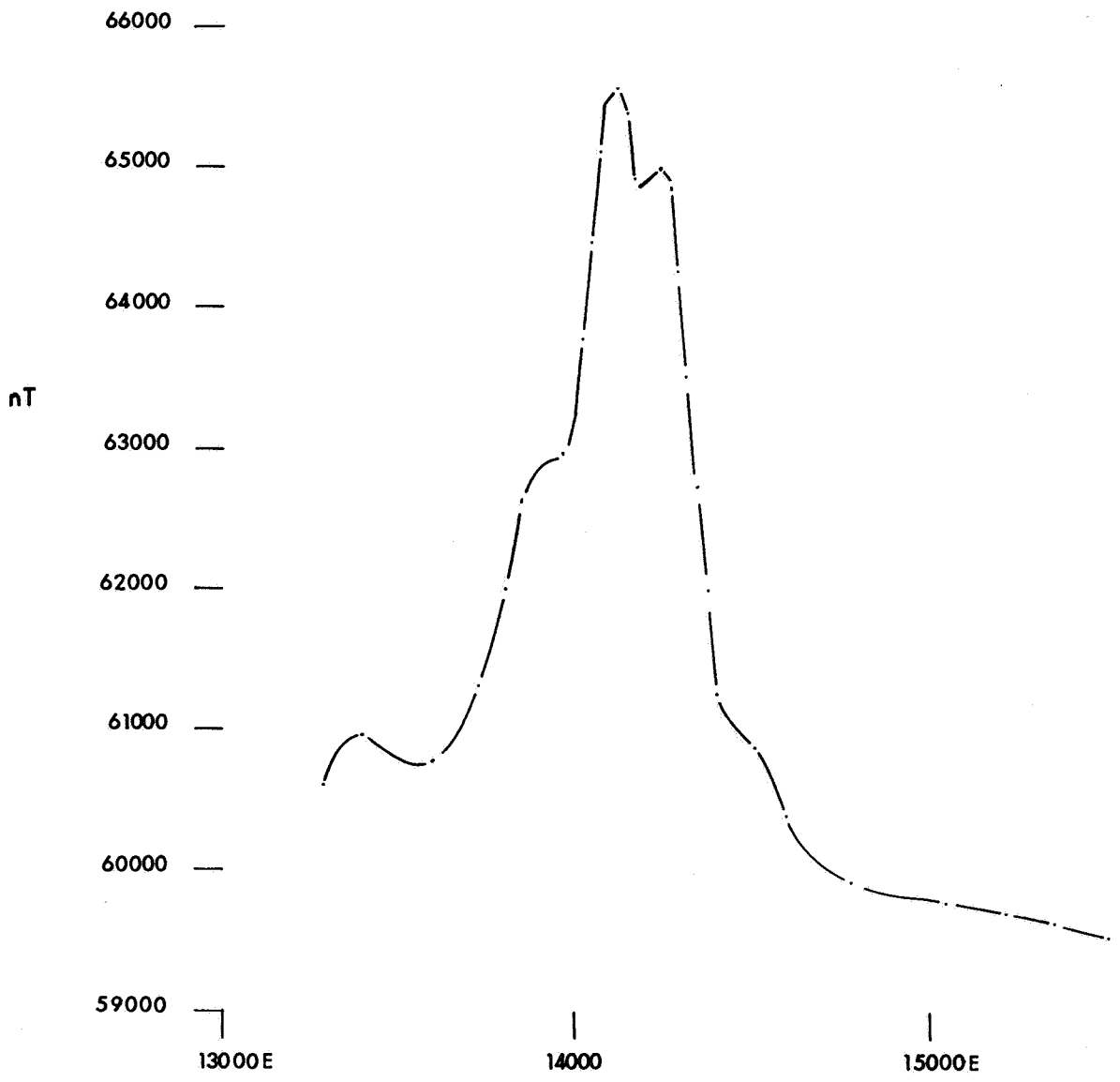
AREA ME-2 LINE 3



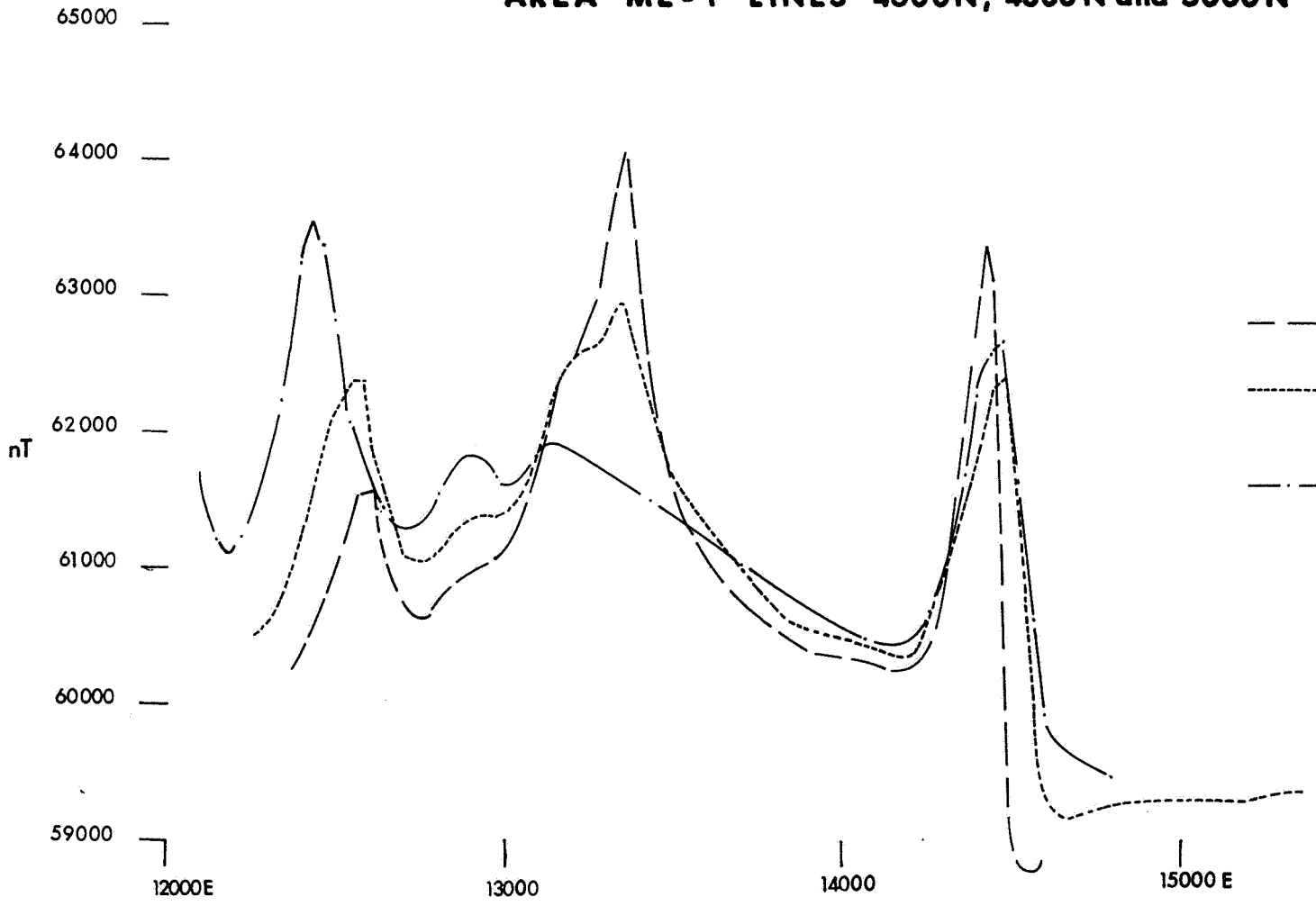
AREA M.E.-4 LINE 3

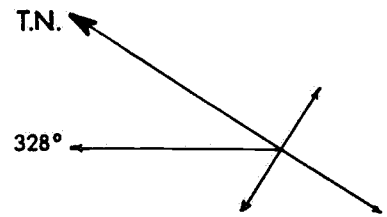


AREA M.E. 1 LINE 8050mN



AREA ME-1 LINES 4600N, 4800N and 5000N

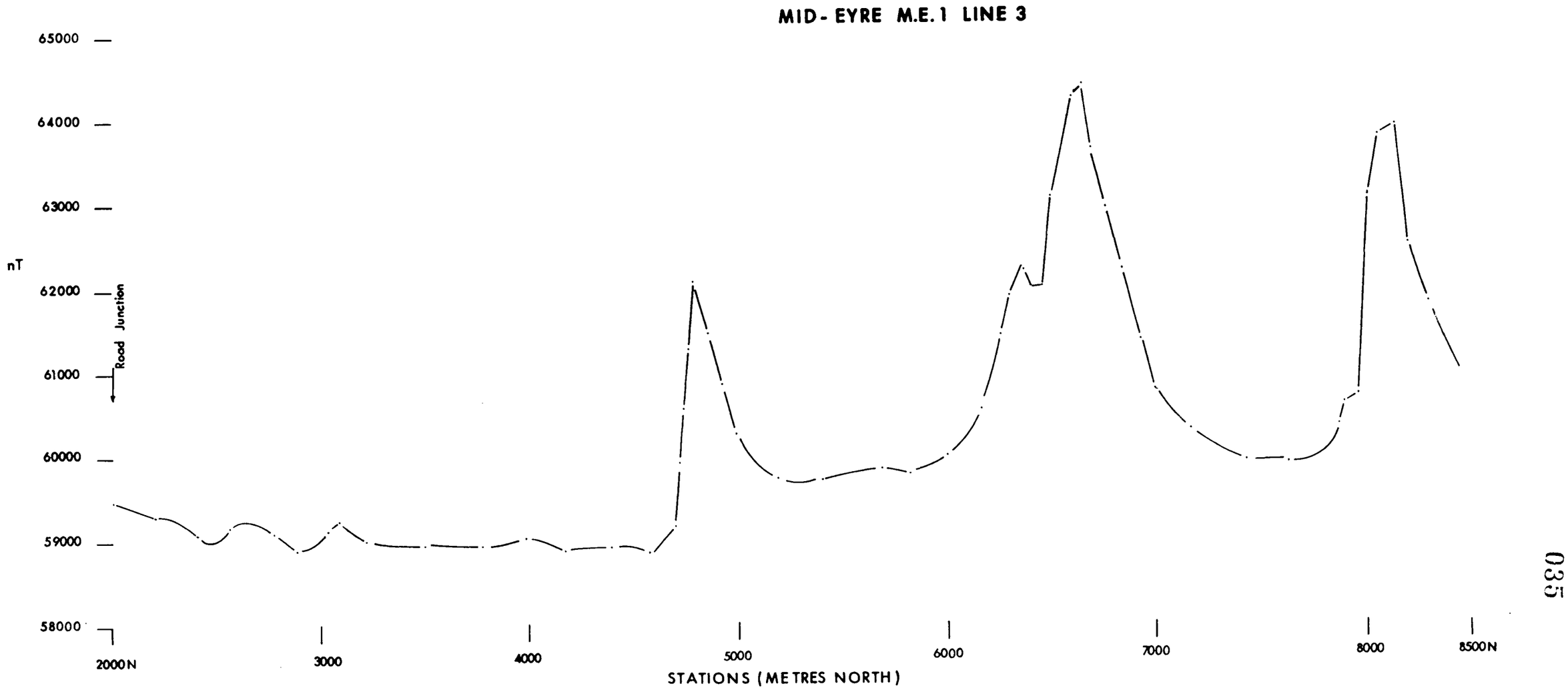




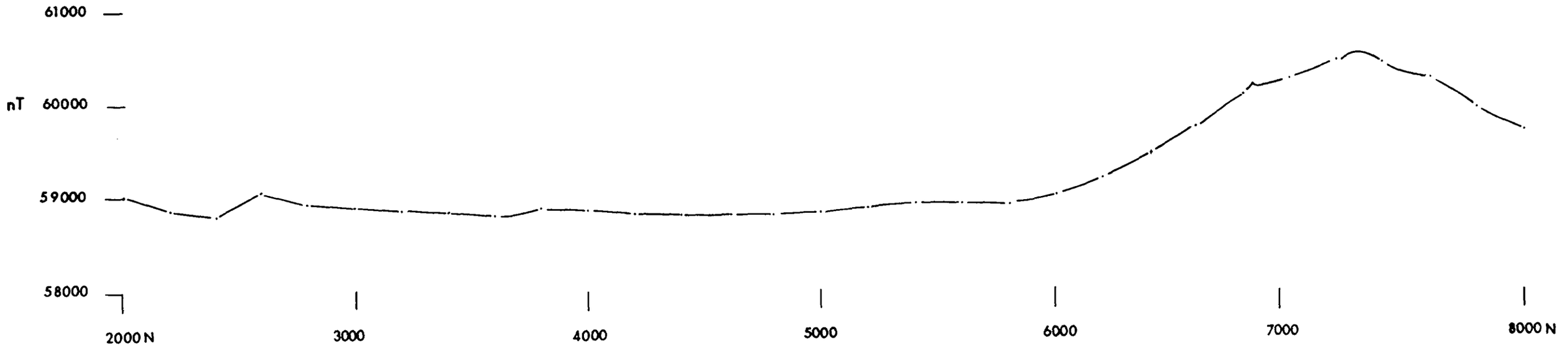
— — — Line 4600N For correct station subtract 320 metres

---------- Line 4800N For correct station subtract 160 metres
For correct nT subtract 250 nT

— · — ·· Line 5000N For correct nT subtract 500nT


MID-EYRE M.E.1 LINE 3
65000
64000
63000
nT
62000
Road Junction
61000
60000
59000
58000
2000N
3000
4000
5000
6000
7000
8000
8500N
STATIONS (METRES NORTH)

MID - EYRE M.E.-1 LINE 6100 mE



5

1076

CRA EXPLORATION PTY. LIMITED

EIGHTH QUARTERLY REPORT ON TUCKEY E.L. 687 FOR THE PERIOD ENDING 10TH AUGUST, 1982.

The contents of this report remain the property of C.R.A. Exploration Pty. Limited and may not be published in whole or in part nor used in a company prospectus without the written consent of the Company.

AUTHOR: P. LEWIS

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S.A.D.M.E.

DATE: 20TH OCTOBER, 1982

SUBMITTED BY: Paul Lewis

ACCEPTED BY:

10307

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2. INTRODUCTION	1
3. WORK CARRIED OUT	1
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LIST OF PLANS	3
KEYWORDS	3
LOCATION	3

1. SUMMARY AND CONCLUSIONS

A review of the 1980 and 1981 CRAE drilling data was made. A resource of 220 million tonnes of lignite is inferred in the northern Tuckey area, dominantly below 200 metres of cover. No significant lignite intersections or anomalous base metal values worthy of follow up are apparent in the southern Tuckey area. Partial relinquishment of the tenement below latitude 33°38' was made.

No field work was undertaken during the quarter.

2. INTRODUCTION

Tuckey E.L. 687 was granted to CRA Exploration Pty. Limited on the 11th August 1980 for a period of twelve months and was renewed for a further twelve month period, on August 11, 1981. The southern portion of the licence below latitude 33°38' was relinquished in May 1982, following generally poor results obtained in the 1980 and 1981 CRAE drilling programmes (McBain, 1982). Application for renewal of the reduced northern portion was lodged with the S.A.D.M.E. (Plan SAa 1932).

3. WORK CARRIED OUT

A review of all the data obtained during the 1980 and 1981 coal exploration programmes was made. A lignite resource of 220 million tonnes is inferred in the northern Tuckey area. The lignite occurs in a long, relatively narrow, east-west trending zone, roughly parallel to the northern basement fault. Approximately two-thirds of the resource (140 million tonnes) occurs at depth below 200 metres of overburden (Flitcroft, 1982).

Lignite intersected in the southern Tuckey area is of poor quality and occurs in thin, laterally discontinuous seams. The southern area is considered to have little potential for economic lignite development. No anomalous base or precious metal geochemistry was obtained from basement or sediment samples. The area below 33°38' was relinquished on May 17, 1982 (McBain).

No field work was undertaken during the quarter.

Paul Lewis

P. LEWIS

PL/pw

REFERENCES

Flitcroft, M.J.N. 1982 Sixth Quarterly Report on Polda Basin South Australia, McLachlan E.L. 670, Tuckey E.L. 687 and Sheringa E.L. 688 for the Period Ending 10th February, 1982.

McBain, D.R. 1982 Report on The Surrender of Sheringa E.L. 688, and Partial Surrender of McLachlan E.L. 670 and Tuckey E.L. 687, Polda Basin, South Australia, 17th May, 1982.

LIST OF PLANS

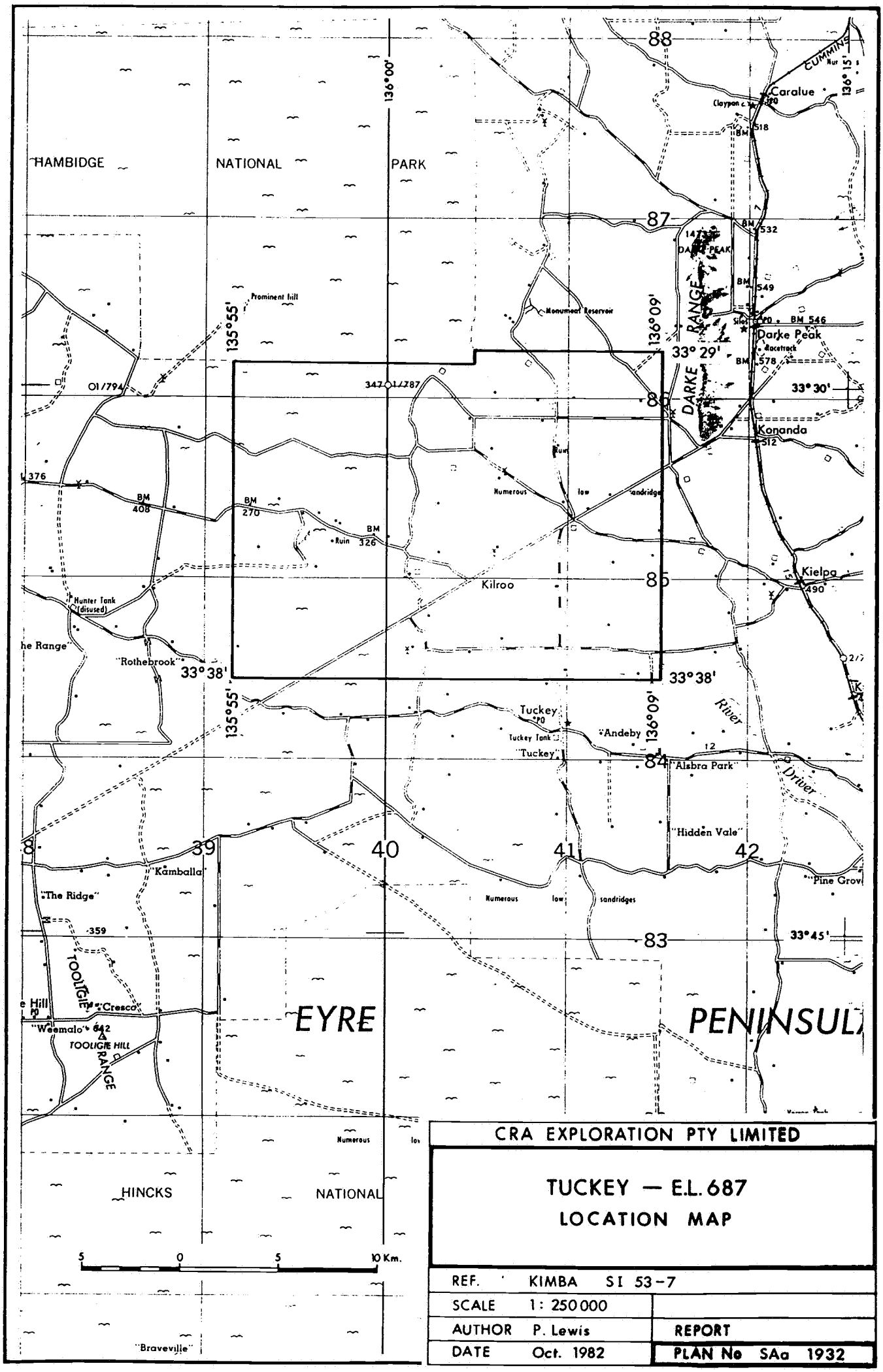
SAa 1932 Tuckey E.L. 687 - Location 1:250 000

KEYWORDS

Data-Review, Lignite

LOCATION

Kimba SI 53-7



CRA EXPLORATION PTY LIMITED

TUCKEY — E.L. 687
LOCATION MAP

REF.	KIMBA SI 53-7	
SCALE	1: 250 000	
AUTHOR	P. Lewis	REPORT
DATE	Oct. 1982	PLAN No SAa 1932

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CRA EXPLORATION PTY. LIMITED

FIRST QUARTERLY REPORT ON MC LACHLAN E.L. 1032, SOUTH AUSTRALIA, FOR THE PERIOD ENDING 7TH DECEMBER, 1982.

The contents of this report remain the prop[illegible].A. Exploration Pty. Li[illegible], not be published in whole or in part nor used in a company prospectus without the written consent of the Company.

AUTHOR: I.D. FINCH

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DATE: 1ST FEBRUARY, 1983

SUBMITTED BY:

ACCEPTED BY:

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1. SUMMARY

An 11 hole scout drilling programme was completed. Rock types intersected were a quartz magnetite, a metabasic, a pegmatite and felsic gneisses and schists containing varying amounts of magnetite.

Assay values obtained were considered normal for the respective basement lithologies.

2. INTRODUCTION

McLachlan E.L. 670 was granted to CRA Exploration Pty. Limited on 7th July, 1980. In May 1982, the southern portion of the E.L. was relinquished and an application made to S.A.D.M.E. for retention of an areally modified version. The application was approved and title granted for one year from 7th September, 1982 (E.L. 1032).

The current McLachlan E.L. 1032 covers 1 050 square kilometres and is bounded as follows (see Plan SAa 1802)....

Commencing at a point being the intersection of latitude 33°20'S and longitude 135°20'E, thence east to the north west corner of the Hambidge Conservation Park, thence generally south eastwards along the boundary of the park to longitude 135°55'E, thence south to 33°35'S, thence west to 135°40'E, thence north to 33°30'S, thence west to 135°20'E and thence north to the point of commencement.

This report details the work carried out on McLachlan E.L. 1032 during the quarter to the 7th December, 1982.

3. CONCLUSIONS

All boreholes reached target depth.

Eight of the 11 boreholes intersected felsic metasedimentary lithologies containing varying amounts of magnetite. One intersected a magnetite rich metabasic (?amphibolite) rock type whilst another intersected a coarse grained pegmatite.

The first hole to be drilled (82KRC1) may, therefore, represent the only intersection of a true Banded Iron Formation (quartz, magnetite).

Assay results from sampled basement lithologies were uniformly low and normal for the rock types encountered.

The elevated base metal and silver geochemistry from the grab sample taken from the S.A.D.M.E.'s K4 hole remains unexplained.

4. RECOMMENDATIONS

1. No further work should be carried out at this stage.

2. Further work will depend on results obtained from work currently underway in the Cootra E.L. 980 to the north.

5. WORK CARRIED OUT

5.1 Drilling (Plan No. SAa 1937)(See Appendix I for Detailed Logs)

From 20th to the 26th November, 1982 11 reverse circulation (air core) holes were drilled aggregating 664 metres. The programme was devised to test basement lithologies beneath a variety of magnetic responses outlined in previous work in three areas - ME1, ME2 and ME4

5.1.1 ME1 Area

Two of the holes (82KRC1-2) were drilled at the northernmost end of the ME1 area. 82KRC1 tested a strong magnetic response (5000 γ above background) whilst 82KRC2 tested a moderate magnetic response (1000 γ). The former intersected a quartz-magnetite rock having magnetic susceptibilities of $30\ 000 \times 10^{-5}$ S.I. units - adequately accounting for the anomaly. The latter intersected a quartz/feldspar/sericite/magnetite schist. The succession in this hole was deeply weathered and no solid rock was encountered, but the presence of magnetite in the weathered clays is believed sufficient to account for the anomaly.

Five of the holes (82KRC3-7) were drilled on lines adjacent to the site of S.A.D.M.E. borehole K4 which returned anomalous geochemistry. Hole 82KRC3 struck solid basement at 53 metres but no core was obtained. Chlorite and pyrite were common within the clays of the weathered basement. Hole 82KRC4 intersected a mafic ?meta igneous rock comprising quartz,

feldspar, biotite, magnetite and amphibole. Magnetic susceptibilities of 20 000 x 10^{-5} S.I. units were sufficient to account for the magnetic anomaly.

Holes 82KRC5, 6 and 7 intersected felsic gneisses with varying amounts of magnetite.

Hole 82KRC9 was drilled in the west of the area to test a sharp, shallow magnetic anomaly. The hole was completed at 33 metres in a coarse grained pegmatite having passed through a Tertiary sequence registering above average magnetic susceptibilities. The anomaly was probably due to the presence of maghemite in the younger sequence.

With the possible exception of 82KRC1 no classical chemosedimentary iron formations were encountered. All holes intersected some carbonaceous material within the Tertiary sequence. This was generally in the form of lignitic clays and sands. Consolidated lignite horizons, however, were encountered, notably in holes 82KRC3 and 82KRC4.

The average depth of younger (Tertiary to Recent) cover in the eight holes was 43 metres. Weathering profiles beneath the cover sequences varied from three metres in 82KRC1 to 33 metres in 82KRC7.

5.1.2 ME2 Area

Two holes, 82KRC10 and 82KRC11 were drilled in the ME2 area. The former tested an exceptionally strong magnetic response (over 11000 γ), whilst the latter was drilled on one of the more typical magnetic anomalies (3000 γ).

82KRC10 passed through 32 metres of younger cover sequence and 52 metres of magnetite rich weathered basement clays (after ?felsic gneiss) before passing into a solid quartz feldspar magnetite gneiss. Magnetic susceptibilities of up to 60 000 x 10^{-5} S.I. units adequately account for this large anomaly.

82KRC11 also encountered a quartz, feldspar magnetite gneiss at 63 metres with magnetic susceptibilities of 25 000 x 10^{-5} S.I. units.

5.1.3 ME4 Area

A single magnetic response was tested by hole 82KRC8. The basement lithology was again represented by a magnetite rich quartz, feldspar, biotite gneiss. The basement/Tertiary

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unconformity occurs at 36 metres.

5.2 Geochemistry (Appendix I)

Holes 82KRC1 and 82KRC9 were sampled throughout at two metre intervals. The remainder were sampled at two metre intervals only within the basement sequence (weathered zone included).

All samples were assayed for copper, lead, zinc, nickel, cobalt, iron, manganese, chrome, silver, molybdenum, gold, barium and tungsten.

Returned base metal assays were uniformly low; the following maxima for a two metre sample being reported...

100 p.p.m. Copper in KRC1
55 p.p.m. Lead in KRC2
170 p.p.m. Zinc in KRC5
200 p.p.m. Nickel in KRC9
210 p.p.m. Cobalt in KRC9
160 p.p.m. Chrome in KRC4

All assay results are included on the detailed borehole logs in Appendix I.

I.D. FINCH

IDF/pw

1582

KEYWORDS

Kimba SI 53-7, Copper, Lead, Zinc, Silver, B.I.F. hosted deposits, Drill-reverse circ., Assays-drill.

LOCATION

Kimba SI 53-7 1:250 000

LIST OF PLANS

Plan No.	Title	Scale
SAa 1802	Location Map McLachlan E.L. 670	1:250 000
SAa 1937	McLachlan E.L. 1032 N-E Portion "Kopi Area" - Drill Sites	1: 50 000

LIST OF APPENDICES

Appendix I Detailed Borehole Logs.

135°30'

136°00'

Warramboo

EYRE HIGHWAY

135°20'

33°20'

Kopi Siding

Coduna – Pt. Lincoln Railway

HAMBIDGE CONS. PARK

33°29'

33°30'

McLACHLAN E.L. 1032

33°30'

33°00'

Mc Lachlan

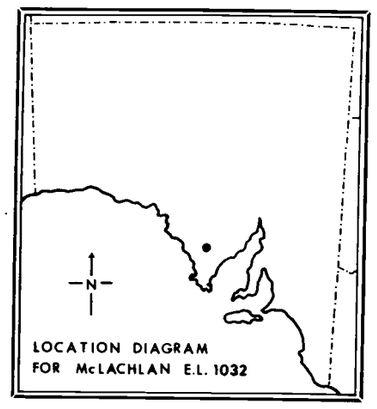
Lock

33°35'

135°40'

135°55'

Warrachie



SCALE

KILOMETRES 5 0 5 10 15 20 25 30 KILOMETRES

CRA EXPLORATION PTY. LIMITED

McLACHLAN E.L. 1032

LOCATION MAP

Reference: KIMBA SI53-7	
Author: I.D. FINCH	Scale: 1:250,000
Drawn: S.J.B.	Report No: 11935
Date: SEPTEMBER 1982	Plan No: SAa 1802

554000mE 558 562 566 570 574 578 582

6314000mN

135°35' 135°40' 135°45' 135°50' 135°55'

33°20'

"Roadview"

To Warramboo

BOUNDARY OF McLACHLAN E.L. 1032

82KRC 2
(B.O.H. 78m)
quartz/feldspar/sericite
SCHIST

82KRC 1
(B.O.H. 45m)
quartz/magnetite rock

ME1 AREA

82KRC 7
(B.O.H. 71m)
quartz/feldspar/biotite/
magnetite GNEISS

82KRC 5
(B.O.H. 60m)
quartz/feldspar/biotite GNEISS

82KRC 6
(B.O.H. 62m)
quartz/feldspar/
biotite/chlorite
SCHIST

82KRC 3
(B.O.H 53m)
quartz/feldspar/pyrite/chlorite

82KRC 4
(B.O.H 57m)
quartz/feldspar/
chlorite/magnetite

82KRC 9
(B.O.H. 33m)
PEGMATITE

"Panorama"

"Fairview"

Kopi

Peak view

"Woodcombe"

82KRC 8
(B.O.H 59m)
quartz/feldspar/magnetite
GNEISS

HAMBIDGE CONSERVATION PARK

ME4 AREA

33°25'

"Mc Lachlan Station"

Shed

BOUNDARY OF McLACHLAN E.L. 1032

82KRC 10
(B.O.H. 84m)
quartz/feldspar/biotite GNEISS

ME2 AREA

82KRC 11
(B.O.H. 63m)
quartz/feldspar/magnetite
GNEISS

"Hambridge"

"Barrobie"

To Lock

33°30'

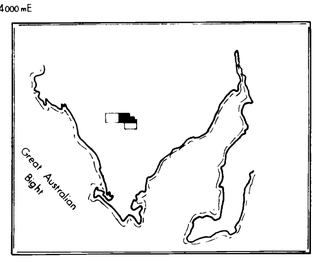
6314 6310 6306 6302 6298 6294

554000mE 558 562 566 570 574 578 582

SCALE 1:50000

METRES 1000 0 1 2 3 4 KILOMETRES

⊙ Drill Sites. (11)



LOCATION MAP

3973-76

CRA EXPLORATION PTY. LIMITED

McLACHLAN E.L.1032
N-E PORTION "KOPI AREA"
DRILL SITES

Ref. KIMBA S153-7	
Scale 1:50000	
Author I.D. Finch.	Report No. 11935
Date OCTOBER 1982	Plan No. SAa 1937

APPENDIX I

DETAILED BOREHOLE LOGS

C.R.A. EXPLORATION PTY. LIMITED

Geochem / Geological. DRILL CORE LOG

PROJECT KOPI. (MCLACHLAN E.L.)

CO-ORDINATES 8050N / 14100E AZIMUTH — DRILLERS WALLIS COMMENCED 20/11/82 DEPTH 45 m's HOLE No. 82KRC1

RL COLLAR — INCLINATION VERTICAL DRILL TYPE RC. (AIR CORE) COMPLETED 20/11/82 CASING LEFT — DPO No(s) —

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	Assay Values Cu	Pb	Zn	Ni	Co	%Fe	Mn	SAMPLE No.	FROM (M)	TO (M)	REC (M)	Mag Susc. $\times 10^{-3}$ SI	b cps	ASSAY. VALUES Cr	Ag	Mo	Au	Ba	W
0	1				Sand/Clay loam	12	14	14	14	<4	1.20	42	916001	0	1		5	8	12	<1	<4	<0.05	105	<10
1	2				Sand and calcrete										2		5	9						
2	6				Mottled clays - damp - some limonite.	18	6	26	18	6	3.60	44	2				5	10	30	1			600	<10
															4		5	16						
						15	8	30	20	6	4.40	42	3				5	16	36	1.			350	10
															6		6	16						
6	15				Various coloured sands and occasional clays	12	6	18	12	<4	4.90	28	4				6	12	28	1			250	<10
					6-7m buff/yellow sands + some clay										8		7	16						
					7-8m reddish iron rich sands	12	<4	2	<4		0.70	16	5				0	8	10	<1			10	<10
					8-9m white quartz sands										10		0	8						
					9-12m buff/yellow/orange sands.	6	<4	2			1.70	8	6				2	8	14				35	10
					12-15m coarser, occasionally gritty + wet.										12		2	10						
						6	<4	<2			0.20	14	7				0	10	16				20	<10
															14		0	8						
						4	<4	4			0.20	10	8				0	10	10				30	10
15	40				Wet lignitic sands and lignite.										16		0	10						
					15-16m lignitic clay + loose flowing sand.	6	<4	2			0.20	14	9				0	10	16				<10	10
					16-21m Med/coarse grained quartz sands										18		0	8						
					with occasional lignitic material.	4	<4		4		0.20	14	10				0	8	90					<10
					very wet.										20		0	6						
					21-30m As above but becoming finer grained	6	4		<4		0.20	12	11				0	6	24					
					30-33m As above but occ. pyrite and										22		0	6						
					silica cemented grit pieces.	4	<4		4		0.20	14	12				0	7	60					
					33-40m Coarse to very coarse fragit with										24		0	8						
					pyrite and occasional lignite	6			6		0.20	14	13				0	7	10					
					Some minor clays. - ferruginous at base										26		0	6						
						<2			18		0.30	20	14				0	7	16					
															28		6	9						
						4			12	4	0.50	12	15				0	4	36					
															30		0	4						
						2			8	<4	0.75	14	16				2	6	22					
															32		5	6						
						<2			6	<4	1.20	16	17				5	4	16				<10	
															34		7	6						
						4		12	24	10	1.70	80	18				4	6	12				180	
															36		5	6						
						16	16	16	26	24	1.70	210	19				5	8	24				350	
															38		5	6						
						30	16	22	18	14	0.80	145	20				5	8	14				480	15
															40		5	10						
40	41				Grey clay.	100	24	90	34	28	11.0	900	21				27	10	46				970	<10
41	44				Coarse grained (chips) - mainly qz,										42		77	10						
					hematite. occ. magnetite. very wet.	8	8	80	20	12	17.0	1250	22				80	10	48	1	.6		410	<10
															44		80	10						
44	45				Quartz magnetite rock - unweathered.	8	10	80	28	16	10.0	1500	916023		45		5000	10	42	<1	<4		680	<10
					basement.																			

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS —

LOGGED BY ED. PUNCH DATE 20/11/82

SHEET 1 OF 1

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C.R.A. EXPLORATION PTY. LIMITED

Geology and Geochemistry DRILL CORE LOG

PROJECT KOPI

CO-ORDINATES 8055N / 13415E — AZIMUTH — DRILLERS WALLIS — COMMENCED 20/11/82 — DEPTH 78m — HOLE No. 82 KRC 2

RL COLLAR — INCLINATION VERTICAL — DRILL TYPE R.C. (AIR CORE) — COMPLETED 20/11/82 — CASING LEFT — — DPD No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION
0	1				Soil and Calcrete.
1	3				Calcrete
3	8				Mottled clays - minor calcrete at top - small sand fraction.
8	14				Fine/med. grained sands - generally poorly consolidated. occ. small clay fraction. colours - mainly white - yellow
14	31				Medium/coarse grained lignitic sands. (quartz sands). 14m - 18m moist. 18 - 31m wet.
31	52				Medium/coarse grained lignitic quartz sands. Some lignite and clay fraction. very wet. Pyrite common - welding grit particles together. Lignite visible at following intervals 31 - 32m, 35 - 36m, 37 - 39m, 50 - 52m

Assay Values

Cu	Pb	Zn	Ni	Co	%Fe	Mn

SAMPLE No.	FROM (M)	TO (M)	REC (M)	Mag. Susc. $\times 10^{-3}$ SI	ASSAY VALUES cps	Gr	Ag	Mo	Au	Ba	W
	0	1		15	5						
		2		11	8						
				7	8						
		4		6	8						
				5	11						
		6		5	11						
				5	11						
		8		5	10						
				10	11						
		10		10	10						
				5	10						
		12		0	10						
				0	6						
		14		4	14						
917250				2	18						
		16		2	19						
251				1	20						
		18		0	10						
252				0	13						
		20		0	10						
253				5	10						
		22		4	12						
254				4	10						
		24		0	10						
255				0	12						
		26		0	10						
256				0	11						
		28		5	10						
257				4	10						
		30		4	10						
258				4	8						
		32		2	11						
259		-		-	11						
		34		4	8						
260				4	10						
		36		5	9						
261				6	9						
		38		15	6						
262				10	11						
		40		0	9						
263				10	12						
		42		0	9						
264				0	7						
		44		0	8						
265				0	8						
		46		0	6						
266				0	8						
		48		0	7						
267				30	8						
		50		0	9						

SAMPLES SENT TO ANALYTICAL LABS

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY I. D. FINCH — DATE 20/11/82

SHEET 1 OF 2

C.R.A. EXPLORATION PTY. LIMITED

Geological / Geochemical DRILL CORE LOG

PROJECT KOFI

CO-ORDINATES 8055N / 13415E AZIMUTH — DRILLERS Wallis COMMENCED 20/11/82 DEPTH 78m HOLE No. 82 KRC 2

RL COLLAR — INCLINATION VERTICAL DRILL TYPE R.C. (AIR CORE) COMPLETED 20/11/82 CASING LEFT — DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	ASSAY VALUES (ppm) Ba	W	Mn	Cr	Ag	Mo	Au	SAMPLE No.	FROM (M)	TO (M)	REC (M)	Mag. Sus. KD'S	ASSAY VALUES (ppm) cps	Cu	Pb	Zn	Ni	Co	%Fe
50	52				Lignitic sands and LIGNITE.								917268	50	51		0	10						
52	75				Weathered Basement - Mainly Kaolinitic clays and quartz.	45	10	40	18	<1	<4	<.005	916024		52		0	8	4	8	8	6	<4	0.4
																	0	10						
						30	<10	46	18	<1	"	"	25		54		2	14	6	<4	10	10	<4	1.0
																	2	20						
					52-57m Kaolinitic clay + minor qz.	60	"	70	18	<1	"	"	26		56		0	18	18	24	140	18	16	2.5
					57-58m Quartz/pyrite gort.												3	18						
					58-63m Grey/white kaolinitic clay - minor qz.	15	"	40	12	<1	"	"	27		58		1	16	10	14	6	8	<4	0.4
					63-64m grey/brown 'oolitic' partly dolomitic												3	14						
			60		64-66m White talc/kaolin mix	20	"	540	16	<1	"	"	28		60		6	8	14	24	14	6	<4	1.9
					66-69m White kaolinitic clays + minor qz + talc.												12	13						
					69-70m Cream/white 'oolitic' dolomite + pyrite + magnetite	35	"	420	16	<1	"	"	29		62		10	12	22	42	18	6	<4	2.0
					70-75 Kaolinitic clays + pyrite + qz + feldspar.												10	12						
					and occasional magnetite.	70	"	2400	26	1	"	"	30		64		140	12	40	55	60	8	26	14.0
					75-												25	11						
						60	"	1200	18	1	"	"	31		66		2	18	22	36	24	8	12	5.3
																	46	12						
						40	"	540	18	1	"	"	32		68		30	12	10	26	16	12	10	3.8
																	10	13						
			70			70	"	390	18	<1	"	"	33		70		150	15	8	16	28	18	6	3.5
																	5	13						
						75	"	300	18	<1	"	"	34		72		10	13	10	16	28	16	6	2.6
																45	30	15						
						60	10	360	20	<1	"	"	35		74	45	5	13	12	18	30	14	10	4.5
																45	5	11						
75	78				Red (ferruginous) feldspar, quartz, sericite magnetite schist	150	<10	1150	44	1	"	"	36		76	45	400	11	12	24	50	12	30	14.0
					78m. Kaolinised = Parts.	60	10	710	42	<1	<4	<.005	37		78	45	50	16						
																45	20	13	18	24	38	12	16	10.0

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY I. D. FINCH DATE 20/11/82

SHEET 2 OF 2

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C.R.A. EXPLORATION PTY. LIMITED

Geology and Geochem DRILL CORE LOG

PROJECT Kopi

CO-ORDINATES 4600N/13750E — AZIMUTH — — DRILLERS WALLIS — COMMENCED 22/11/82 — DEPTH 53 m — HOLE No. 82 KRC 3

RC COLLAR — INCLINATION VERTICAL — DRILL TYPE RC (AIR CORE) — COMPLETED 22/11/82 — CASING LEFT — DPO No(s) /

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION
0	1				~~transported~~ sand.
1	2				Sand and calcrete.
2	11				Red Sand and moist, mottled clays occasional calcrete at top
11	22				Variously coloured fine/medium grained sands — coarse at base. generally unconsolidated 11-14m red iron rich fine grained sand. 14-17m very fine gr. yellow sand. damp at base. 17-21m buff. damp sands with small clay fraction. 21-22m Coarse quartz sand - wet.
22	43				LIGNITE, lignitic sands and clays. 22-24 Very fine gr. dark brown lignitic sands + occasional lignite pieces near base 24-25m LIGNITE. 25-26m Lignitic clays/sands + some lignite pieces. 26-28m wet coarse/med lignitic sands 28-30m wet very fine grained lignitic sand + lignite 30-35m fine grained lignitic sands + occ clay/lignite 35-36m coarse lignitic sand + lignite pieces 36-37m Sand/clay mix + some lignite pieces. 37-43m Very coarse quartz chips with lignitic staining
43	53				Light Blue weathered Basement Clays with quartz, chlorite, pyrite + a little Magnetite. 43-47m light grey lignitic clays occasionally sandy with some quartz. 47-48m light blue grey clays + qz/pyrite and minor chlorite 48-49m fine quartz chips + 5% pyrite + some clays 49-53m bluish clays with quartz, pyrite + occ. chlorite and occ. magnetite.

Assay Values

SAMPLE No.	Cu	Pb	Zn	Ni	Co	%Fe	Mn
917269							
270							
271							
272							
273							
274							
275							
276							
277							
278							
917279							
~~916~~ 916038	8	6	22	14	6	0.55	30
039	6	4	34	12	6	0.60	48
040	14	4	60	16	8	1.20	100

SAMPLES SHIPPED FOR LIGNITE ANALYSES

FROM (M)	TO (M)	REC (M)	ASSAY VALUES Mag Susc ×10⁻³ SI	cps	Cr	Ag	Mo	Au	Ba	W
0	1		20	5						
	2		20	4						
			15	5						
	4		10	6						
			7	5						
	6		9	5						
			9	8						
	8		11	8						
			12	8						
	10		12	6						
			9	8						
	12		6	8						
			4	7						
	14		6	5						
			6	5						
	16		5	7						
			5	6						
	18		5	5						
			6	7						
	20		17	7						
			5	6						
	22		4	6						
			9	8						
	24		6	16						
			0	11						
	26		0	8						
			0	6						
	28		0	5						
			0	5						
	30		0	4						
			0	8						
	32		5	8						
			5	8						
	34		0	8						
			0	5						
	36		2	4						
			0	8						
	38		0	6						
			0	5						
	40		0	6						
			0	5						
	42		0	7						
			4	11						
	44		2	9						
			0	8	30	<1	<4	<0.05	360	<10
	46		5	8						
			3	9	12	<1	<4	<0.05	450	<10
	48		4	8						
			6	10	14	<1	<4	<0.05	440	<10
	50		5	7						

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY I. D. FINCH DATE 22/11/82

SHEET 1 OF 2

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT KOPI.

CO-ORDINATES 4600N / 13750E. AZIMUTH — DRILLERS Geol. + Geochem. WILLIS

RL COLLAR — INCLINATION Vertical DRILL TYPE RC (91a core)

COMMENCED 22/11/82 COMPLETED 22/11/82 DEPTH 53m CASING LEFT — HOLE No. 82 KRC3 DPO No(s) —

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	Assay Values Cu	Pb	Zn	Ni	Co	%Fe	Mn	SAMPLE No.	FROM (M)	TO (M)	REC (M)	Mag Susc. ×10⁻³ SI	cps	ASSAY VALUES Cr	Ag	Mo	Au	Ba	W
49	53				med/coarse quartz chips + khaki (gunmetal) clays + pyrite, chlorite and minor magnetite ore sands.	6	2	32	12	4	0.70	90	B160411	50	51		4	9	10	<2	<4	<0.05	450	<10
															52		14	14						
						10	4	42	12	6	11.40	180	B160423		53		10	14	12	<1	<4	<0.05	610	<10
					-- Hard rock core bit in bottom of hole																				
					EoH = 53m.																				

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY I.D. FINCH DATE 22/11/82

SHEET 2 OF 2

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C.R.A. EXPLORATION PTY. LIMITED

Geology and Geochem' DRILL CORE LOG

PROJECT KOPI.

CO-ORDINATES 4600N/14100E AZIMUTH — DRILLERS WALLIS COMMENCED 22/11/82 DEPTH 57m HOLE No. 82KRC4

RL COLLAR — INCLINATION VERTICAL DRILL TYPE RC (Air Core) COMPLETED 23/11/82 CASING LEFT — DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	Assay Values Cu	Pb	Zn	Ni	Co	%Fe	Mn
0	1				Dune Sand.							
1	4				Sand, Calcrete with minor clay.							
4	12				Red (Fe rich) Sand/clay loams. Clays are occasionally mottled 4 - 10m. largely clay with small sand fraction 10 - 12m largely sand with small clay fraction.							
12	24				Variously coloured fine/medium grained sands - generally poorly consolidated. 12 - 13m Very fine gr. buff sand + some clay 13 - 14m Very fine orange sand. 14 - 16m Very fine v rich red/maroon sand fairly consolidated 16 - 19m V. fine white/orange (ilmenitic?) sand + moist. 19 - 21m Moist/damp quartz sand (monomineralic) 21 - 24m buff medium grained sand.							
24	36				LIGNITE, lignitic sands and clays 24 - 25m fine grained lignitic sand. 25 - 26m Lignite. 26 - 31m medium/coarse grained lignitic sands wet. mainly quartz grains. occ. lignite pieces 31 - 33m fine gr. wet lignitic sand. 33 - 34m med/coarse gr. lignitic sand - wet. 34 - 35m Lignite. 35 - 36 fine gr. brown lignitic sand + occ. lignite							
36	40				Coarse, gritty Qz/feldspar chips in Kaolinitic clays/occasional biotite, and chlorite + minor magnetite.	4	<4	50	24	12	1.30	770
						12		60	26	16	1.80	1600
40	57				Quartz/feldspar/Biotite/MONZONITE (minor amphibole) Rock. Decreasing amounts of chlorite downwards. Occasional rounded orange grains — possibly topaz or zircons.	12		80	28	18	2.90	2900
						8		46	14	8	1.40	1450
						6		44	12	8	1.70	1100
						10		80	24	12	3.90	3300
						8		80	20	16	5.60	3500

SAMPLE No.	FROM (M)	TO (M)	REC (M)	Mag' Susc' ×10⁻³ SI	ASSAY VALUES ers	Cr	Ag	Mo	Au	Ba	W
	0	1		10	7						
		2		15	6						
				15	7						
		4		12	6						
				10	11						
		6		12	10						
				6	11						
		8		13	10						
				20	10						
		10		23	10						
				16	9						
		12		11	6						
				8	8						
		14		0	9						
				0	5						
		16		5	7						
				7	10						
		18		0	8						
				0	6						
		20		0	6						
				0	8						
		22		0	7						
				0	7						
		24		0	9						
				0	12						
917280		26		0	11						
				0	8						
281		28		0	8						
				0	7						
282		30		0	6						
				0	6						
283		32		0	8						
				0	6						
284		34		0	6						
				0	8						
285		36		0	8						
916043				30	10	70	<1	<4	<0.05	730	<10
044		38		10	10						
				5	8	160				1100	
045		40		5	7						
				20	10	24				1650	
046		42		20	13						
				10	9	30				700	
047		44		35	9						
				200	14	38				750	
048		46		300	16						
				650	15	22				1350	
049		48		2600	14						
				4800	11	28				470	
		50		1500	10						

Lignite samples

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY I. D. FINCH DATE 23/11/82

SHEET 1 OF 2

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT KOPI

CO-ORDINATES 4600N/14100E AZIMUTH — DRILLERS WALLIS COMMENCED 22/11/82 DEPTH 57m HOLE No. 82KRC4

RL COLLAR — INCLINATION VERTICAL DRILL TYPE RC (air core) COMPLETED 23/11/82 CASING LEFT — DPO No(s) —

Geology and Geochem

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION
50	57				Quartz feldspar Biotite ~~Magnetite~~ amphibole rock.

Assay Values

SAMPLE No.	FROM (M)	TO (M)	REC (M)	Mag Susc. ×10⁻³ SI	ASSAY VALUES cps	Cr	Ag	Mo	Au	Ba	W	Cu	Pb	Zn	Ni	Co	%E	Mn
916050	50	51		4400	13	38	<1	<4	<0.05	1500	<10	4	<4	80	22	12	5.70	2000
		52		6200	13	~~44~~												
051				7200	12	44				1300	<10	4		70	18	14	6.0	2350
		54		7400	14													
				14000	16	38				1600	10	6		70	26	14	8.60	2550
052		56		15,000	13													
053		57		23000	12	50				1200	40	20		70	26	16	11.0	2500

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS —

LOGGED BY I. D. FINCH DATE 23/11/82

SHEET 2 OF 2

C.R.A. EXPLORATION PTY. LIMITED

Geological & Assay DRILL CORE LOG

PROJECT McLAUCHLIN EL - Kopi

CO-ORDINATES 4550NE/13400SE AZIMUTH — DRILLERS Wallis COMMENCED 23/11/82 (1045H) DEPTH 60m HOLE No. 82 KRC 5

RL COLLAR — INCLINATION Vertical DRILL TYPE Reverse Circulation COMPLETED 23/11/82 (1900H) CASING LEFT None DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	Assay Values Cu	Pb	Zn	Ni	Co	%Fe	Mn	SAMPLE No.	FROM (M)	TO (M)	REC (M)	Mag Sus SI	IP's	ASSAY VALUES Cr	Ag	Mo	Au	Ba	W
0	1.5				SAND, orange, fine grained.												10	10						
																	10	10						
1.5	3.0				CALCRETE, white, 90%												10	8						
					SAND, white, fine grained 70%												12	8						
3.0	4.5				SILT, fawn.												12	9						
4.5	9.0				CLAY, red-brown, fine grained, sandy, well rounded												17	9						
																	10	9						
																	20	9						
																	17	10						
9.0	12.0		10		SILTSTONE, purple, grey.												17	10						
																	10	10						
																	12	11						
12.0	13.0				SAND, red (hematite stained), fine grained, pebbly, well rounded.												5	11						
13.0	14.0				SAND, rust coloured, fine grained.												8	9						
14.0	14.5				SAND, orange (limonite stained), fine grained.												5	10						
14.5	15.5				SILTSTONE, white.												8	10						
15.5	18.0				SAND, grey, fine grained, clayey.												8	10						
																	4	11						
18.0	19.0				SAND, white-grey, fine grained, subangular to subrounded												4	12						
19.0	21.0		20		SAND, grey-white, fine to medium grained, subR-subA												4	12						
																	0	9						
21.0	24.0				CARBONACEOUS CLAY								917286	21	23		0	20						
																	5	17						
													7		25		8	16						
24.0	25.0				SAND, white grey, fine grained, subA												5	12						
25.0	26.0				CARBONACEOUS SAND, black, fine grained								8		27		15	11						
26.0	27.0				CARBONACEOUS CLAY												5	11						
27.0	29.0				SAND, dark grey, fine grained, subR-subA							Lignite	9		29		0	9						
29.0	30.0				SAND, pebbly (to 4mm) subR, black, lignitic (wood chips												0	9						
			30		to 30mm) 20%								90		30		0	9						
30.0	31.0				SAND, white-grey, medium grained, subA												0	6						
31.0	32.0				SAND, grey-black, fine grained, subR								917291		33		5	8						
32.0	33.0				SAND, black, fine grained to pebbly, subrounded, carbonaceous, lignitic												10	10						
33.0	34.0				SAND, white to light grey, medium grained, subR-subA	24	40	4	22	20	0.40	38	916054		35		5	14	22	<1	<4	<0.05	30	<10
34.0	42.0				CLAY, white-grey, sandy, silty, fine to medium grained kaolinitic.												0	20						
						20	30	10	14	14	0.40	20	5		37		0	38/40	22				45	
																	0	19						
						32	32	14	8	<4	0.55	12	6		39		0	18	38				60	
																	0	30						
			40			30	26	34	4	<4	0.45	42	7		41		0	18	22				45	
																	5	10						
						50	26	90	28	<4	0.70	150	8		43		5	10	30				110	
42.0	47.0				CLAY, blue-grey, sandy, fine grained, stiff.												5	14						
						90	20	120	28	8	1.80	140	9		45		5	14	28				110	
																	0	12						
						48	30	160	34	8	1.90	180	60		47		10	14	20				450	
																	15	16						
47.0	48.0				PYRITIC QUARTZ VEIN. Large (30mm) angular	48	18	170	40	10	2.40	230	1		49		16	19	38				500	
48.0	50.0				pieces of white, opaque quartz. Pyrite as angular												0	13						
			50		aggregates to 3mm. Tr of fine grained pyrite, chloritic	36	12	110	28	6	1.70	150	916062		51		0	16	65				570	
					SAND, quartzose. CLAY, grey-blue, sandy, firm.																			

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY JP Howard DATE 23/11

SHEET 1 OF 2

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT

CO-ORDINATES | AZIMUTH | DRILLERS | COMMENCED | DEPTH | HOLE No. 82KRC5

RL COLLAR | INCLINATION | DRILL TYPE | COMPLETED | CASING LEFT | DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	Assay Values Cu	Pb	Zn	Ni	Co	%Fe	Mn	SAMPLE No.	FROM (M)	TO (M)	REC (M)	Mag Sus x10⁻³ SIU	ASSAY VALUES cps	Cr	Ag	Mo	Au	Ba	W
50.0	53.0				SAND, fine grained	36	12	110	28	6	1.70	150	916062	49	51		0	19	65	<1	<4	<0.05	570	<10
					CLAY, green-blue, chloritic.												0	17						
						46	24	150	32	10	2.30	190	3		53		15	18	90				850	
53.0	54.0				CLAY, blue, very firm.												0	28						
54.0	55.0				SAND, coarse grained, pebbly, blue, subangular	60	50	100	28	10	3.0	260	4		55		0	15	80				360	
55.0	57.0				CLAY, blue, chloritic, very firm												0	15						
						42	24	130	46	36	3.10	300	5		57		0	10	22				155	
57.0	60.0				SAND, blue-grey, fine grained, chloritic, feldspathic												0	11						
	B.O.H.				Core: -(15 cms)	70	10	120	110	80	4.60	500	6		59		0	14	38				220	10
			60		GNEISS, quartz-feldspar 70%	50	12	100	60	38	3.50	480	916067		60		10	12	90				180	<10
					biotite 30%.	70	8	110	100	80	4.80	460	916068	duplicate.					40				350	40
					Gneissosity at 20°/ca.																			

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY | DATE

SHEET 2 OF 2

C.R.A. EXPLORATION PTY. LIMITED

PROJECT McLaughlan EL -KOPI

Geological & Assay DRILL CORE LOG

CO-ORDINATES 4600NE/13000SE AZIMUTH — DRILLERS Wallis Drillers COMMENCED 24/11/82 DEPTH 62m HOLE No. 82KRC6

RL COLLAR — INCLINATION Vertical DRILL TYPE Reverse Circulation COMPLETED 24/11/82 CASING LEFT None. DPO No(s) —

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	Mag Sus KSI SIU	ASSAY VALUES cps
0.0	1.0				TOPSOIL, silt, fawn-brown.						24	10
1.0	3.0			CC	CALCRETE, off white						0	/
				CC								
3.0	7.0				CLAY							
					3-5m Clay, red-brown, silty, firm	'A' horizon						
					5-7m Clay, red-brown, fawn, silty, mottled, firm.	'B' horizon						
7.0	10.5				SILTSTONE							
					7-8m Silt, off-white, grey	'C' horizon						
			10		8-9m Siltstone, red-brown, purple, Fe & Mn rich							
					9-10.5m Siltstone, red						5	
											0	
10.5	20.0				SANDSTONE, brown, white, fine grained, clayey. Grades to medium grained, sub R to sub A & grey towards the base.							
			20									
20.0	33.5			CC	CARBONACEOUS SAND, CLAY & SILT		917292	20	22			
				CC	20-21m Carbonaceous sand, brown-grey, fine g, sub A							15
				CC	21-22m " " , fine to medium grained,		3		24			10
				CC	bimodal, grey.							
				CC	22-23m Carbonaceous clay, black, silty.		4		26			
				CC	23-24m " silt, black							
				CC	24-25m " sand, grey, fine to medium	Lignite samples	5		28			
				CC	grained, sub A to sub R, equivant	(not sent)						
				CC	25-29m Carbonaceous sand, black, fine to medium		6		30			
			30	CC	grained, sub R							
				CC	29-32.5m Carbonaceous clay, brown-black, micaceous		7		32			15
				CC	32.5-33.5m Carbonaceous clay, chocolate brown, firm		917298	32	33			
33.5	34.0				SAND, grey, medium to coarse grained, bimodal, sub R to sub A.							20
34.0	62.0				CLAY							
					34-39m Clay, off-white, grey, firm							
			40		39-45m Clay, grey-blue, talcose.							10
												10
												15
												20
												20
					45-52m Clay, off-white, grey, talcose							25
												20
												20
												20
			50								15	20

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS —

LOGGED BY J.P. Howard DATE 25/11/82

SHEET 1 OF 2

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT

CO-ORDINATES | AZIMUTH | ORILLERS | COMMENCED | DEPTH | HOLE No. 82KRC6

RL COLLAR | INCLINATION | ORILL TYPE | COMPLETED | CASING LEFT | OPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	Assay Values Cu	Pb	Zn	Ni	Co	%Fe	Mn	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES x10⁻⁶	cps	Cr	Ag	Mo	Au	Bi	W
																	20	10						
																	20	15						
					52-62m Clay, blue-grey, talcose	70	20	100	20	10	4.70	410	916069	52	54		10	15	22	<1	<4	<.005	160	<10
					&												10	20					1	
						46	22	150	32	14	5.50	480	70		56		15	20	26				160	
																	15	15						
						46	26	140	34	20	7.40	610	71		58		20	15	44				250	
																	25	20						
						70	24	150	48	20	5.20	400	72		60		20	20	42				230	
			60														10	15						
						80	16	130	48	26	5.80	410	916073		62		30	20	46				175	
	62.0				Core:-												20	20						
	BOH				Quartz-feldspar-biotite-chlorite rock																			
					with 5% small (<0.2mm) rounded grains orange																			
					-yellow in colour. ? zircon ? garnet. ? topaz																			
					(B) Schistosity 80° lca																			

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY | DATE

SHEET 2 OF 2

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C.R.A. EXPLORATION PTY. LIMITED

Geolo **DRILL CORE LOG**

PROJECT MCLAUCHLAN EL - KOPI

CO-ORDINATES 5000 NE/12420SE AZIMUTH _____ DRILLERS Wallis Drillers COMMENCED 24/11/82 DEPTH 71.0m HOLE No. 82 KRC 7

RL COLLAR _____ INCLINATION Vertical DRILL TYPE _____ COMPLETED 24/11/82 CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION
0.0	1.0				TOPSOIL, silty, grey
1.0	3.0				CALCRETE, pinkish-fawn.
3.0	6.0				CLAY, grey to cream, minor orange, silty, firm.
6.0	~~22.0~~ 18.0				SILT & SANDSTONE
					6-8m Silt, brown-red, fawn, clayey.
					8-8.5m Siltstone, red.
			10		8.5-9m Siltstone, white, clayey.
					9-10m Sand, white, fine grained, sub R to well R.
					10-11m Siltstone, orange, purple, white.
					11-14m Sandstone, white, fine grained, sub A.
					14-15m " , dark brown " , well R
					15-16m " , grey brown, medium grained, sub R
					16-18m " dark brown, fine grained, well R
					~~18-21m Silt, dark~~
18.0	30.0				CARBONACEOUS SILT, SAND & CLAY
			20		18-21m Carbonaceous silt, dark brown-black
					21-22m " sand, grey-black, medium grained to pebbly (3mm), sub R.
					22-23m Carbonaceous silt, black
					23-24m " clay, soft.
					24-25m Sand, grey, fine grained, sub R to sub A.
					25-30m Carbonaceous clay, light grey to dark brown & black, lignite (45%), glassy black.
			30		
30.0	39.0				CLAY
					30-33m Clay, grey-blue, white.
					33-39m Clay, grey silty.
39.0	71.0		40		SAND & SILT.
					39-40m Sand, grey, medium grained, sub A, feldspathic.
					40-42m Silt, grey.
					42-43m Sand, as above, 1% black hematite.
					43-45m Silt, fawn.
					45-46m Sand, as above.
					46-48m Silt, off-white, clayey
					48-52m Sand, as above & magnetite, fine grained, 10-20%
			50		

Assay Values

Cu	Pb	Zn	Ni	Co	%Fe	Mn	SAMPLE No.	FROM (M)	TO (M)	REC (M)
12	22	28	14	8	2.20	410	916074	47	49	
24	16	30	34	24	21.0	2400	916075	49	51	

ASSAY VALUES

Cr	Ag	Mo	Au	Ba	W
56	<1	<4	<0.005	95	25
42	<1	<4	<0.005	190	10

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY J.P. Howard DATE

SHEET 1 OF 2

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT

CO-ORDINATES | AZIMUTH | DRILLERS | COMMENCED | DEPTH | HOLE No. 82 KRC 7.

RL COLLAR ° | INCLINATION | DRILL TYPE | COMPLETED | CASING LEFT | DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	Assay Values Cu	Pb	Zn	Ni	Co	%Fe	Mn	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES C.	Cr	Ag	Mo	Au	Ba	W
					52–54m Silt, grey	20	22	42	26	18	27.0	1950	916076	51	53			50	<1	<4	<0.05	125	<10
					54–55m Sand, grey, medium to coarse grain, Sub A Quartz 50%, feldspar 30%, magnetite 15% pyrite 5%	16	14	42	30	26	26.0	2400	77		55			32			0.05	95	10
					55–57m Silt, grey, sandy, magnetite	10	10	50	8	6	28.0	1800	78		57			30			0.05	210	<10
					57–58m Sand, grey, coarse grained, sub A, magnetite 15%																		
					58–60m Sand, grey, clayey.	18	12	50	14	14	30.0	2000	79		59			50			0.10	350	
				60																			
					60–61m Sand grey, medium grained, sub A, magnetite 10%	18	8	36	16	12	25.0	1650	80		61			60			<0.05	470	
					61–62m " , fine grained																		
					62–63m Sandstone, fawn, quartzose, medium grained, sub A, clay cemend, magnetite 5%	12	10	36	10	8	27.0	1700	81		63			46				610	
					63–71m Sand, grey-blue, quartzose, feldspathic, coarse to very coarse grained, angular, magnetite	14	10	48	10	10	29.0	2100	82		65			30				590	
					4o 20%.	14	8	32	10	8	22.0	1800	83	65	67			40				720	
					Core:— GNEISS, quartz, feldspar (plag), magnetite (ca 30%)																		
					biotite	18	6	30	16	8	23.0	2300	916084	67	69			40				990	
				70	Gneissosity at 0°/ca.																		
	71.0					14	4	36	10	10	22.0	2400	916085	69	71			38				1050	
	BOH																						

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY J.P. HOWARD DATE

SHEET 2 OF 2

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C.R.A. EXPLORATION PTY. LIMITED

Geological & Assay DRILL CORE LOG

PROJECT MCLAUCHLAN EL KOPI

CO-ORDINATES ME4 Line 3/2920E AZIMUTH ____ DRILLERS Wallis Drilling Co P/L COMMENCED 25/11/82 (0700H) DEPTH 59m HOLE No. 82 KRC 8

RL COLLAR ____ INCLINATION ____ DRILL TYPE Reverse Circulation COMPLETED 25/11/82 (1200H) CASING LEFT ____ DPO No(s) ____

DEPTH FROM (M)	DEPTH TO (M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION
0.0	2.0				TOPSOIL, grey, fine grained, 10%
					CALCRETE, off white, 90%
2.0	5.0				CLAY, brown, sandy, fine grained, becoming redder & more sandy towards the base
5.0	22.0				SAND & minor SILT
					5-6m Sand, red-brown, fine to medium grained, bimodal, sub rounded to well rounded
					6-8m Sand, laminated (2mm), brown & white clay cement, fine grained, well rounded
			10		8-9m Sand, orange-brown, fine to medium grained, bimodal, sub A
					9-10m SILTSTONE, off-white
					10-12m Sand, orange-brown, fine grained, sub A to sub R
					12-14m " fawn, fine grained, to medium, " "
					14-19m " dark red-brown to orange, fine grained sub A to sub R
					"
					19-20m " purple, fawn, fine grained, sub A to sub R, lignitic 5%
			20		20-22m " light yellow-white, fine grained, sub A to sub R
22.0	23.0				CLAY, medium grey, stiff.
23.0	29.0				SAND
					23-24m light fawn, fine to medium grained bimodal, sub A to sub R
					24-29m white, light brown, fine grained, sub R to well rounded, frosted & clear quartz
29.0	36.5		30		CARBONACEOUS CLAY & SAND
					29-30m Carbonaceous clay, stiff
					30-31m Sand, white, fine grained, sub R to well R, frosted
					31-34.5m Carbonaceous sand, light black, medium grained, sub A to sub R
					34.5-36.5m Carbonaceous clay, black & white, stiff.
36.5	~~55.0~~ 37.0				CLAY, ~~& SAND, purple, grey, soft~~
	55.0				Sand, 80-20%, purple grey, medium to coarse grained angular, quartzose (70%) & feldspathic (30%)
					Accessory: magnetite, 10%, fine grained, anhedral.
			40		Clay, 20-80%, purple, grey, soft
			50		

Assay Values

SAMPLE No.	FROM (M)	TO (M)	REC (M)	Mag Sus ×10⁻⁵ SI	Bg 18	Cu	Pb	Zn	Ni	Co	%Fe	Mn
	0	1		0	415							
		2										
		3										
		4										
		5										
		6										
		7										
		8										
		9										
		10										
		1										
		2										
		3										
		4										
		5										
		6										
		7										
		8										
		9										
		20										
		1										
		2										
		3										
		4										
		5										
		6										
		7										
		8										
		9										
		30										
		1										
		2										
		3										
		4										
		5										
		6		1500								
		7		5000								
		8		5300								
916086	37	39		20000	1	18	24	20	30	10	17.0	770
				20000	18							
7		41		15000	415	20	16	36	24	10	22.0	700
				20000								
8		43		1		18	12	32	22	6	28.0	900
9		45		1		14	10	30	32	12	27.0	800
				10000								
90		47		9500		18	12	30	20	10	24.0	700
				9800								
916091	47	49		6800		16	10	50	16	8	22.0	1000
				4000								

ASSAY VALUES						
Cr	Ag	Mo	Au	Ba	W	
65	<1	<4	0.05	50	<10	
70				70	<10	
44				65	<10	
40				70	15	
42				75	<10	
60				65	<10	

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY JP Hayward DATE 25/11/82

SHEET 1 OF 2

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT

CO-ORDINATES | AZIMUTH | DRILLERS | COMMENCED | DEPTH | HOLE No. 82KRC8

RL COLLAR | INCLINATION | DRILL TYPE | COMPLETED | CASING LEFT | DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	Assay Values Cu	Pb	Zn	Co	%Fe	Mn	SAMPLE No.	FROM (M)	TO (M)	REC (M)	Mag Sus K10⁻⁵ SI	ASSAY VALUES cps	Cr	Ag	Mo	Au	Ba	W
						28	10	60	20	10	20.0	790	916092	49	51		8000	≤15	60	<1	<4	<0.05	155	<10
																	15000							
~~52.0~~	~~54.0~~				52.53m Sand grey, yellow, blue, coarse grained,	18	38	50	16	8	19.0	780	3		53		5000		55				1100	
					angular, quartzose, feldspathic (yellow & white clays)												10000							
					Accessory: magnetite to 25%, subhedral	16	<4	48	20	8	22.0	1450	4		55		35000		46				1200	
					Pink euhedral & green anhedral feldspar.												20000							
55.0	59.0				GNEISS quartz-feldspar-magnetite as anhedral	28	6	50	24	12	20.0	3000	5		57		30000		60				860	
	BOH.				grains <1mm to 3mm wide lamellae	48	<4	70	22	12	18.0	3200	6	57	58		25000		50				800	
					Gneissosity at 45° /ca. Magnetite ~ 40%	16	<4	60	16	10	18.0	2700	916097	58	59		35000		44				980	
					Chloritic in part.									Core			25000							
					Pyrite up to 20% on joint planes 30°/ca - filled with light yellow-green chlorite																			
					Several pieces of core 55-59m.																			

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY | DATE

SHEET 2 OF 2

C.R.A. EXPLORATION PTY. LIMITED

Geological & Assay **DRILL CORE LOG**

PROJECT McLAUCHLAN EL KOPI

CO-ORDINATES 100002E/5770N AZIMUTH _____ DRILLERS Wallis Drilling Co P/L COMMENCED 25/11/82 (1300 HRS) DEPTH 33 m HOLE No. 82 KRC 9

RL COLLAR _____ INCLINATION Vertical DRILL TYPE Reverse circulation air core COMPLETED 25/11/82 (1525 HRS) CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	Assay Values Cu	Pb	Zn	Ni	Co	%Fe	Mn	SAMPLE No.	FROM (M)	TO (M)	REC (M)	Mag Sus. x10⁻⁵ SI	Bq /g cps	ASSAY VALUES Cr	Ag	Mo	As	Ba	W
0.0	1.0				CALCRETE, grey								916098	0	1		900	615						
1.0	32.8				SAND & CLAY	10	6	10	8	<4	3.90	100	916098		2		400		12	<1	4	<0.05	180	<10
					1.0-5m Sand, light fawn, fine grained, subangular, clayey at base. Accessory: magnetite, fine grained 5%										3		200						
						8	<4	18	10		0.80	90	9		4		40		12		<4		75	
					5-8m Sand, 60%, red-brown, orange-brown, dark brown, light brown to white										5		10						
						10		12	12		1.60	30	916100		6		35		12		<4		120	
					Clay, 40%, light grey, stiff, interbedded										7		0						
					8-14m Sand, light brown, grey, quartz grains coated with white clay	10		16	12		2.40	28	1		8		0		14		<4		155	
			10												9		0						
						8		6	4		1.60	6	2		10		5		26		10		105	
															1		10						
						6		4	6		0.65	38	3		2		400		10		4		35	
															3		200						
						10		10	<4		0.75	16	4		4		150		10		<4		35	
					14-17m Clay, dark brown, silty, soft & light brown to grey										5		0						
						14		4	6		0.80	38	5		6		200		24		8		70	
															7		0						
					17-21m Clay, blue-grey, stiff	18	4	8	6		0.15	4	6		8				16		<4		30	
					Sand, pebbles, angular, clear translucent fragments to 5 mm.										9									
			20			8	6	50	16	10	0.20	6	7		20				12				20	
															1								
					21-24m Clay, light grey, brown, silty, stiff.	6	8	80	26	18	0.20	190	8		2				12				80	
															3								
						8	14	80	10	6	0.20	16	9		4				10				10	
					24-33 Sand & Clay										5									
					Sand, 50%, fine grained, sub A to sub R	5	38	6	140	110	1.20	280	916110		6				30				520	
					Clay, 50%, grey-blue										7									
					Pebble size chips:- granophyric intergrows of quartz & feldspar Accessory PYRITE ~2%	40	20	10	200	210	0.35	1000	1		8				28				770	
			30												9								
					Qtz - milky white & opaque	80	18	24	200	180	1.60	660	2		30				28				740	
					Felds - translucent crystals to 5 mm.										1									
						16	10	34	160	120	2.40	760	3		2		5		42				560	
32.8	33.0				Core:- PEGMATITE, pyritic, coarse grained	46	12	28	100	85	1.50	460	916114		33		0		44				70	10

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY JA Howard DATE 25/11/82

SHEET 1 OF 1

C.R.A. EXPLORATION PTY. LIMITED

Geological & Assay **DRILL CORE LOG**

PROJECT McLAUCHLAN EL KORI

CO-ORDINATES ME 2 Line 2/7720E AZIMUTH _____ DRILLERS Wallis Drilling Co P/L COMMENCED 25/11/82 (1030 HRS) DEPTH 84m HOLE No. 82 KRC 10

RL COLLAR _____ INCLINATION Vertical DRILL TYPE Reverse Circulation w.f. core COMPLETED 25/11/82 (2030 HRS) CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	Assay Values Cu	Pb	Zn	Ni	Co	%Fe	Mn	SAMPLE No.	FROM (M)	TO (M)	REC (M)	Mag Sus KHOT SI	cps	ASSAY VALUES Cr	Ag	Mo	As	Ba	W
0.0	1.0				TOPSOIL, silt, dark grey									0	1		0	≤15						
1.0	2.5				CALCRETE, grey-pink, white.										2									
2.5	32.0				SAND, CLAY & SILT interbedded & intermixed.										4									
					2.5-5m Silt, off white																			
					5-7m Clay & sand intermixed										6									
					Clay, 50%, orange-brown																			
					Sand, 50%, fine grained, subrounded										8									
					7-12m Sand, orange-brown, fine grained, sub R																			
			10		12-14m Clay & sand intermixed										10									
					Clay, 30%, light brown																			
					Sand, 70% " " fine grained, sub R → sub A										12									
					14-15m Siltstone																			
															14									
					15-17m Sand, orange-brown to red, fine grained, sub R to well rounded, clayey										16									
					17-18m Sand, yellow-white, fine to medium grained, sub R to sub A, frosted quartz										18									
			20		18-19.5m Sand, orange, fine grained, sub R										20									
					19.5-23m Clay, white, chalky, sandy.																			
															22									
					23-32m Clay, off white, grey & yellow, sandy.										24			80						
																		20						
															26			20						
																		20						
															28			25						
			30															25						
															30			20						
					CLAY (Basement derived?)																				
32.0	40.0				32-34m Clay, purple-white, Accessory: magnetite										32			20						
																		2500						
						12	14	32	20	6	4.70	590	916115		34			4000	44	<1	<4	<0.05	1050	<10
					34-40m Clay, blue-grey, sandy													7000						
						8	10	70	60	36	9.10	1300	6		36			8000	80				980	<10
																		4500						
						10	8	80	90	24	7.70	1250	7		38			8000	90				1300	<10
																		20000						
			40			8	6	70	44	22	12.0	1600	8		40			20000	95				1200	15
40.0	40.2		Core		GNEISS quartz & feldspar, 60%, white-grey.													1200						
					magnetite, 40%, fine grained, granular	14	<4	80	70	50	10.0	1200	9		42			3000	60				1400	<10
					biotite, minor													2500						
					pyrite <1%	8	6	70	28	18	16.0	1800	120		44			3500	90				1150	
					Gneissosity at 45° ca.													3500						
						6	6	70	18	12	17.0	2000	1		46			2500	95				1250	
40.2	54.0				CLAY, blue-grey													3500						
						8	8	80	22	16	18.0	1850	2		45			2000	60				1100	
																		3200	15					
			50			8	6	80	28	18	15.0	2200	916123		50			2000	15 60				1150	

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY J.P. Howard DATE 25/11/82

SHEET 1 OF 2

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT

CO-ORDINATES | AZIMUTH | DRILLERS | COMMENCED | DEPTH | HOLE No. 82KRC 10

RL COLLAR | INCLINATION | DRILL TYPE | COMPLETED | CASING LEFT | DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	Assay Values Cu	Pb	Zn	Ni	Co	%Fe	Mn	SAMPLE No.	FROM (M)	TO (M)	REC (M)	Mag Sus ×10⁻³ SI	Bg cps	ASSAY VALUES Cr	Ag	Mo	Au	Ba	W
													916124	50	51		12000	15						
						8	6	65	42	28	12.0	1700	916124		52		30000	20	80	<1	<4	<0.05	1200	<10
						10	6	100	24	18	18.0	1800	5		54		30000		60				870	
540	888				SAND, blue-grey, fine to very coarse grained, angular, quartz, feldspar, biotite & magnetite												33000							
						30	<4	90	22	14	19.0	1750	6		56		34000		75				780	
																	40000							
						14	<4	80	28	16	17.0	1800	7		58		42000		75				970	
																	40000							
			60			18	6	75	12	10	19.0	1900	8		60		46000	15	44				800	
																	35000							
						12	6	70	12	10	18.0	2000	9		62		40000		46				890	
																	30000							
						12	6	75	16	10	17.0	1900	30		64		30000		60				1100	
																	32000							
						10	6	80	20	12	21.0	2100	1		66		35000		46				880	
																	40000	20						
						10	6	80	14	14	19.0	2200	2		68		45000	20	42				860	10
			70														35000	20						
						10	4	80	22	12	18.0	2200	3		70		40000	15	42				1150	<10
																	42000							
						10	4	80	20	14	16.0	2400	4		72		35000		50				1100	
																	36000							
						14	<4	80	22	10	11.0	1370	5		74		40000		60				1900	
																	60000							
						26	4	70	20	12	19.0	1600	6		76		25000		40				1200	
																	45000	20						
						38	4	70	16	12	15.0	1650	7		78		45000	20	38				1080	10
																	35000	20						
			80			50	<4	80	20	10	14.0	1800	8		80		35000	15	40			0.10	1350	<10
																	25000							
						12	<4	70	22	12	16.0	2400	9		82		45000		38			<0.05	1150	<10
																	45000							
838	840				GNEISS Quartz-feldspar, white 55% ?Feldspar, light green, translucent, 15% Magnetite, generally as rich layers 20% Pyrite <2% Biotite <10% <3% ?Garnet ?topaz ?zircon, light orange, fine grained, well rounded translucent. Gneissosity at 45°/ca.	14	<4	80	20	14	15.0	2250	9161 40		84		46000		60			<0.05	1500	<10

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY | DATE

SHEET 2 OF 2

C.R.A. EXPLORATION PTY. LIMITED

Geological & Assay **DRILL CORE LOG**

PROJECT McLAUCHLAN EL KOPI

CO-ORDINATES ME 2/Line 1/8750E AZIMUTH _____ DRILLERS Wallis Drilling Co. P/L COMMENCED 26/11/82 (0900HRS) DEPTH 63m HOLE No. 82KRC 11

RL COLLAR _____ INCLINATION Vertical DRILL TYPE Reverse Circulation Air Core COMPLETED 26/11/82 (1430 HRS) CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION
0.0	2.0				SAND, grey-white, fine grained, sub R → well rounded, floaty.
2.0	4.0				CALCRETE, white
4.0	16.0				CLAY, SILT & SAND, interbedded, ~~cave~~
					4-9m Clay, light to dark brown, silty, firm
			10		9-12m Silt, pink-brown, laminated
					12-16m Sand, orange-brown, white, fine grained, silty, sub R to sub A
16.0	18.0				CARBONACEOUS CLAY, dark grey, black, sandy, very stiff.
18.0	40.0				SAND, loose.
			20		18-20m light grey to grey brown, fine to medium grained, sub A
					20-23m orange-brown, coarse to very coarse grained, sub A.
					23-30m Fe enriched, bright fawn-yellow & red-brown very coarse grained to pebbly, Angular to sub A.
			30		
~~40.0~~	~~50.0~~				~~CLAY~~
					~~40-47m light grey silty~~
					30-40m Sand, light yellow-brown, coarse to very coarse grained, angular to subangular
					33m = 1000l per hr
			40		
40.0	50.0				CLAY
					40-47m Clay, light grey, silty
					47-50m Clay, red-brown, purple, silty
			50		

SAMPLE No.	FROM (M)	TO (M)	REC (M)	May Sus. $\times 10^{-3}$ SI	eps
	0	1		25	<15
		2		5	
				0	
		4			
		6			
		8			
		10			
		12			
		14			
		16			
		18			
		20			
		22			
		24		10	
				15	
		26		20	
				50	
		28		15	
				15	
		30		25	
				15	
		32		5	
				0	
		34		5	
				10	
		36		75	
				20	
		38		36	
				20	
		40		5	
				0	20
		42		0	
				0	
		44		40	
				50	
		46		25	15
				50	
		48		50	
				45	
		50		50	

ASSAY VALUES

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY GR Howard DATE 26/11/82

SHEET 1 OF 2

C.R.A. EXPLORATION PTY. LIMITED

Geological + Geochemical DRILL CORE LOG

PROJECT

CO-ORDINATES ME2/line 1/8750E AZIMUTH DRILLERS Wallis Drilling

RL COLLAR INCLINATION Vertical DRILL TYPE R.C. air core

COMMENCED 26/11/82 (08:00 hrs) DEPTH 63m HOLE No. 82KRC 11

COMPLETED 26/11/82 CASING LEFT DPO No(s)

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION
500	~~520~~ 62·8				CLAY, SILT & SAND (Basement derived)
					CLAY (Basement derived), grey, silty. Accessory magnetite eg
~~520~~	~~570~~				52-55m Silt, medium brown, clayey. Accessory magnetite
					55-57m Silt, medium grey, sandy, subrounded, clayey
					57-62·8m Sand, grey-yellow, very coarse grained, angular
			60		Core: ~~Clayey~~ 15m irregular laminations (grassiness?) Rohit
					EOH 63m.
			70		

Magnetite
Pyrite <1%
Clear/transparent rounded grains of garnet? topaz? zircon?

Assay Values Cu	Pb	Zn	Ni	Co	%Fe	Mn	SAMPLE No.	FROM (M)	TO (M)	REC (M)	Mag Sus. x10⁻³ SI	ASSAY VALUES cps	Cr	Ag	Mo	Au	Ba	W
30	10	32	14	16	16.0	2800	916141	50	51		1500	20	50	<1	<4	<0.05	850	<10
									52		4000	20						
20	12	34	16	16	15.0	2900	916142		53		6500	20	60				760	10
					NB				54		5000	20						
22	12	40	16	16	13.0	3700	916143				4500	15	48				910	<10
									56		4500	15						
42	8	60	16	16	11.0	2750	916144				4500	20	60				960	
									58		1000	15						
55	6	90	20	12	11.0	1000	916145				1000	15	44				1150	
									60		1500	10						
26	12	90	18	14	16.0	3450	916146				1500	10	42				1000	
									62		25000	20						
16	12	95	24	14	13.0	1600	916147				25000	15	70				1050	

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY J.P. HOWARD DATE 26/11/82

SHEET 2 OF 2

CRA EXPLORATION PTY. LIMITED

FIRST QUARTERLY REPORT ON

TUCKEY E.L. 1054, SOUTH AUSTRALIA

FOR THE PERIOD ENDING 19TH JANUARY, 1983

The contents of this report remain the property of C.R.A. Exploration Pty. Limited and may not be published in whole or in part nor used in a company prospectus without the written consent of the Company.

AUTHOR: P. LEWIS

COPIES TO: CRAE LIBRARY
S.A.D.M.E.

DATE: 3RD FEBRUARY, 1983

SUBMITTED BY: Paul Lewis

ACCEPTED BY:

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2. INTRODUCTION	1
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LIST OF PLANS	2
LOCATION	2

1. SUMMARY AND CONCLUSIONS

No work was carried out during the quarter.

2. INTRODUCTION

Exploration licence 1054 was granted to CRA Exploration Pty. Limited on the 19th of October 1982. The licence covers an area of 355 square kilometers and is coincident with the retained northern portion of Tuckey E.L. 687 which expired on the 10th of August 1982 (Plan SAa 1932).

3. WORK CARRIED OUT

No work was undertaken on E.L. 1054 during the three month period ending on the 19th January, 1983.

P. LEWIS

PL/dp

1608

LIST OF PLANS

Plan No.	Title	Scale
SAa 1932	Tuckey E.L. 687 - Location	1:250 000

LOCATION

Kimba SI 53-7

1603

CRA EXPLORATION PTY. LIMITED

SECOND QUARTERLY REPORT ON TUCKEY E.L. 1054, SOUTH AUSTRALIA, FOR THE PERIOD ENDING 19TH APRIL, 1983.

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AUTHOR: P. LEWIS

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DATE: 20TH APRIL, 1983

SUBMITTED BY: Paul Lewis

ACCEPTED BY:

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1. SUMMARY

An experimental Audio Magneto Telluric Survey was conducted over the northern basement fault. The data is currently being processed.

2. INTRODUCTION

Exploration licence 1054 was granted to CRA Exploration Pty. Limited on the 19th October, 1982. The licence covers an area of 335 square kilometres and is coincident with the retained northern portion of Tuckey E.L. 687 which expired on the 10th August, 1982 (Plan SAa 1932).

This report covers the work undertaken during the quarter ending 19th April, 1983.

3. WORK CARRIED OUT

An experimental Audio Magneto Telluric (A.M.T.) survey line was conducted over the northern basement fault by the Macquarie University and S.A.D.M.E. during April 1983. Soundings were recorded at nine sites along a north-south traverse, centred on CRAE drillhole 81LRM64 (Plan SAa 2135). The data is currently being processed.

Paul Lewis

P. LEWIS

PL/pw

LIST OF PLANS

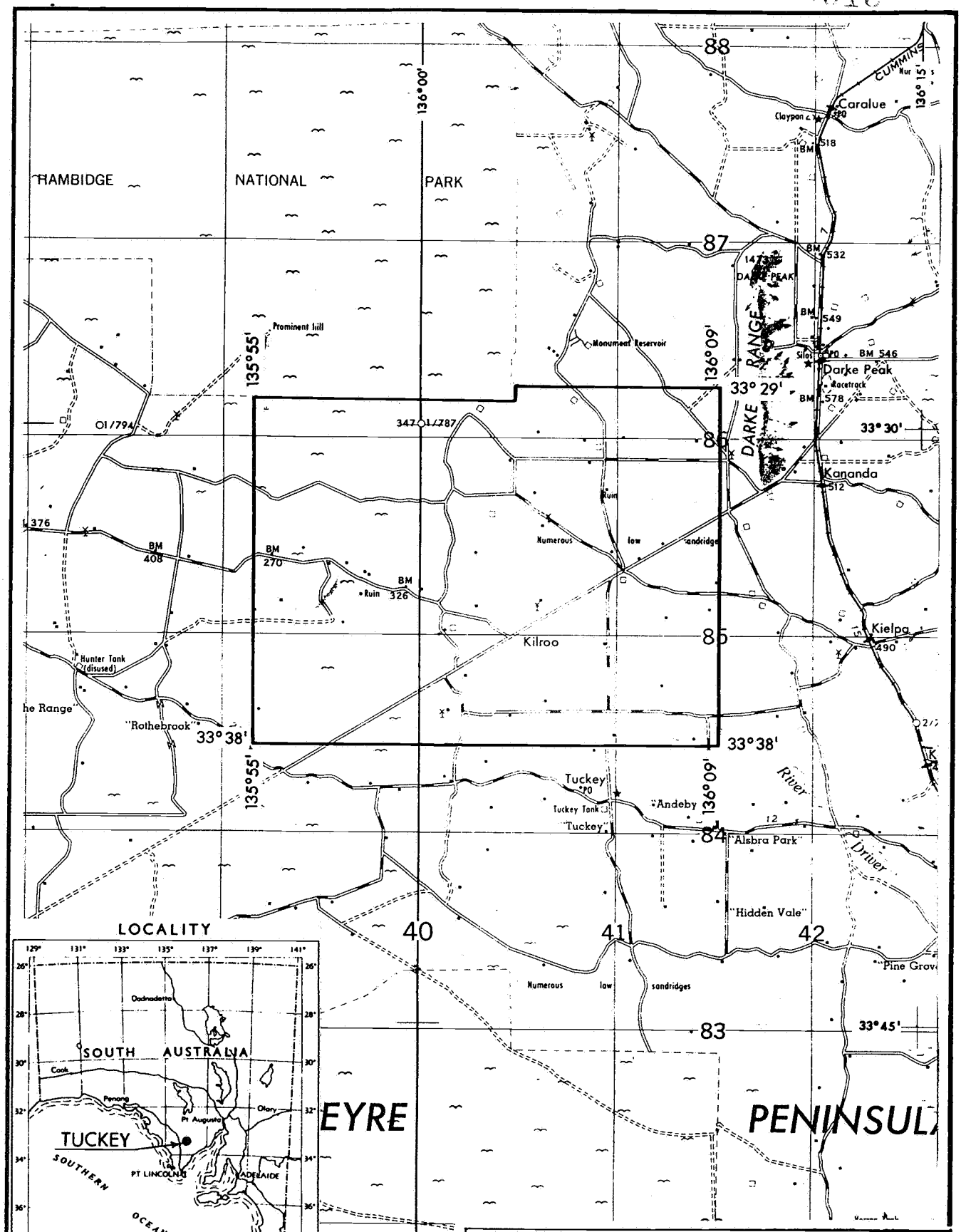
Plan No.	Title	Scale
SAa 1932	Tuckey E.L. 1054 - Location	1:250 000
SAa 2135	Tuckey E.L. 1054 - Location of A.M.T. Soundings	1: 50 000

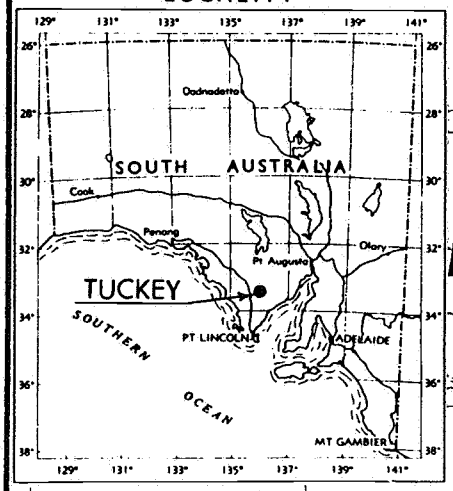
LOCATION

Kimba SI 53-7

KEYWORDS

Geophys-E.M.





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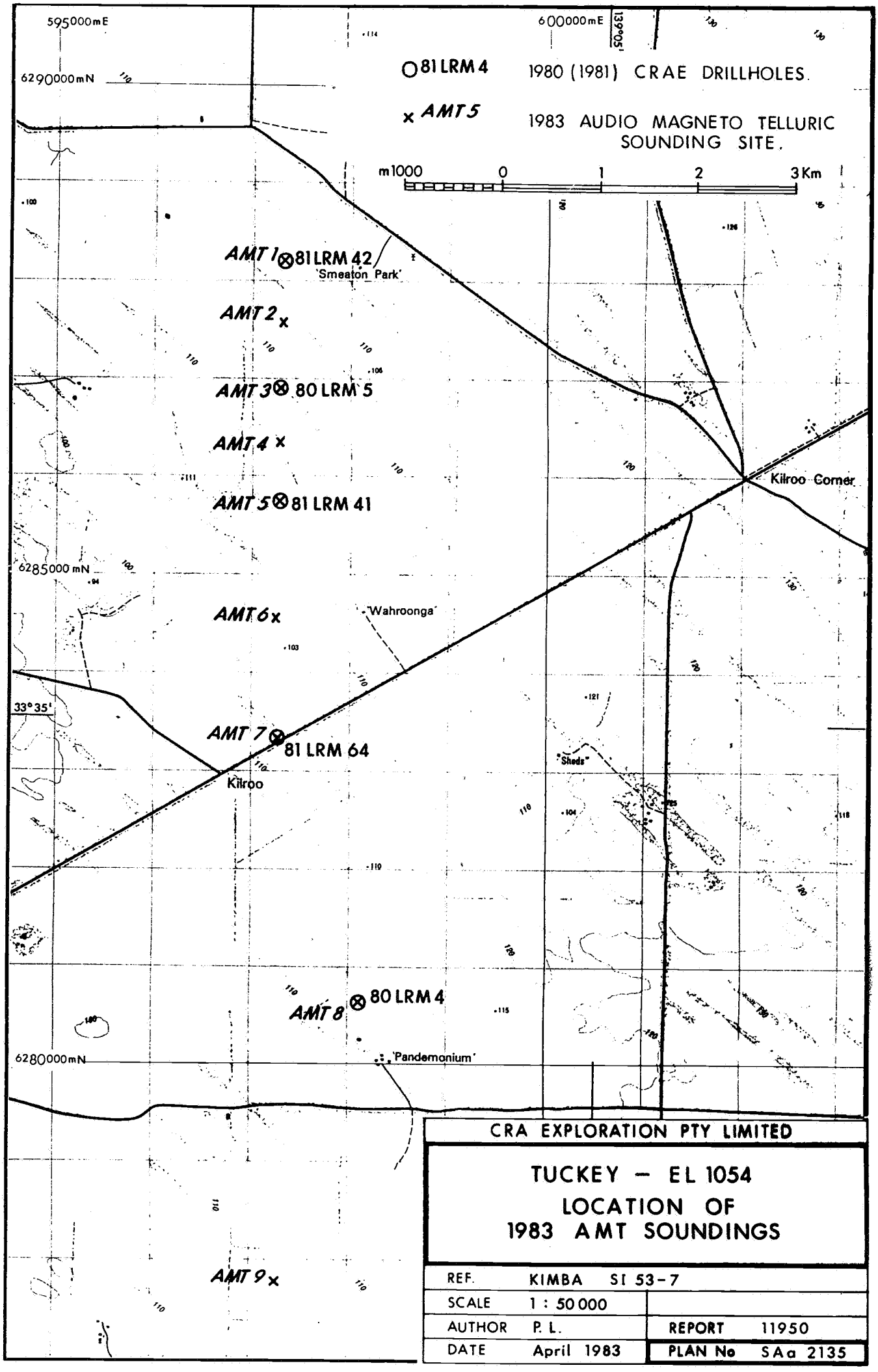
TUCKEY — E.L. 1054
LOCATION MAP

REF.	KIMBA SI 53-7		
SCALE	1 : 250 000		
AUTHOR	P. Lewis	REPORT	11950
DATE	Oct. 1982	PLAN No	SAa 1932

613A



CRA EXPLORATION PTY LIMITED

TUCKEY – EL 1054
LOCATION OF 1983 AMT SOUNDINGS

REF.	KIMBA SI 53-7		
SCALE	1 : 50 000		
AUTHOR	P. L.	REPORT	11950
DATE	April 1983	PLAN No	SAa 2135

1014

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THIRD QUARTERLY REPORT ON TUCKEY E.L. 1054, SOUTH AUSTRALIA, FOR THE PERIOD ENDING 19TH JULY, 1983.

AUTHOR: P. LEWIS

COPIES TO: CRAE LIBRARY
S.A.D.M.E.

DATE: 19TH JULY, 1983

SUBMITTED BY: Paul Lewis

ACCEPTED BY:

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3973-VI

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1. SUMMARY

Preliminary results of the Audio Magneto Telluric survey conducted during April 1983 were received. The data is currently being reprocessed to correct an instrument calibration error.

No field work was undertaken during the quarter ending the 19th July, 1983.

2. INTRODUCTION

Exploration licence 1054 was granted to CRA Exploration Pty. Limited on the 19th October, 1982. The licence covers an area of 335 square kilometres and is coincident with the retained northern portion of Tuckey E.L. 687 which expired on the 10th August, 1982 (Plan SAa 1932).

This report covers the work undertaken during the quarter ending 19th July, 1983.

3. WORK CARRIED OUT

Preliminary results of the experimental Audio Magneto Telluric survey conducted in April 1983 were received. However the instrument was found to be incorrectly calibrated, and the raw data is being reprocessed. Final results are still outstanding.

No field work was undertaken during the quarter ending 19th July, 1983.

Paul Lewis

P. LEWIS

PL/pw

617

EXPENDITURE

Expenditure for the period ended 31st July, 1983, the nearest accounting period, amounted to $1 156.00, comprising:-

	$
Salaries and Wages	625
General Supplies	22
General Overheads	509
	$1 156

Please note that expenditure for period ending 18th April, 1983, was Nil.

LIST OF PLANS

Plan No.	Title	Scale
SAa 1932	Tuckey E.L. 1054 - Location Plan	1:250 000

LOCATION

Kimba SI 53-7

KEYWORDS

Geophys-E.M.

CRA EXPLORATION PTY. LIMITED

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FOURTH QUARTERLY REPORT ON TUCKEY E.L. 1054, SOUTH AUSTRALIA, FOR THE PERIOD ENDING 18TH OCTOBER, 1983.

AUTHOR: A.K. SCOTT

COPIES TO: CRAE LIBRARY
SADME

DATE: 14TH DECEMBER, 1983

SUBMITTED BY: for A.K. Scott

ACCEPTED BY:

RECEIVED
30 DEC 1983
DEPT. OF MINES AND ENERGY SECURITY
3973-11

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1. INTRODUCTION

E.L. 1054 of 335 km² was granted to CRA Exploration Pty. Limited on 19th October, 1982. This report covers the work undertaken during the quarter ending 18th October, 1983.

2. INVESTIGATIONS

2.1 AMT Survey

An Audio Magneto Telluric survey was carried out under the auspices of the Australian Mineral Industries Research Association earlier in the year within E.L. 1054.

The results correlated well with interpreted gravity and seismic profiles. Although unable to map resistive basement (>500 m deep in the basin), the AMT system mapped resistivity contrasts of low magnitude so as to allow the tracing of an interpreted clay/lignite layer through the basin. The definition of this layer also enabled the definition of structural elements such as faults and the determination of approximate throws.

2.2 Potash

Interest in the Tuckey E.L. has recently centred on its potash potential, following the release of data from offshore oil exploration well Mercury No. 1 drilled by Australian Occidental Pty. Ltd. This hole penetrated a 1 700 m section of interbedded halite and red siltstone of probable Lower Palaeozoic age on the edge of a low domal structure about 60 km off the coast in the Polda Trough.

In order to obtain more information on the pre-Permian sequence in the onshore part of the trough, ~~SADME plan to~~ drill a stratigraphic cored hole to basement in the eastern sub-basin of the Polda Trough. SADME carried out a 17 km long seismic survey, part of which was located in E.L. 1054 (see plan no. SAa 2549), to obtain better definition of the bottom of the basin. A copy of the preliminary seismic profile was obtained and studied, although no major interpretation was carried out.

In anticipation of a potash intersection being obtained in the SADME drillhole, two exploration licences were applied for to cover the remainder of the Polda Trough - The Range E.L.A. 255/83 which surrounds E.L. 1054 on three sides, and Mount Wedge E.L.A. 256/83 in the western part of the trough.

3. RECOMMENDATIONS

A full interpretation of the final processed SADME seismic data should be carried out.

CRAE should closely monitor the progress of the SADME drillhole.

If the SADME hole contains indications of potash, CRAE should carry out follow up drilling.

A.K. SCOTT

AKS/pw

EXPENDITURE

Expenditure for the period ended 31st October, 1983, the nearest accounting period, amounted to $142, comprising:-

	$
Salaries and Wages	91
General Supplies	2
Assaying	49
	$142

LOCATION

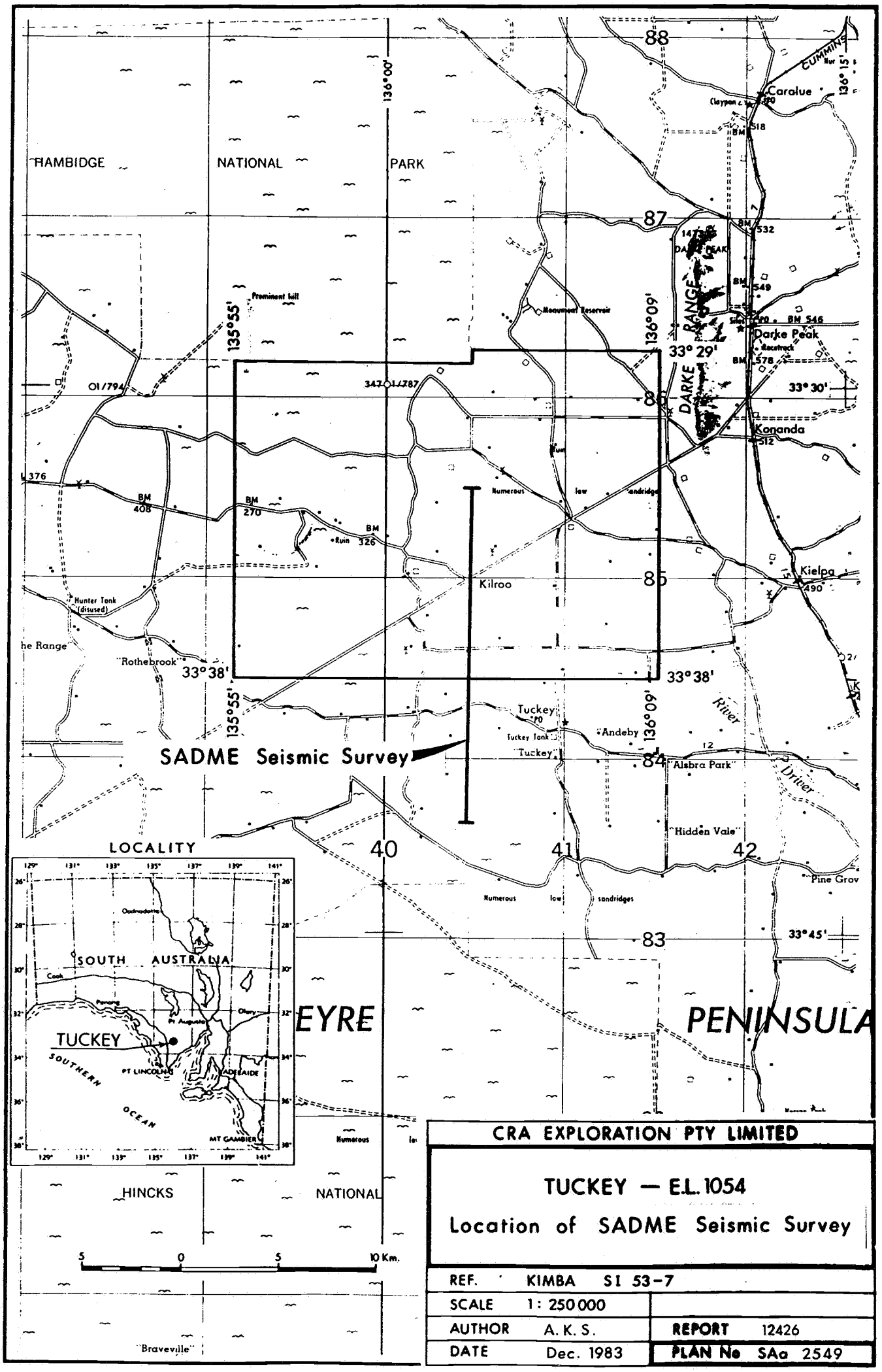
Kimba SI 53-7 1:250 000

KEYWORDS

Coal-lignite, Potash, Geophys.-E.M., Geophys.-seis.

LIST OF PLANS

Plan No.	Title	Scale
SAa 2549	Tuckey E.L. 1054 Location of SADME seismic survey.	1:250 000



CRA EXPLORATION PTY LIMITED

TUCKEY — E.L. 1054

Location of SADME Seismic Survey

REF.	KIMBA SI 53-7		
SCALE	1: 250 000		
AUTHOR	A. K. S.	REPORT	12426
DATE	Dec. 1983	PLAN No	SAa 2549

6

1021

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FIFTH QUARTERLY REPORT ON TUCKEY E.L. 1054, SOUTH AUSTRALIA, FOR THE PERIOD ENDING 18TH JANUARY, 1984.

AUTHOR: A.K. SCOTT

COPIES TO: CRAE LIBRARY
SADME

DATE: 29TH FEBRUARY, 1984

SUBMITTED BY: P.L. Anderson for A.K. Scott.

ACCEPTED BY: Alan D Tuckwell

12527

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1. SUMMARY

The structure of the eastern, or Kilroo, sub-basin of the Polda Basin has been reasonably well defined by a recent SADME seismic traverse which shows a narrow trough bounded on the north by a series of faults and on the south by a shallower shelf. The sub-basin is believed to contain about 450 m of Tertiary and Jurassic sediments and at least 550 m of Permian and pre-Permian rocks, some of which may be evaporites.

By analogy with the oil well Mercury No. 1 drilled 170 km to the west in the offshore part of the Polda Basin, it is hoped that massive halite, with associated potash, exists beneath the Permian in the Kilroo sub-basin, and drilling has commenced to search for such a sequence.

The initial hole was abandoned at 336 m after intersecting 115 m of probable Miocene clay, 186 m of Eocene (Poelpena Formation) sands and silts, including 5.5 m of lignite at 199 m, and 35 m of probable Jurassic silts and sands. There is reasonable correlation between the stratigraphy interpreted from the seismic section and that intersected in the hole.

A second hole is about to be commenced.

2. INTRODUCTION

E.L. 1054 of 355 km² was granted on 19th October, 1982, and covers part of the Polda Basin on the Eyre Peninsula (see plan no. SAa 1932). It is part of an earlier E.L. of 600 km² (no. 687) that was held by CRAE from 11th August, 1980, to 19th October, 1982.

In 1980 and 1981 CRAE drilled several rotary holes in E.L. 687 in the search for coal and lignite and discovered about 76 Mt of Eocene lignite above a depth of 200 m (see CRAE report no. 10307 for further details).

The Polda Basin is a narrow east-west trending trough containing 800-1000 m of Tertiary, Jurassic, Permian and probable early Palaeozoic sediments onshore, and a greater thickness offshore. Its onshore length is about 130 km and its width varies from about 8 to 20 km. A narrowing of the basin in the vicinity of the ETSA coal deposit (110 Mt of Jurassic coal) separates an eastern sub-basin 60 km long from a western sub-basin which extends well off-shore (see plan no. SAa 2361).

It has been known for some years that the Polda Basin contains sediments of Tertiary, Jurassic and Permian age, but not until the drilling of Columbia No. 1 and Mercury No. 1 by Australian Occidental Pty. Ltd. in 1982 was it established that a substantial pre-Permian sequence exists, at least in the offshore part. In Mercury No. 1, drilled on a dome, this older sequence contains 1700 m of halite with interbedded red shales, and may be equivalent to the Cambrian Observatory Hill beds intersected in Wilkinson No. 1 in the Tallaringa Trough.

Although a bromine profile of the salt intersection in Mercury No. 1 was inconclusive, it was felt that the mere presence of the salt was sufficient justification to initiate a potash search in the basin. It was planned to drill a hole in the western sub-basin in 1984, while SADME drilled a stratigraphic hole in the eastern sub-basin. However, the imposition of certain restrictions on E.L. 1054 and the cancellation of SADME's proposed hole made it necessary for CRAE to drill its first hole in the eastern sub-basin.

Fortunately SADME completed a 17 km long seismic traverse, known as the Kilroo seismic section, in the eastern sub-basin, most of it within E.L. 1054, in mid-1983 and results were made available in October and November that year. This clearly defined the basin structure and allowed a drill site to be chosen with confidence. Drilling commenced late in December, 1983, and was in progress at the end of the period covered by this report.

3. GEOLOGY

3.1 Stratigraphy

There are no outcrops of Tertiary, Jurassic or Permian rocks in the Polda Basin, but they are known from a large number of drill holes, the more important being Polda 1, Polda 8 and Lock 1 (drilled by SADME); 80L30C, 81L41C and 81LRM64 (drilled by CRAE, report no. 10307), RWF16 and RWF21 (drilled by Esso Australia Ltd., envelope 3783) and the two oil wells mentioned earlier. A summary of the stratigraphy appears in Table 1.

The Tertiary consists of grey clays and poorly sorted sands probably of Middle Miocene age and a Middle Eocene unit, the Poelpena Formation, of carbonaceous sands and lignite. Total Tertiary thickness is over 200 m in places. The Upper Jurassic Polda Formation, of fine and coarse sands, carbonaceous mudstone and lignite is at least 160 m thick onshore but is 500 m thick in Mercury No. 1.

Pre-Jurassic clays, sandstones and diamictites have been dated as late Carbonaceous-early Permian and have been given the name Coolardie Formation. This formation is at least 180 m thick (Lock 1) and is equated with the Boorthanna Formation in the Arckaringa Basin and the Cape Jervis Beds in the Troubridge Basin (Cooper, Harris and Meyer, 1982).

Subsurface information below the Permian is sketchy and is available only from the two offshore holes Columbia No. 1 and Mercury No. 1. Summary logs of these two holes are given in Appendix I and graphic logs in plan no. SAa 2652. The former penetrated 1 400 m of shales and sandstones with minor limestone and dolomite, whilst the latter intersected 500 m of calcareous red-brown siltstone overlying 1 700 m of halite and red siltstones and bottoming in 150 m of calcareous sandstone. It is thought that this sequence may be equivalent to the Observatory Hill Beds of Cambrian age in the Officer Basin. Onshore there are exposures of arkosic sandstone, grit and conglomerate, known as the Corunna Conglomerate, which are usually assigned to the Adelaidean although their age is uncertain. Carpentarian granites and gneisses, and metasediments of the Hutchison Group, crop out in places around the margins of the basin and are presumed to form the floor of the basin.

3.2 Structure

The Polda Basin is believed to have formed as a result of partial rifting during the separation of the Australian and Antarctic plates at some stage in the Palaeozoic.

As mentioned earlier, the Polda Basin is divided into two sub-basins by a narrow shelf west of Lock. The eastern sub-basin, henceforth called the Kilroo Sub-basin, has a sharp northern boundary defined by a series of faults interpreted from regional and detailed gravity and from drilling (CRAE report no. 10307). The throw on this fault is in the order of 1 000 m, and its location is shown on plan no. SAa 2361. The sub-basin shelves more gently to the south.

The Kilroo seismic traverse provided some very useful information as well as confirming the existing structural interpretation. The final processed data is shown on plan no. SAa 2653 and the geological interpretation on an overlay (plan no. SAa 2654). Shot points are shown on the regional plan (no. SAa 2361) and in more detail on plan no. SAa 2655.

Interpretation of the seismic data was carried out by SADME and also by CRA Oil Group geologists. The Miocene-Eocene boundary is tentatively drawn at a strong reflection although its true location is not known. The Eocene-Jurassic boundary

TABLE 1

STRATIGRAPHY OF THE POLDA BASIN

AGE			NAME	ROCK UNIT	THICKNESS (metres)	LITHOLOGY	STRATIGRAPHIC RELATIONS	EXPRESSION
CAINOZOIC	QUATERNARY	Pleistocene		Bridgewater Formation	30 m	Sand, off-white, cemented calcareous, clay interbeds	Uppermost unit in sequence	Outcrops west of Lock and in cliffs Drill Holes
		?		Undifferentiated	6-7 m	Clay, vari-coloured, calcareous	Underlies Bridgewater Formation	
	TERTIARY	Middle Miocene		Undifferentiated	70 m	Green to grey clay & carbonaceous clays. Grey poorly sorted coarse sand & carbonaceous sand	Relationships unknown. Correlated with Munno Para Clay.	Many holes in Polda Trough
		Middle Eocene		Poelpena Formation	Greater than 200 m	Grey, dark grey & brown coarse sand & lignite. Very carbonaceous	Unconformably on Jurassic. Overlain unconformably by ?Miocene or Quaternary	Many holes in Polda Trough - absent on southern edge. 81L41C cored hole.
MESOZOIC		Upper Jurassic		Polda Formation	Greater than 160 m	Dark grey to black very carbonaceous fine sand, silt & lignite and very coarse grey sands	Unconformably on Permian & Precambrian. Unconformably overlain by Tertiary in Polda Basin, conformably by Cretaceous on Ceduna Terrace	Many drill holes in Polda Trough
PALAEOZOIC		Permian		Boorthanna Formation	180 m	Pyritic diamictite & clay	Unconformably on Archaean & Proterozoic. Unconformably overlain by Jurassic	Polda No. 1 stratigraphic drill hole. Tuckey No. 1 stratigraphic drill hole. 80L30C cored hole.
PROTEROZOIC		Adelaidean		Corunna Conglomerate	Exceeds 200 m	Conglomerate, sandstone & shale	Unconformably on Lincoln Complex. Unconformably overlain by Permian, Jurassic & Tertiary	
		Carpentarian	Lincoln Complex			Granite, gneiss, migmatite, granulite, augen gneiss, quartzo-feldspathic gneiss. Synkimban Orogeny granites. Basic intrusives.	Overlain unconformably Corunna Conglomerate. Underlain by Hutchison Group	Southeast and northeast of Lock
		Nullaginian	Hutchison Group	Middleback Formation Warrow Quartzite		Metasiltstone, schist, iron formation, marble & quartzite	Overlain by Lincoln complex & underlain unconformably by Sleaford Complex	Outcrops southeast of Lock. May occur in drill holes
		Lower Proterozoic & Archaean	Sleaford Complex	Widbey Granite Kiana Granite	?	Granite, granite gneiss, schist, granulite metasediments, basic intrusives	Overlain unconformably by Hutchison Group	Outcrops north & south of Lock. May occur in drill holes

is reasonably well defined from palynology carried out on Tuckey 1, 80LRM4 and 81L41C, although it is not defined by any obvious reflector. The reflection just above the base of the Tertiary is almost certainly due to the lignite seam encountered in 80LRM5, 81L41C and 80LRM64 (15 m thick in 81L41C). The boundary between the relatively unconsolidated Jurassic sediments and the hard Permian diamictites is probably the next major reflector, as shown, and this is supported by the small-scale arcuate reflections in the vicinity of shot point 430 that are believed to be characteristic of reflection patterns off large boulders lying in a less dense matrix.

The high speed of the next unit (3600-3800 m/s) may be caused by the presence of dense carbonates as in the Observatory Hill Beds elsewhere, although this speed is more characteristic of the Boorthanna Formation diamictites in the Tallaringa Trough (Milton, 1975). The significance of the strong reflector below this interval is unknown, especially as the next interval has a velocity around 2900-3300 m/s which is well below the speed expected for crystalline basement (over 5 000 m/s).

3.3 Halite

Occidental offshore hole Mercury No. 1 is known to have been drilled on a salt dome (from their own seismic work) and this almost certainly explains the thick (1 700 m) intersection of halite and interbedded halite and siltstone that was obtained between 1 400 and 3 100 m. CRAE carried out bromine in halite analyses on 5 m composite samples over the whole of the salt-bearing interval but the results were inconclusive. (See Appendix II for assays). Values ranged from 8 to 400 ppm Br but no trends were evident. It is believed that the rather erratic Br distribution is a result of remobilisation of the salt, a feature that would be in accordance with the interpreted diapir.

4. DRILLING

4.1 Site Selection

The latitude of 83KD1 was selected entirely on the basis of the Kilroo seismic section. If potash-bearing evaporites exist in the basin, they will probably occur in the pre-Permian depocentre, which is most likely to coincide with the deepest part of the basin, near the northern bounding fault. This was refined by the interpretation of a possible small sub-basin beneath the Permian at shot point 340. Long-

itudinally, the seismic traverse is approximately in the middle of the Kilroo sub-basin, and close to a small sub-basin interpreted from a detailed gravity traverse carried out in 1980 by CRAE (see CRAE report no. 10307). Furthermore, it was believed that a significant potash deposit would be detectable over a strike length of several km. The hole was therefore sited on the seismic section at SP340 where at least a small amount of stratigraphic control was available.

4.2 Prognosed Geology

Depths to the reflectors that would be encountered in 83KD1 were calculated from the velocity scans at SP305 and SP355, (shown in boxes at the top of the seismic section). Calculations and depths are shown on plan no. SAa 2656. It should be remembered that the calculated depths are only approximate because the velocity intervals do not coincide with reflectors in every case, and also because velocities vary from place to place due to natural variations in the physical properties of the rocks.

From plan no. SAa 2654, the expected stratigraphy and depths are as follows:

Miocene	0 - 100
Eocene	100 - 270
Jurassic	270 - 450
Permian	450 - 600
Pre-Permian	600 - 1 000
Precambrian (?)	1 000+

Plan no. SAa 2657 shows this in graphic form.

4.3 Planning

The general drilling plan was to drill a large diameter (say 150 mm) hole with blade and/or roller bit down to the Permian diamictites and case off in hard rock between 450 and 500 m. Diamond coring would then commence in HQ size and continue to about 800 m where the HQ rods would remain in the hole as casing while coring was taken to final depth (about 1 100 m) in NQ. The hole would be geophysically logged at the completion of rotary drilling and again at final depth.

The selection of drilling muds was a major item in the planning stages. A high viscosity, high solids bentonite/polymer mud was considered suitable for the rotary section where wall stability in soft shales and friable sands was of

utmost importance. For the cored section of the hole, Baroid Australia was engaged to supply a mud programme (see Appendix III) and an on-site engineer. The basis of the drilling mud for this section was to be a saturated KCl fluid which would be expected to provide almost full recovery of potash-bearing core, although halite might suffer partial dissolution. An oil-based mud is normally regarded as the best medium for obtaining complete recovery of potash, but the cost of such a system for a hole of this size would be in the vicinity of $50 000. This was regarded as excessive for a one-off exploration hole in a relatively unknown basin.

The drilling contract was awarded to F.A. Kelly Pty. Limited primarily because of the availability of a Warman 1500 rig which would be capable of continuing to 1400 or 1500 m if the need arose. Most other contractors in the same price range were offering Longyear 44 machines, the uprated version of which is rated at about 1 200 m in NQ.

4.4 Drilling Operations

For budgetary reasons the hole was commenced at short notice on December 19, 1983, although it was known that a three-week break was to be taken from Christmas to mid-January, 1984. The hole progressed to 336 m by 21st December, where a hard band was encountered. Many problems with mud breakdown had also been experienced. It was thus decided to circulate a heavy mud and cease drilling until mid-January, as there was insufficient time to carry out drilling, logging and casing before Christmas.

Operations recommenced on 17th January, 1984. On re-entry, it was found that a clay unit between the surface casing (set to 37 m) and 115 m had expanded and filled the hole. Circulation was lost on re-drilling through this material, and the problem of mud breakdown was again experienced. It was then decided to abandon the hole, and a new hole, ~~83/4~~KD1A, was collared 10 m away on 20th January.

4.5 Geology of Drill Hole

Samples were collected at 2 m intervals, although the slow rate of penetration caused grinding of the shale and silt units, so that very little of these lithologies reached surface in recognisable chips.

A summary graphic log, as compared with the expected stratigraphy, is presented on plan no. SAa 2657, and a summary log is given below. Since the hole is in its early stages, the detailed log of this section of the hole will be given in the next quarterly report so that a complete log will be presented therein.

Miocene (?)	0 - 26	Lateritic clayey sand
	26 - 56	Lateritic clay. Base of oxidation at 56 m
	56 -115	Blue-grey clay, with minor sandy interbeds
Eocene (Poelpena Fm)	115 -199	Fine-medium sands with minor coarse sand and carbonaceous mudstone
	199 -204.5	Lignite
	204.5-301	Medium sands with minor siltstone, carbonaceous shale and lignite
Upper Jurassic (Polda Fm)	301 -336	Interbedded siltstone and fine to medium sands

Note: Formation boundaries are tentative at present.

4.6 Discussion

The base of the blue-grey clay at 115 m is reasonably close to the strong reflector estimated to lie at about 100 m. Whether this is in fact the Miocene/Eocene boundary is open to question.

The 5.5 m thick band of lignite at 199 m coincided very well with its estimated depth (200 m).

The Eocene/Jurassic boundary is very tentative at this stage. It is based on the appearance of the first of several compact, rather hard, carbonaceous shales.

Palynological examination of cuttings may help to locate these boundaries more accurately.

P.L. Robins per R.K. Scott

A.K. SCOTT

AKS/pw

EXPENDITURE

Expenditure for the period ended 31st January, 1984, the nearest accounting period was $55 531.00, as listed below.

	$
Drilling	40 151
Payroll	6 768
Supplies	2 855
Vehicle	602
Travel	213
Property	462
Tenements	608
Contractors	1
Overheads	3 871
	$55 531

1037

REFERENCES

Cooper, B.J., Harris, W.K. & Meyer, G.M., 1982 — The Late Palaeozoic Coolardie Formation, Polda Basin. G.S.S.A. Quart. Geol. Notes, No. 81.

Milton, B.E. 1975 — Reconnaissance Seismic Exploration, Southwest Arckaringa Basin, S.A., 1974. G.S.S.A. Quart. Geol. Notes, No. 53.

LOCATION

Kimba SI 53-7 1:250 000

KEYWORDS

Coal, Halite, Potash, Basin, Drill-rotary, Geophys-seismic.

LIST OF PLANS

Plan No.	Title	Scale
SAa 1932	Tuckey E.L. 1054 Location Map	1:250 000
SAa 2361	Tuckey E.L. 1054 Polda Basin - S.A. Geology, Geophysics and Drill-Holes	1:250 000
SAa 2652	Polda Basin. Australian Occidental Offshore Drillholes	1: 10 000
SAa 2653	Tuckey E.L. 1054. Kilroo Seismic Section	1: 25 000
SAa 2654	Tuckey E.L. 1054. Kilroo Seismic Section. Interpretation	1: 25 000
SAa 2655	Tuckey E.L. 1054. Kilroo Seismic Traverse. Shot Points.	1: 50 000
SAa 2656	Tuckey E.L. 1054. Kilroo Seismic Section. Depth Calculations for Proposed Hole 83KD1.	1: 25 000
SAa 2657	Tuckey E.L. 1054. Comparison between Prognosed and Actual Stratigraphy in 83KD1.	1: 5 000

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Appendix II Bromine in Halite Analyses from Mercury No. 1.
Appendix III Drilling Fluids Programme for 83KD1.

APPENDIX I

SUMMARY LOGS OF MERCURY NO. 1 AND COLUMBIA NO. 1

MERCURY NO. 1

Australian Occidental Pty. Ltd. (Petroleum Division)

Lat. 33° 33' 47.5" S
Long. 134° 14' 14.0" E

November '81 - February '82

Total Depth - 3 251 m
Water Depth - 77 m

RKB 16 m above sea level
Sea bed at depth of 93 m below RKB

Quaternary	93- 110 m	
Poelpena Fm.	110- 288 m	
Polda Fm.	288- 799 m	Claystone, sst, lst with minor coal 660-770 m. Best coal 3 m @ 740 m
Permo-Carb.	799- 886 m	Claystone, conglomerate, shale
Pre-Permian:		
Unit III	886-1393 m	Calc. red bed sequence as interbedded stst and sst (sandier near base). Trace anhydrite at base.
Unit II	1393-3100 m	Massive clear light orange-brown halite with minor shale and dolomitic interbeds. 1393-1556 Halite 95% 1556-1609 Lst, shale. Halite nil. 1609-2255 Halite 95% 2255-2538 Shale interbeds. Halite 50% 2538-2824 Dolomitic stst. Halite 5% 2824-2978 Stst interbeds. Halite 60% 2978-3100 Halite 90%. Stst interbeds
Unit I	3100-3251 m	Well sorted sst with calc cement. Some silty zones.

COLUMBIA NO. 1

Australian Occidental Pty. Ltd.

Lat. 33° 29' 38.9" S
Long. 133° 53' 4.5" E

February-April '82

Total Depth - 2 168 m
Water Depth - 74 m

RKB 17 m above sea level
Sea bed at depth of 91 m below RKB

Quaternary	91-	112 m	
Poelpena Fm.	112-(?)270	m	
Polda Fm.	(?)270-	706 m	Stst, becoming sandier towards base. Bottom 150 m mainly sst. Minor coal in lower two-thirds.
Permo-Carb.	706-	771 m	Boulder clay, stst.
Pre-Permian:			
Unit IV	771-	954 m	Mainly stst with minor sst interbeds. Dol. and lst. interbeds 771-830 m. Minor anhydrite 900 m.
Unit III	954-	1286 m	Silty sst and stst 954-1060 m. Mainly sst 1060-1286 m except for lst 1165-1175 m and stst 1175-1195 m.
Unit II	1286-	1701 m	Stst with very minor dol. and lst. 1286-1674 m. Sst 1674-1701 m. Anhydrite 1610 m.
Unit I	1701-	2168 m	Stst 1701-1735 Sst 1735-1997 Stst 1997-2168

APPENDIX II

BROMINE IN HALITE ANALYSES FROM MERCURY NO. 1

amdel 164 samples Re-analysed 104

Analysis code B1/1 Report AC 5759/83 Page 1

Order B 0604 Results in ppm

Sample		% Halite	Br
951150	1345	2.50	360
951151	1355	2.20	320
951152	1365	2.80	430
951153	1375	2.50	420
951154	1385	2.00	370
951155	1395	2.50	390
951156	<1400	6.30	280
951157		7.10	230
951158		7.20	240
951159		6.60	190
951160		8.60	270
951161		9.50	270
951162		6.30	220
951163		7.70	260
951164		7.20	240
951165		74.3	10
951166		76.6	10
951167		83.2	15
951168		61.7	15
951169		87.4	35
951170		87.6	10
951171		86.8	110
951172		87.2	10
951173		89.1	15
951174		90.9	15
951175		82.1	20
951176		78.0	20
951177		67.4	400
951178		80.4	25
951179		89.3	15
951180		91.2	20
951181		90.5	50
951182		92.9	50
951183		91.2	40
951184		52.8	80
951185		39.1	85
951186		96.0	15
951187		51.7	65
951188		21.0	160
951189		18.0	190
Detn limit			(5)

Analysis code B1/1 Report AC 5759/83 Page 2

Order B 0604 Results in ppm

Sample	% Halite	Br
951190	24.4	210
951191	27.2	210
951192	18.0	280
951193	34.5	130
951194	85.2	15
951195	77.1	35
951196	47.6	35
951197	88.6	15
951198	88.8	10
951199	77.8	15
951200	90.4	10
951201	82.9	15
951202	66.5	35
951203	56.5	60
951204	50.7	25
951205	44.5	40
951206	90.5	15
951207	85.1	10
951208	75.3	10
951209	70.4	20
951210	79.7	20
951211	84.1	10
951212	78.6	20
951213	82.1	5
951214	87.7	55
951215	92.3	15
951216	49.4	35
951217	76.6	25
951218	88.4	15
951219	87.8	20
951220	91.9	20
951221	92.4	15
951222	93.5	30
951223	89.2	10
951224	93.7	20
951225	93.7	10
951226	85.7	130
951227	77.7	20
951228	90.6	5
951229	89.7	10
Detn limit		(5)

Analysis code B1/1 Report AC 5759/83 Page 3

Order B 0604 Results in ppm

Sample	% Halite	Br
951230	88.1	15
951231	88.7	15
951232	89.1	10
951233	87.2	10
951234	90.8	5
951235	89.0	15
951236	87.9	<5
951237	89.0	10
951238	73.8	35
951239	87.2	15
951240	84.7	10
951241	65.8	10
951242	85.0	20
951243	90.0	25
951244	88.9	25
951245	92.2	20
951246	87.3	20
951247	88.8	15
951248	82.2	20
951249	76.7	10
951250	82.0	10
951251	83.8	20
951252	88.8	15
951253	90.7	5
951254	86.0	15
951255	92.0	15
951256	92.5	5
951257	94.2	5
951258	93.3	15
951259	88.9	<5
951260	91.7	15
951261	91.2	5
951262	92.0	15
951263	86.0	5
951264	91.2	5
951265	84.7	5
951266	94.1	15
951267	91.1	110
951268	90.2	10
951269	93.3	5
Detn limit		(5)

amdel

Analysis code B1/1 Report AC 5759/83 Page 4

Order B 0604 Results in ppm

Sample	% Halite	Br
951270	96.4	5
951271	94.9	5
951272	92.0	10
951273	88.2	5
951274	89.0	5
951275	92.5	10
951276	91.2	5
951277	91.0	5
951278	93.1	<5
951279	92.8	10
951280	100.1	<5
951281	87.3	5
951282	92.1	5
951283	83.0	20
951284	89.5	5
951285	85.2	5
951286	87.7	15
951287	89.7	5
951288	93.9	5
951289	94.6	10
951290	90.5	10
951291	91.0	5
951292	90.9	15
951293	91.4	10
951294	93.0	15
951295	94.9	5
951296	95.5	10
951297	92.0	5
951298	92.8	15
951299	91.2	10
951300	91.6	15
951301	88.9	<5
951302	89.0	60
951303	88.9	10
951304	88.6	20
951305	80.3	20
951306	78.5	5
951307	83.6	15
951308	91.8	5
951309	85.5	20
Detn limit		(5)

amdel

Analysis code B1/1 Report AC 5759/83 Page 5

Order B 0604 Results in ppm

Sample		% Halite	Br	
951310		82.9	15	
951311		88.5	15	
951312		82.6	5	
951313		73.6	10	
951314		84.2	10	
951315		87.2	20	
951316		82.5	20	
951317		89.8	10	
951318		90.2	5	
951319		22.6	150	
951320	Comlabs	46.4	40	Comlabs
951321		36.0	60	
951322	23.6	34.3	130	160
951323	36.9	48.3	40	35
951324	-	61.7	35	-
951325	85.4	84.2	5	12
951326	77.4	78.9	10	12
951327	87.4	93.4	5	8
951328	86.5	88.3	10	8
951329	88.0	90.1	<5	8
951330	26.0	28.6	15	60
951331	10.2	11.4	200	170
951332	9.25	10.2	230	150
951333	25.9	31.4	90	60
951334	13.1	13.3	150	100
951335	9.50	10.4	230	140
951336	-	10.3	150	-
951337	6.85	6.80	200	-
951338		10.5	150	
951339		10.6	150	
951340		10.1	150	
951341		24.0	55	
951342		28.2	75	
951343		13.2	140	
951344		11.7	180	
951345		14.3	100	
951346		18.2	85	
951347		12.8	180	
951348		10.9	170	
951349		10.5	140	
Detn limit			(5)	

Averaged by Comlabs.

amdel

1540

Analysis code B1/1 Report AC 5759/83 Page 6

Order B 0604 Results in ppm

Sample	% Halite	Br
951350	4.10	140
951351	13.6	180
951352	10.2	190
951353	8.30	130
951354	9.80	140
951355	9.70	140
951356	9.90	140
951357	11.8	140
951358	11.8	120
951359	8.60	170
951360	10.7	170
951361	7.50	130
951362	7.50	90
951363	7.40	110
951364	7.10	170
951365	6.70	95
951366	13.8	130
951367	10.7	220
951368	9.40	170
951369	8.10	170
951370	10.1	90
951371	8.60	180
951372	10.1	220
951373	13.3	190
951374	18.5	210
951375	7.90	180
951376	39.5	35
951377	58.0	15
951378	42.0	45
951379	46.9	45
951380	26.6	60
951381	22.8	65
951382	18.3	110
951383	33.6	60
951384	32.8	120
951385	16.1	150
951386	13.8	170
951387	16.9	130
951388	11.8	250
951389	9.20	230
Detn limit		(5)

amdel

Analysis code B1/1 Report AC 5759/83 Page 7

Order B 0604 Results in ppm

Sample	% Halite	Br
951390	7.80	200
951391	7.70	210
951392	7.10	260
951393	17.2	130
951394	9.00	170
951395	8.60	120
951396	6.00	130
951397	6.00	210
951398	7.30	240
951399	7.90	210
951400	8.60	210
951401	7.50	250
951402	11.0	250
951403	19.3	240
951404	10.9	230
951405	9.70	250
951406	11.2	230
951407	8.60	190
951408	6.40	220
951409	10.8	260
951410	7.90	310
951411	7.00	280
951412	8.40	240
951413	9.40	220
951414	5.70	210
951415	6.20	230
951416	8.00	240
951417	7.00	190
951418	7.10	190
951419	8.00	110
951420	7.40	210
951421	8.00	230
951422	7.80	230
951423	10.9	150
951424	11.5	180
951425	8.50	170
951426	8.50	210
951427	5.20	180
951428	8.60	220
951429	6.70	220
Detn limit		(5)

amdel

Analysis code B1/1 Report AC 5759/83 Page 8

Order B 0604 Results in ppm

Sample	% Halite	Br
951430	9.40	190
951431	8.80	210
951432	8.90	230
951433	7.80	230
951434	8.20	210
951435	10.7	200
951436	11.1	250
951437	16.7	250
951438	12.9	260
951439	9.70	210
951440	9.50	180
951441	6.30	150
951442	13.9	250
951443	12.9	200
951444	9.40	210
951445	12.0	210
951446	12.0	190
951447	43.3	30
951448	15.2	130
951449	82.2	5
951450	22.4	80
951451	43.4	25
951452	22.6	70
951453	18.3	110
951454	14.7	130
951455	9.90	210
951456	11.4	230
951457	25.0	150
951458	88.2	20
951459	89.3	20
951460	91.3	5
951461	78.0	25
951462	64.6	20
951463	69.8	90
951464	72.9	25
951465	81.5	30
951466	70.2	20
951467	51.5	55
951468	54.3	20
951469	65.9	25
Detn limit		(5)

amdel

Analysis code B1/1 Report AC 5759/83 Page 9

Order B 0604 Results in ppm

Sample	% Halite	Br
951470	10.3	100
951471	72.0	10
951472	64.5	25
951473	27.1	70
951474	31.4	60
951475	49.2	40
951476	53.6	30
951477	76.0	20
951478	73.9	20
951479	78.5	15
951480	81.6	10
951481	84.7	110
951482	82.3	10
951483	80.8	15
951484	77.2	<5
951485	62.8	15
951486	86.5	5
951487	72.6	<5
951488	85.0	55
951489	37.7	45
951490	70.8	10
951491	77.2	<5
951492 3095	71.7	10
~~M1 1572.5 1575~~	~~71.1~~	~~230~~
Detn limit		(5)

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

Head Office and
Central Laboratory
305 SOUTH ROAD,
MILE END SOUTH
STH. AUST. 5031
TEL.: (08) 43 5722
TELEX: AA89323

NATA REGISTERED No. 1526

OUR REF.: COM 831707

YOUR REF.: DPO B0609-0610

Mr. A. Scott,
CRA Exploration Pty Ltd,
P.O. Box 254,
NORWOOD SA 5067,

12.9.83

Dear Tony,

RE: JOB COM 831707

Enclosed are the assays for the samples delivered to our laboratory on the 10th August 1983.

Yours sincerely,
COMLABS PTY LTD

per :

c.c.: NORWOOD

Queensland Preparation Laboratory: 172 Lavarack Ave., Eagle Farm, Queensland. 4007 Tel.: (07) 268 4748
Western Australia Preparation Laboratory: 52 Fairbrother St., Belmont, W.A. 6104 Tel.: (09) 47 81336
Northern Territory Preparation Laboratory: 3 Bishop Street, Darwin, N.T. 5790 Tel.: (089) 81 3961

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

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ANALYTICAL REPORT

JOB COM831707 O/N : B 0609-0610

Results in ppm

SAMPLE	Br	%K	Li	B	I	%Salt Recovered
951322	160	0.14	<1	10	<10	23.6
951323	35	0.05	<1	<10	<10	36.9
951324	I.S.	I.S.	I.S.	I.S.	I.S.	I.S.
951325	12	0.01	<1	20	10	85.4
951326	12	0.01	<1	20	<10	77.4
951327	8	0.01	<1	50	<10	87.4
951328	8	0.01	<1	<10	10	86.5
951329	8	0.01	<1	<10	<10	88.0
951330	60	0.07	<1	<10	10	26.0
951331	170	0.18	<1	<10	<10	10.2
951332	150	0.20	<1	<10	<10	9.25
951333	60	0.11	<1	50	<10	25.9
951334	100	0.07	<1	20	12	13.1
951335	140	0.18	<1	<10	<10	9.50
951336	I.S.	I.S.	I.S.	I.S.	I.S.	I.S.
951337	I.S.	0.20	<1	<50	I.S.	6.85

NOTE: Results expressed as ppm in salt

Method of Analysis : Br I : XRF
Li K : AAS6
B : COL10

APPENDIX III

DRILLING FLUIDS PROGRAMME FOR 83KD1

1653

C.R.A. EXPLORATION

RECOMMENDED MUD PROGRAM FOR POTASH DRILLING SOUTH AUSTRALIA

Prepared by: John Quayle
John Knox

December 1983.

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II. CASING PROGRAM AND LITHOLOGY

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V. LAB TESTS

VI. ENGINEERS RESUMES

VII. PRICE LIST

C.R.A. EXPLORATION

POTASH DRILLING

INTRODUCTION

C.R.A. Exploration is proposing to drill a 1,200 metre hole in the Polda Basin of South Australia to explore for evapourites and in particular, deposits of Potash. Previous offshore exploration in the Polda Basin has encountered thick sections of Halite and it is understood that the geological section may be similar to an area of the Officer Basin recently drilled by Comalco.

One of the priorities of this drilling program will be to obtain 100% core recovery so that a thorough economic and geological evaluation may be made of the area. Potash deposits are notoriously difficult to successfully core, mainly because it is unusual to find a single salt deposit of pure KCl. Generally speaking, the potash will contain traces of magnesium or other minerals and because of the varying solubility of the magnesium and potassium chloride it becomes difficult to maintain 100% core recovery and avoid large washed out hole sections in the evapourites.

If the hole can be drilled quickly it may be possible to have good core recovery but the problem of washed out hole gives greater potential for snapped rods and resulting delays in fishing, etc. The only way 100% core recovery can be guaranteed is to use an invert emulsion oil mud with the water phase saturated with CALCIUM CHLORIDE. This method has been used very successfully and provided a continuous drilling program can be maintained and the mud re-used, costs do not become excessive. On an exploration hole oil mud costs become prohibitively expensive and it will be necessary to use a saturated KCl/brine in the initial exploration stage.

In Australia, Potassium Chloride is available in two grades:-

1. Agricultural grade which is approximately 99% KCl but is slow to dissolve and coarse crystalline.

/Cont...

C.R.A. EXPLORATION

POTASH DRILLING

INTRODUCTION (Cont)

2. Industrial grade which is 99.6% pure KCl and is easily dissolved because of it's finely crystalline nature.

We would recommend that the agricultural grade be used as close to saturation point as possible because of the cost advantages. Agricultural grade Muriate of Potash is readily available in Adelaide but the industrial grade has to be imported and is more expensive. We would suggest that a small amount of industrial grade KCl be carried in suspension by the mud system in order to prevent leaching of the core through undersaturation of the mud. The importance of saturation of the KCl brine cannot be overemphasized and every attempt should be made to have a super-saturated system in the hole. It is expected the temperature gradient in this are will be low so the varying solubility due to temperature will be low.

We have recommended the use of Hydroxyethyl cellulose (HEC) as the primary viscosifying polymer in this mud system. HEC is a synthetic cellulosic material and is completely resistant to bacterial break down. It is non-ionic and it is not affected by varying concentrations of electrolytes or by trace elements such as boron or chromium. A cheaper material such as guar gum (sold under various trade names) can be used but it is subject to bacterial attack even in a saturated brine. It's major disadvantage is that it tends to coagulate and settle out in the bottom of the tanks in a semi-solid state. This happened on the Comalco drilling program when some left over mud stocks were being used and the end result was the material had to be dug out of the mud tanks. XC POLYMER could be used in this system but it is more expensive and the gel strengths it develops tends to suspend the cuttings and lead to sludge build up in the rods.

/Cont...

C.R.A. EXPLORATION

POTASH DRILLING

INTRODUCTION (Cont)

DEXTRID has also been programmed to reduce filtrate loss and to eliminate dispersion of shales and clays in the borehole. It would be possible to drill with just KCl/HEC but every attempt should be made to reduce hole washout when drilling deep coreholes in sedimentary systems. All too often a hole is lost when rods snap in a washed out hole through vibration and rod rattle.

C.R.A. EXPLORATION

POTASH DRILLING

CASING PROGRAM AND LITHOLOGY

1. Precollar 5" diameter to 500 metres, set HW casing.

2. Diamond Coring

   500 - 800 metres - HQWL size
   800 - 1,200 metres - NQWL size

LITHOLOGY

0 - 500 metres - Tertiary - Jurasic - Siltstones, Coal

500 - 1,200 metres - Cambrian - Shales, Sandstones, Limestones, Halite

NL Baroid

RECOMMENDED MUD PROGRAM

Company C.R.A. EXPLORTION
Well Name and Number _____ Date DECEMBER 6, 1983
Location South Australia County Onshore State South Australia
Proposed Depth 1,200 metres
Casing: Surf. HW @ 500 metres Inter. HW @ 800 metres Prod. _____

RECOMMENDED MUD PROPERTIES

DEPTH Metres	WEIGHT ppg	VISCOSITY SEC	FILTRATE ml		TREATMENT
0-500m	Precollar, set HW casing				
HQWL Hole					
500-800m	9.68	33-35	6-8cc	10+	In fresh water mix 0.75 lbs/bbl HEC then add 2 lbs/bbl DEXTRID then add coarse grade KCl until nearly saturated - approximately 85 lbs/bbl. Then add fine grade KCl (Potassium Chloride) approximately 14 lbs/bbl - this will super-saturate and give maximum protection when encountering the potash formation. Add 0.75 lb/bbl CAUSTIC SODA to raise pH to 10 +.
NQWL Hole					
800-1200m		as above			

99 lbs/bbl KCl
KCl = 280-285000 ppm
KCl = 24-25%.

Estimated cost for mud materials: $5,954.55
Recommended Program Based Upon Cost estimate based on Baroid experience in the Officer Basin on Comalco Exploration drilling.

The above recommendations are statements of opinion only, and are made without any warranty of any kind as to performance and without assumption of any liability by NL Industries, Inc., or its agents.

C.R.A. EXPLORATION

POTASH DRILLING

RECOMMENDED MUD PROGRAM

After precollaring and setting casing we recommend drilling into the Cambrian Transition zone with a saturated KCl/HEC (Hydroxyethyl cellulose) mud with additions of DEXTRID for shale and filtration control.

We recommend that the pH of the mud be raised to around 10.0 with CAUSTIC SODA. This will minimize corrosion.

We would also recommend that the HEC be hydrated in fresh water before adding to the brine, this has proven to be more economical and effective than adding the HEC directly to the brine. DEXTRID is again recommended for extra filtration control and to improve borehole stability and core recovery. At all times the mud must be saturated with KCl to provide good core recovery and to eliminate washout in the Halite/Potash sections.

Suggested Mud Properties

Density	-	9.68 ppg (saturated)
Viscosity	-	33 - 35 sec/qt
API Filtrate	-	6 - 8 ccs
pH	-	10 +
Solids	-	Minimum
Yield Point	-	8 - 10 lbs/100 sq.ft.

It is anticipated that after the mud system has been formulated it will be easy to maintain and the simplicity of the system makes it possible for someone with very little training to run it effectively.

C.R.A. EXPLORATION

POTASH DRILLING

LOST CIRCULATION

Lost circulation is always a problem in any coring operation, and the slim hole nature of this program makes the use of lost circulation materials very limited.

Several approaches may be made and are as follows in order of priority:-

A. Add MICA (Fine) to the circulating system. MICA is about the only lost circulation material which can successfully be used without plugging up the pump and the core-barrel. This approach has very good success particularly if seepage losses are across a porous sandstone section.

Each time the rods are pulled a slug of mud with a high concentration of MICA (50-60 lbs/100 gals) should be spotted across the thief zone so that the formation will not be broken down when running the rods back into the hole.

B. GUNK SQUEEZE

A gunk squeeze is a method of curing lost circulation by the expanding effect of bentonite when it hydrates. The objective is to keep the bentonite from hydrating until it reaches the zone of lost circulation.

Procedure

Pour half a bag of QUIK GEL into eight gallons of diesel and mix throughly. Pour two gallons of diesel down the rods (76 mm in this case), followed by the "gunk" squeeze, then a further two gallons of diesel. This isolates the "gunk" from water contact to ensure the squeeze does not expand in drill rods.

/Cont...

C.R.A. EXPLORATION

POTASH DRILLING

LOST CIRCULATION (Cont)

B. GUNK SQUEEZE/Procedure (Cont)

Calculate the time required to pump the "gunk" down the rods.

$$\text{Time} = \frac{\text{Rod volume (gallons)}}{\text{Pump output (gallons/minute)}}$$

(in second gear the pump should have an output of approximately 10 imperial gallons/minute).

The inner tube should have been pulled prior to pouring "gunk" down the rods. Have the rods sitting just off bottom and stationary. Pump the "gunk" down the rods until the pump pressure gauge registers an increase of pressure (indicating the "gunk" has reached the bottom", raise the rods clear of the squeeze and shut off the pump. Allow enough time for the squeeze to expand, approximately 10 minutes. Set the inner tube, restart the pump and wash, or rotate if necessary through the gunk squeeze . When the rods are on bottom, check mud returns. If no returns are apparent, re-run "gunk sqeeze". When returns are evident, recommence drilling. If mud returns cannot be regained after running two "gunk squeezes" the loss zone is most likely to be a large fracture and drilling blind would be necessary. Six to eight pounds of HYSEAL could be added to the "gunk" to assist in regaining returns.

There are definite advantages in using a "gunk squeeze" if successful:-

i. Saves time. The whole process takes only an hour at the most compared with using cement which takes about 10 hours to harden.

ii. Easily prepared and spotted, requires no extra supervision.

/Cont...

LOST CIRCULATION (Cont)

B. GUNK SQUEEZE/Procedure (Cont)

iii. Cheap - half a sack of QUIK GEL and diesel to required amount.

iv. With retained returns, mud costs are reduced.

v. Stabilises formation reducing cave when tripping, thereby reducing bit costs and lost time getting back on bottom.

C. CEMENT

When all else fails with lost circulation it may be necessary to use quick setting cement in order to try to plug off the thief zone.

The advantage of Quick Setting Cement is that it requires little setting time and does not hold up progress. We would recommend that QUIK SET 30 or QUIK SET 60 be used rather than using QUIK SET 15, which may set prematurely in the rod string. If losses are severe it may be necessary to mix HYSEAL into the cement in order to help seal off the loss zone.

C.R.A. EXPLORATION

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POTASH DRILLING

CEMENTING REQUIREMENTS

It will be the responsibility of the Baroid Mud Engineer on site to supervise the formulation and pumping of cement when casing is run and when the hole is abandoned.

On surface casing it is expected that normal Portland Construction Cement (Class A) will be used with 2% $CaCl_2$ being used as an accelerator. It will be the mud engineer's responsibility to weigh the mud and prepare the make up water with 2% $CaCl_2$. Slurry density is expected to be around 15.5 - 16.0 ppg, but this will be determined by discussions with the operator and the drilling contractor or drilling consultant.

In addition the mud engineer will advise drilling personnel on QUIK SET mixing procedures and supervise any other cementing requirements. Again we would emphasize the need for consultation with the operator, contractor and consultant so that the mud engineer has a clear idea of what is required.

C.R.A. EXPLORATION

POTASH DRILLING

COST ESTIMATES

It is assumed that the hole has been precollared to 500 metres and HW casing has been set at that point.

Volumes

500 - 800 metres HQWL hole

Casing Volume	-	4.5 m³ 29 bbls
Hole Volume	-	2.0 m³ 12 bbls
Surface Volume	-	6.0 m³ 38 bbls ≡ 212ft³
Daily Maintenance	-	15.0 m³ (8 days on hole)
TOTAL	-	27.5 m³

The above figure allows for a daily consumption of 1.875 m³/day which is realistic for this type of drilling.

Materials Consumption

500-800m ← 800m - 12oom
Daily ← Same

KCl (Coarse)	-	242 kg/m³	10 Sx
KCl (Fine)	-	40 kg/m³	2 Sx
HEC	-	2 kg/m³	4kg ≈ 1/5 Sx.
DEXTRID	-	6 kg/m³	1 Sx
CAUSTIC SODA	-	2 kg/m³	1/5 Sx

SODA ASH
BARADEFOAM
COAT 415
TORQ TRIM II if req.

/Cont...

C.R.A. EXPLORATION

POTASH DRILLING

COST ESTIMATES (Cont)

Estimated Materials Required

PRODUCT	UNIT	UNIT COST	QUANTITY	COST A$
KCl (Coarse)	50 kg	$12.47	133 sxs	$1,658.51
KCl (Fine)	50 kg	28.90	22 sxs	635.80
HEC	25 kg	197.00	3 sxs	591.00
DEXTRID	50 lb	51.50	8 sxs	412.00
CAUSTIC SODA	40 kg	34.50	2 sxs	69.00
		TOTAL COST FOR INTERVAL		$3,366.31

800 - 1,200 metres NQWL Hole

Additional hole volume required - 20 m^3
Daily maintenance - 17 m^3 (9 days on hole)

TOTAL - 19 m^3

The above figure allows for 1.88 m^3/day maintenance.

Materials Consumption

KCl (Coarse)	-	242 kg/m^3
KCl (Fine)	-	40 kg/m^3
HEC	-	2 kg/m^3
DEXTRID	-	6 kg/m^3
CAUSTIC	-	2 kg/m^3

/Cont...

C.R.A. EXPLORATION

POTASH DRILLING

COST ESTIMATES (Cont)

Estimated Materials Required

PRODUCT	UNIT	UNIT COST	QUANTITY	COST A$
KCl (Coarse)	50 kg	$12.47	92 sxs	$1,147.24
KCl (Fine)	50 kg	28.90	15 sxs	433.50
HEC	25 kg	197.00	2 sxs	394.00
DEXTRID	50 lb	51.50	5 sxs	257.50
CAUSTIC SODA	40 kg	34.50	1 sx	34.50
		TOTAL COST FOR INTERVAL		$2,266.74

Total Recommended Materials for one hole and Recommended Contingency items

PRODUCT	UNIT	UNIT COST	QUANTITY	COST A$
KCl (Coarse)	50 kg	$12.47	225 sxs	$2,805.75
KCl (Fine)	50 kg	28.90	37 sxs	1,069.30
HEC	25 kg	197.00	5 sxs	985.00
DEXTRID	50 lb	51.50	13 sxs	669.50
CAUSTIC	40 kg	34.50	3 sxs	103.50
BARADEFOAM	20 ltr	110.20	1 drm	110.20
MICA (Fine)	19 kg	14.31	10 sxs	143.10
HYSEAL	10 kg	13.64	5 sxs	68.20
		TOTAL ESTIMATED MATERIALS		$5.954.55

/Cont...

C.R.A. EXPLORATION

POTASH DRILLING

COST ESTIMATES (Cont)

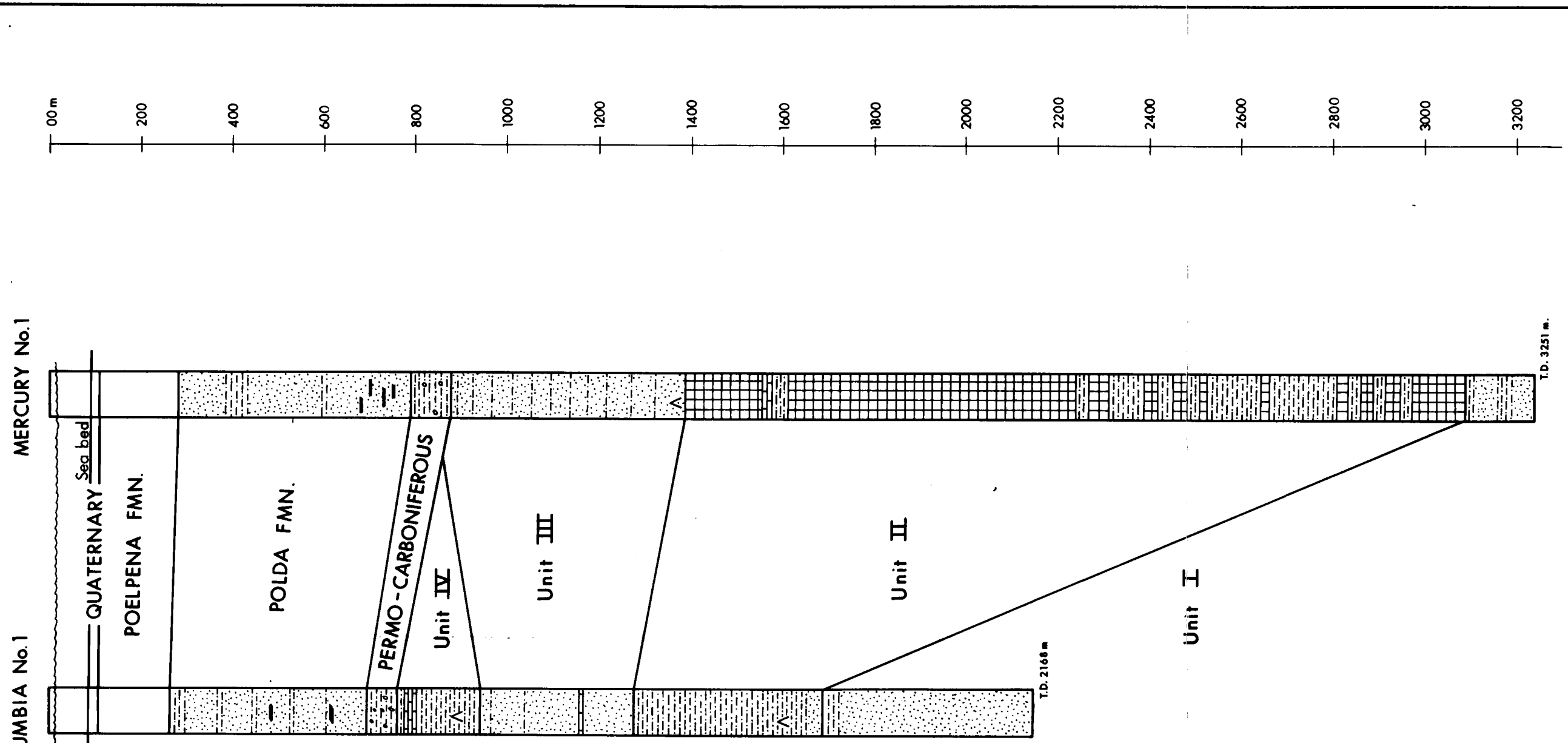
1. All costs are based on a trouble free hole with no allowance for lost circulation.

2. Prices are based on delivery ex Adelaide warehouse.

3. All products will be shrink wrapped and palletized.

4. All products returned in a re-usable condition will be credited in full.

5. All prices quoted will remain firm for the duration of the hole.

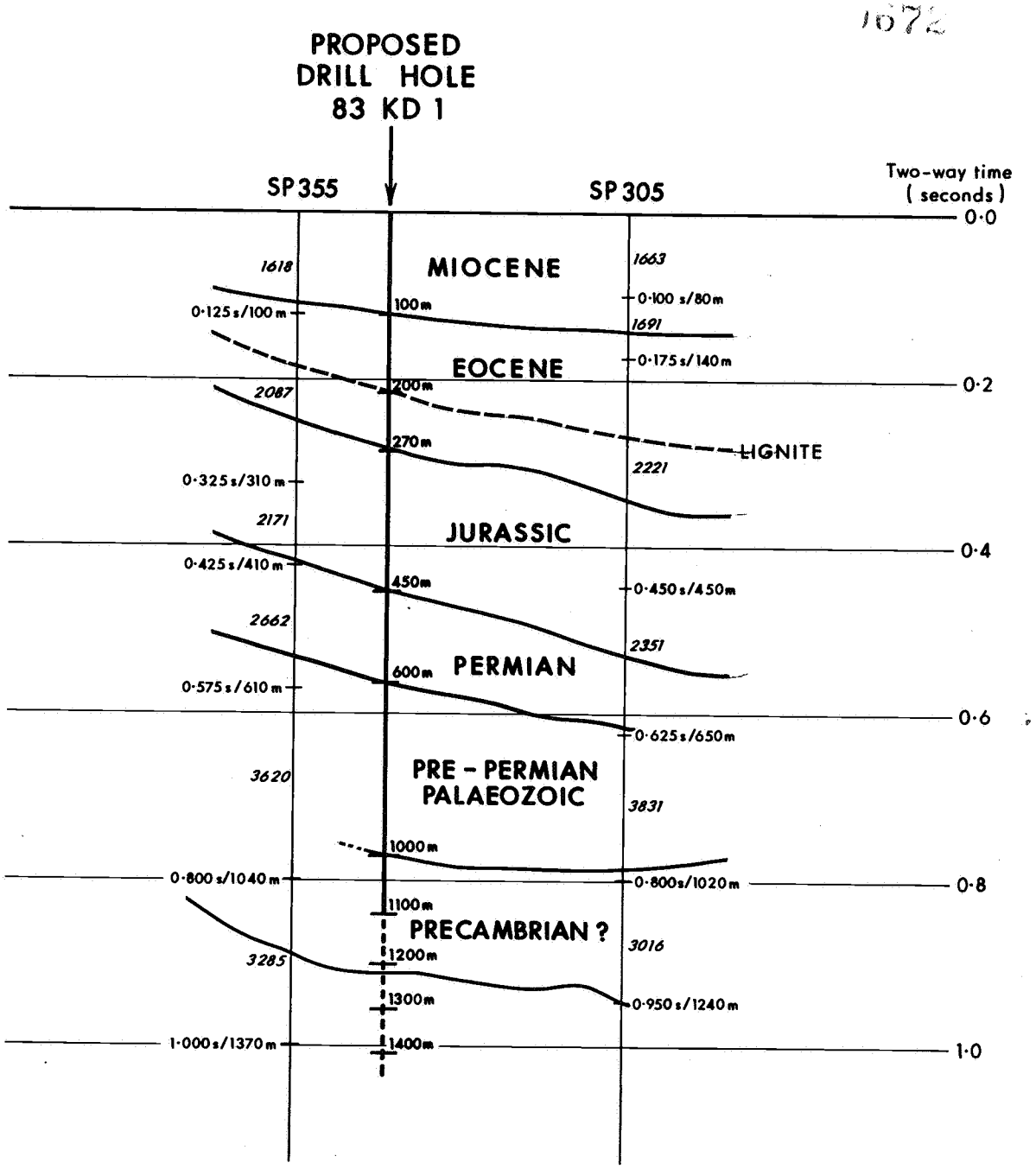


CRA EXPLORATION PTY LIMITED

POLDA BASIN — S.A.
AUSTRALIAN OCCIDENTAL OFFSHORE DRILL HOLES

REF	ELLISTON SI 53-6		
SCALE	1: 10000 (Vert.)		
AUTHOR	A.K.S.	REPORT	12527
DATE	Feb. 84.	PLAN No	SAa 2652

1672



Two-way time (sec.) / Calculated depth (m)

0·425s/410m

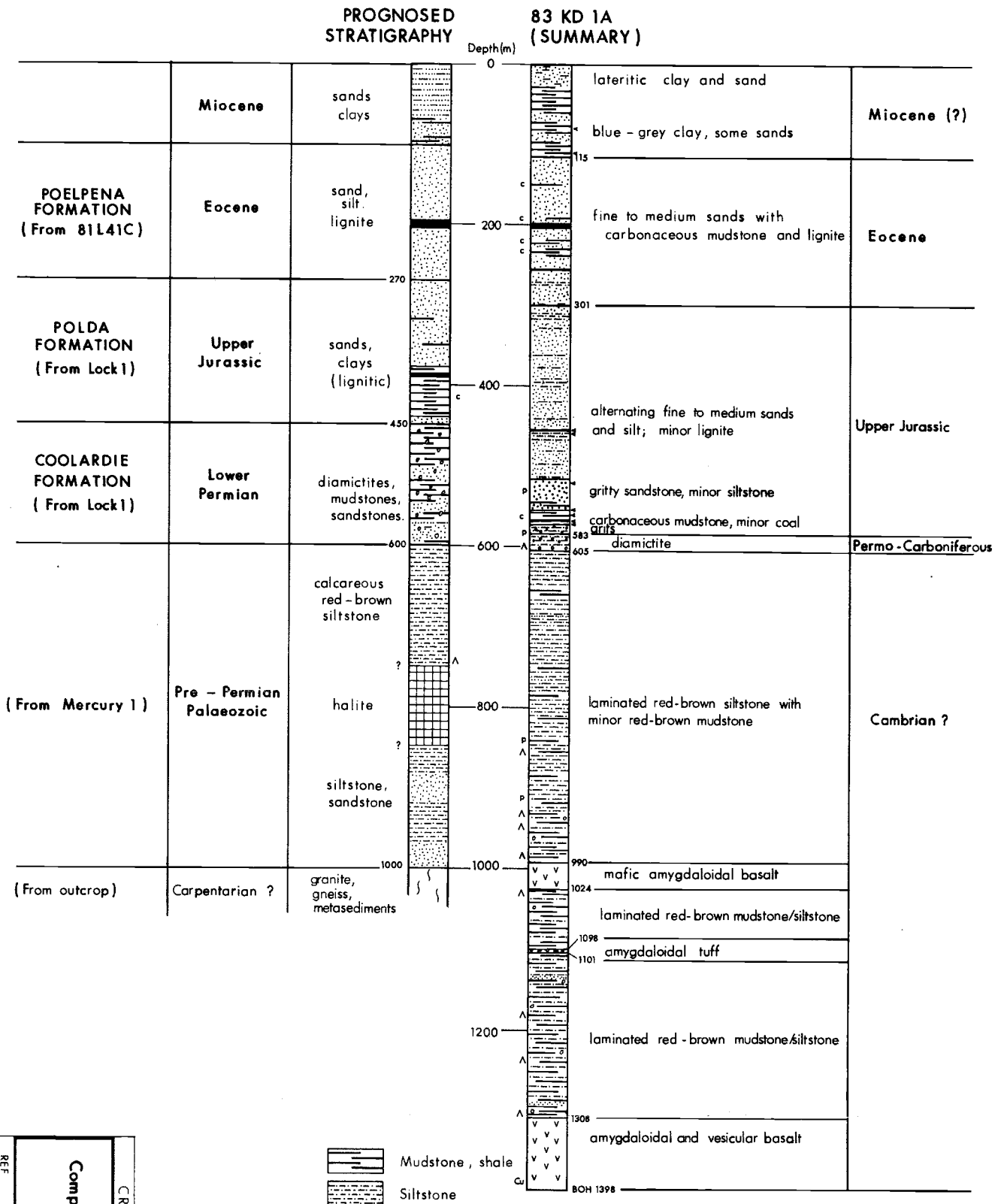
2662 Seismic velocity (m/sec)

0·575s/610m

CRA EXPLORATION PTY LIMITED

TUCKEY E.L.1054 — S.A.
Kilroo Seismic Section.
Depth Calculations for Proposed Drill Hole 83 KD1

REFERENCE	KIMBA SI 53-7		
SCALE	1 : 25000 (H)		
AUTHOR	A.K.S.	REPORT	12527
DATE	Nov. 83	PLAN No	SAa 2656



CRA EXPLORATION PTY LIMITED

TUCKEY EL.1054 – S.A.
Comparison between Prognosed and Actual Stratigraphy in 83 KD 1A

REF KIMBA SI 53-7
SCALE 1 : 5000
AUTHOR A. K. S.
DATE Feb. 84
REPORT 12673
PLAN No SA a 2657

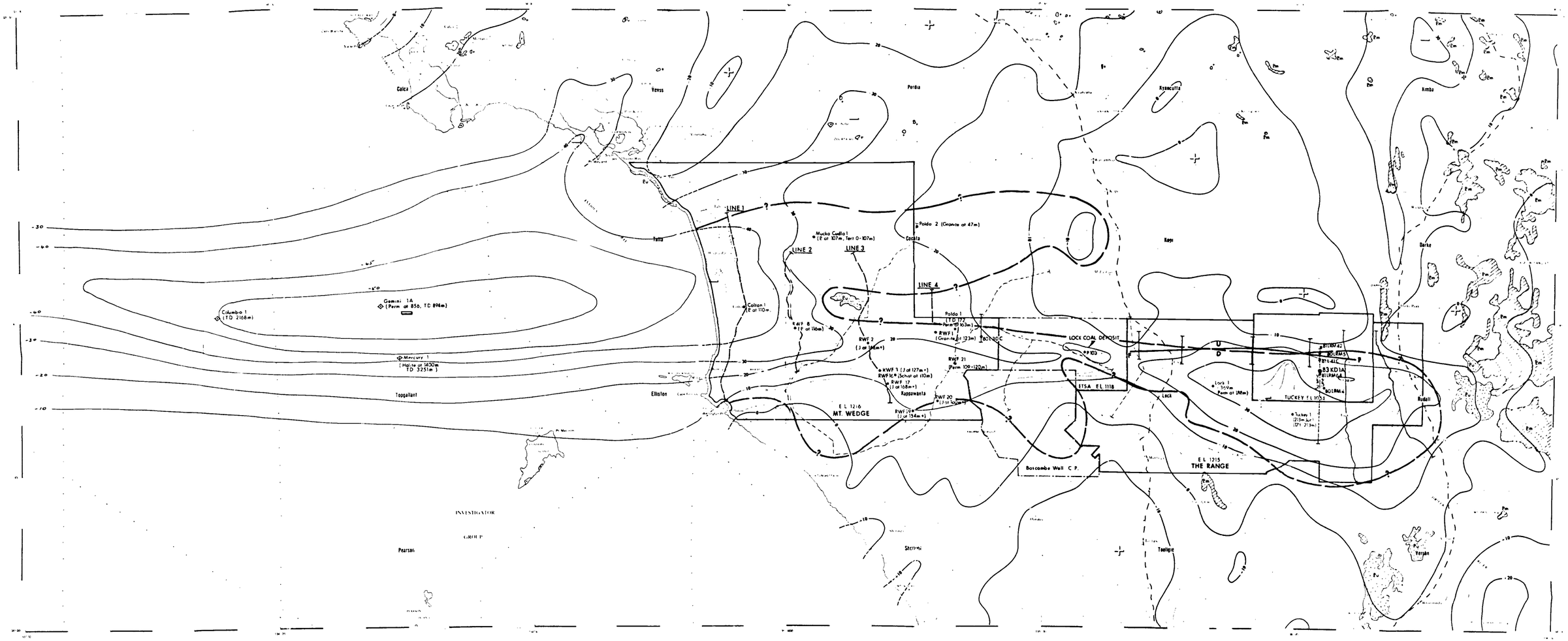
EL9

ELLISTON

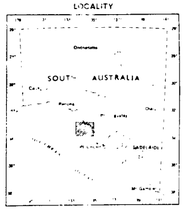
GEOLOGICAL SURVEY OF SOUTH AUSTRALIA
DEPARTMENT OF MINES ADELAIDE

KIMBA

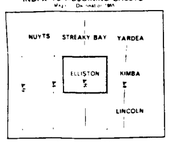
GEOLOGICAL SURVEY OF SOUTH AUSTRALIA
DEPARTMENT OF MINES ADELAIDE



LOCALITY



INDEX TO ADJOINING SHEETS



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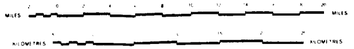
SCALE

1 : 250,000

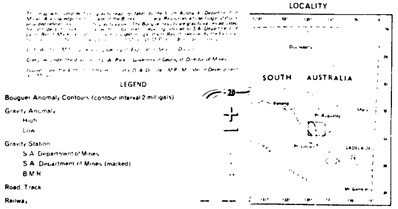


Published 1971

BOUGUER ANOMALY MAP

Density 2.67 gm/cm

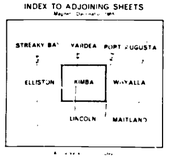
LOCALITY



LEGEND

Bouguer Anomaly Contours (contour interval 2 milligals)
Gravity Anomaly
High
Low
Gravity Station
S.A. Department of Mines
S.A. Department of Mines (masked)
B.M.R.
Road Track
Railway
Watercourse Place
Vermin Proof Fence

INDEX TO ADJOINING SHEETS



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KEY TO DRILLHOLES

Colton 1	SADME Stratigraphic holes
Mucka Cudla 1	
Polda 1	
Lock 1	
Tuckey 1	
al-RM 41	CRAE (report No 10307)
RWF 3	ESSO AUST LTD (SADME env 3783)
Gemini 1A	OUTBACK OIL NL
Mercury 1	AUSTRALIAN OCCIDENTAL P/L
Columbia 1	

Pu — CORUNNA CONGLOMERATE Arkosic sandstone, grit, conglomerate — ADELAIDEAN

Granite, gneiss — CARPENTARIAN

Pm — HUTCHISON GROUP Metasediments — CARPENTARIAN

U/D — Interpreted Fault

CRAE Gravity Traverse (1980)

SADME Seismic Traverse

Sea-level contour on Pre-Cambrian Surface

SADME Gravity Traverse (1978)

CRAE Gravity Traverse (1983)

3973-77

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Report No
Date Jan 1984
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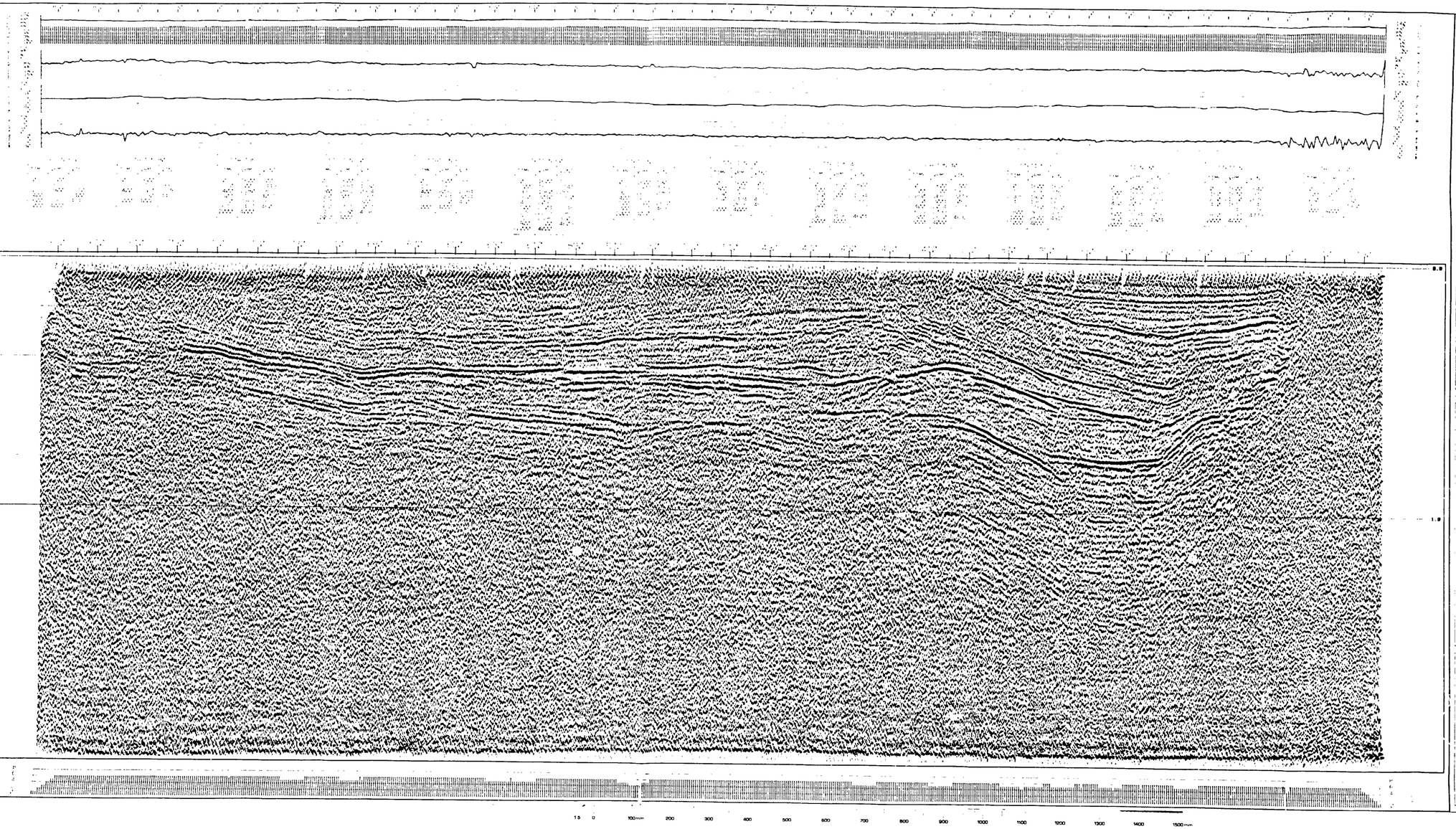
STAEDTLER MARS



SOUTH AUSTRALIAN
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TUCKEY E.L 1054 - KILROO SEISMIC SECTION Kimba SI 53-7 Report 1557 Plan No SAG..55

KIELPA

SOUTH AUSTRALIA

6130 — IV

1:50 000 TOPOGRAPHIC SERIES

FIRST EDITION

NC PC

PB - 83 - 001

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Konanda

Kielpa

Kaloo Corner

Wahroonga

Smeaton Park

Nankurn

Bungama

Tallaro

Burragan

Pandemonium

Tuckerosa

Tuckey

Bindiboo

Pandoon

Glenclova

Tullaringa

Rudallville

Pine Grove

Hillview

Valleys

Midway Park

Sandy Vale

Tenna Courts

Telephone Exchange

HINCKS CONSERVATION PARK

66°00'00" N

93°00'00" E

100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 945

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3 Estimate tenths from grid line to point — 8

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Before giving a grid reference another users should check the number and name of this map.

GN TN MN

Grid Convergence 0°37'

Grid Magnetic Angle 7°00'

The relationship between True North, Grid North and Magnetic North is shown diagramatically for the centre of this map. Magnetic bodkin is correct for 1975. Annual Change is 0' Easterly

SCALE 1:50 000

METRES 1000 0 1 2 3 4 5 KILOMETRES

CONTOUR INTERVAL 10 METRES

The representation of a road on this map is no evidence of the existence of a right of way

Built-up area — Parks, recreation areas

Road: sealed surface two or more lanes — National route marker

Road: sealed surface one lane

Road: unsealed surface two or more lanes — Bridge

Road: unsealed surface one lane — Gate — Cattle grid

Vehicular track

Railway: multiple track — Station — Siding

Railway: single track — Cutting — Embankment

Building — Post office — Police station — School

Hospital — Church — Mine — Windmill

Fence — Quarry

Power transmission line — Levee or bank

Survey beacon — Spot

Rock, bare or scrub — Reef

Lake: perennial — Watercourse

Lake: intermittent — Land subject to inundation

Lake: mainly dry — Land subject to occasional flooding

Dam or waterhole on watercourse — Tank or small dam

Contours — Depression contours

Sand — Sand ridges

Pine plantation — Orchard or vineyard

Woodbreak

Trees and scrub: scattered

Trees and scrub: medium, dense

Seismic Line

PB - 83 - 001 — Seismic Line Number

600 — Shot Point Number

WORLD GEODETIC SYSTEM

To convert World Geodetic System 1972 to Australian Geodetic Datum 1966 coordinates on which this map is based:

Decrease the numerical value of latitudes by 5.0" equivalent to 155 m

Decrease the numerical value of longitudes by 4.4" equivalent to 113 m

To obtain heights above mean sea level decrease satellite heights by 4 m

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PALKAGEE 6030-I	KIELPA 6130-IV	RUDALL 6030-I
NICHOLLS 6030-II	HINCKS 6130-III	VERRAN 6130-II

JWP — EJ

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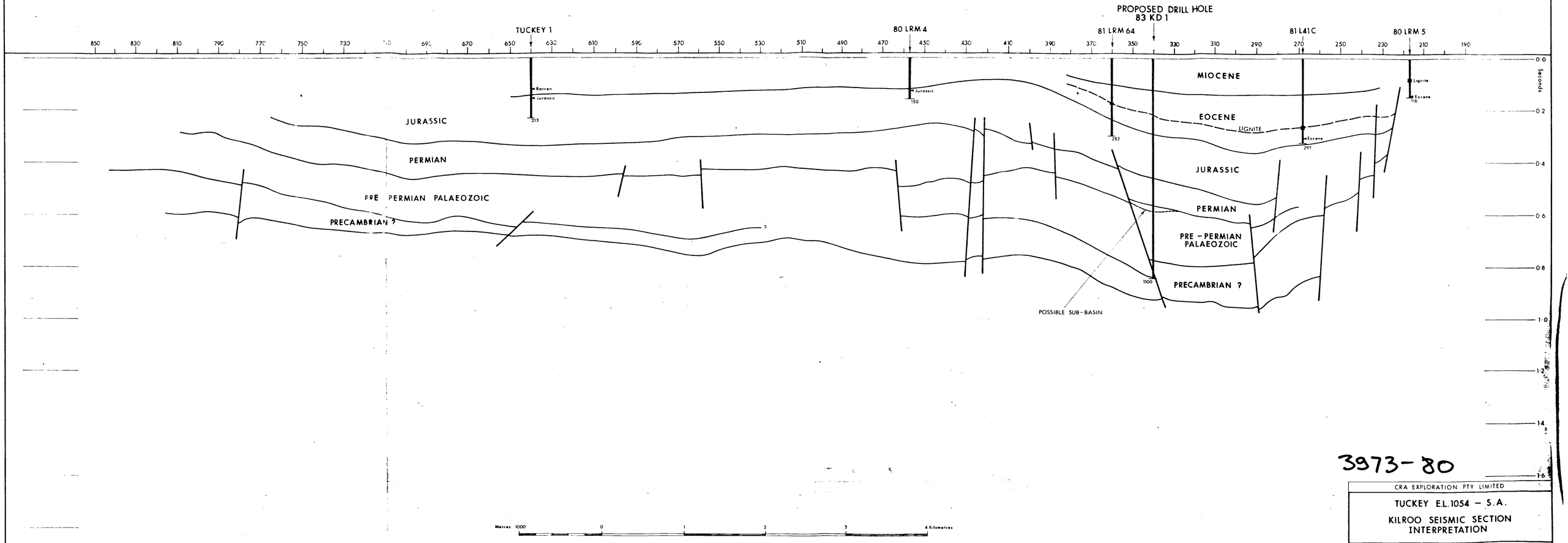
TUCKEY EL.1054 — S.A.

KILROO SEISMIC SECTION SHOT POINTS

3973—79

Ref :	KIMBA S1 53—7		
Scale	1 : 50000		
Author	A. K S	Report No.	12527
Date	Feb 84	Plan No.	SAa 2655

STAEDTLER | MARS



3973-80

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TUCKEY E.L.1054 – S.A.

KILROO SEISMIC SECTION INTERPRETATION

Ref	KIMBA SI 53-7		
Scale	1 : 25000		
Author	A K S	Report No	12527
Date	Feb 1984	Plan No	SAa 2654

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SIXTH QUARTERLY REPORT ON TUCKEY E.L. 1054, SOUTH AUSTRALIA, FOR THE PERIOD ENDING 18TH APRIL, 1984.

AUTHOR: A.K. SCOTT

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1. SUMMARY

? See P.3.

Following the abandonment of an earlier hole at 336 m, a new hole, cored from 596 m to total depth, was drilled to 1398 m in the eastern (or Kilroo) sub-basin of the Polda Trough. It intersected 301 m of Tertiary sands, clays and lignite, 282 m of Upper Jurassic sands, silts, grits and minor coal, 22 m of Permo-Carboniferous diamictite, and 793 m of argillaceous red beds and basalts of possible Cambrian age. No evaporitic sediments were intersected.

The (?)Cambrian palaeoenvironment deduced from the core is thought to have been a large flat depression in a landscape of low relief where periodic shallow inundation by fresh water caused reworking of near surface sediment. Deep crustal fractures allowed occasional outpouring of basalt over a wide area.

From comparisons with the stratigraphy in Polda offshore hole Mercury No. 1 and in the Officer Basin, it is thought that the stratigraphic position of evaporites in the Kilroo Sub-basin is below the basalt intersected at the bottom of 83KD1A, although there is no certainty that evaporites actually exist in the sub-basin at all.

2. RECOMMENDATIONS

The following recommendations are made.

1. Wait for the results of the SADME age dating of the basalts to see whether they are in fact of Cambrian age.

2. Consider the value of an east-west seismic line to determine the shape of the sub-basin with more confidence.

3. Ascertain the practicability and economics of solution mining of potash at depths below 1400 m.

3. INTRODUCTION

E.L. 1054 of 355 km² was granted on 19th October, 1982, and covers part of the Polda Basin on the Eyre Peninsula (see plan no. SAa 1932). It was obtained to search for potash in the pre-Permian sediments of the eastern (or Kilroo) sub-basin of the Polda Basin.

The previous quarterly report (CRAE report no. 12527) contains details of the stratigraphy and structure of the Polda Basin and in particular of the Kilroo sub-basin. It also gives details of an important SADME seismic profile and its interpretation. On the basis of the seismic section and a thick pre-Permian halite sequence intersected offshore, a hole was planned to penetrate to Carpentarian basement in the Kilroo area. The hole, which was also described in the previous report, was abandoned at 336 m.

A new hole, 83KD1A, was drilled to a depth of 1398 m at the same location. During drilling, a brief re-appraisal of the Kilroo seismic data was undertaken by a consultant. This report describes the seismic re-interpretation, the geology of the drillhole and the implications arising therefrom.

4. SEISMIC INTERPRETATION

A consultant geophysicist, Mr. A. Mitchell, briefly re-assessed the Kilroo seismic data in order to make an estimate of the depth to basement.

He selected a fair event at 1.01 sec (estimated depth 1360 m) which turned out to be the top of the lower volcanic unit at 1308 m.

Another event was picked at about 1.36 sec but this was much less definite, and the possibility was admitted that it may be a multiple. If the event is real, it was calculated that its depth might be between 1920 and 2190 m, or perhaps deeper.

5. DRILLING

Details of site selection, prognosed geology and planning were set out in the previous quarterly report. The location of the hole is shown on plan no. SAa 2361.

It was intended to drill the hole to Precambrian basement, but during drilling it became evident that this might be at least 2000 m deep. The drilling budget was unable to meet the cost of such a deep hole so it was stopped at 1398 m after penetrating 90 m of basalt. This was approx-imately 300 m deeper than originally planned.

5.1 Drilling Operations

83KD1A was collared approximately 7 m away from 83KD1 on 20th January and was drilled to 120 m where 150 mm OD steel casing was set and cemented. Rotary mud drilling continued to 456 m, where a 3 m HQ core was cut to 459 m, and then resumed to 515 m, at which depth diamond drilling in HQ size commenced. Hard diamictite was struck at 593 m and 100 mm ID steel casing was set and cemented at 596 m after logging and reaming.

HQ coring continued to 616 m where the bentonite/polymer mud system was changed to a saturated KCl/polymer mix. At 665 m, core size was reduced from HQ to NQ with the HQ rods left in the hole as casing. The hole was completed in NQ size with the KCl/polymer mud, although the KCl concentration was gradually reduced to about 50% of saturation around 1000 m and then further reduced towards the end of the hole. The HQ rods were then withdrawn and the hole again logged.

5.2 Sample Recovery

Samples were collected at 2 m intervals for the rotary drilled section of the hole from surface to 515 m. The sample collection arrangement was poor and almost no sample return was obtained from shale formations.

Core recovery averaged 60% from 515 to 589 m, most of the losses occurring in friable Jurassic grits. Below 589 m core recovery was virtually 100%.

5.3 Other Investigations

The hole was geophysically logged at 596 m and 1398 m, and chemical analyses, specific gravity determinations and petrographic examinations were made on selected samples of core. In addition, SADME made palynological and coal quality studies and also completed a well shoot and vertical seismic profiling at the completion of drilling. SADME also intends to carry out K-Ar dating on the basalts.

1080

5.4 Cost

The total cost of the drilling programme (including the abandoned hole) was about $212 000 which included supervision, overheads, analyses, logging, etc. The contractual drilling cost of 83KD1A was approximately $140 000 giving an overall cost per metre of $100.

6. GEOLOGY OF DRILL HOLE

6.1 Stratigraphy

83KD1A intersected 301 m of Tertiary, 282 m of Upper Jurassic and 22 m of Permo-Carboniferous sediments and 793 m of pre-Permian, possibly Cambrian, sediments and volcanics. The hole bottomed in basalt.

A summary log is given below and a summary graphic log together with the prognosed stratigraphy is shown in plan no. SAa 2657. A detailed composite borehole log is given on plan no. SAa 2805, and the detailed geological log is attached as Appendix V.

Summary Log, 83KD1A

Tertiary	0- 115	Clay, sand
	115- 301	Sand, lignite
Upper Jurassic	301- 583	Sand, carbonaceous mudstone, minor coal; grits at base
Permo-Carboniferous	583- 605	Diamictite
(?)Cambrian	605- 990	Laminated red-brown siltstone/mudstone
	990-1024	Altered amygdaloidal basalt
	1024-1098	Laminated red-brown mudstone/siltstone
	1098-1101	Amygdaloidal tuff
	1101-1308	Laminated red-brown mudstone/siltstone
	1308-1398	Altered amygdaloidal and vesicular basalt with minor copper mineralisation.

Detailed stratigraphy is described below. Much of the description of lithologies above 515 m is based on the geophysical logs, because of the poor sample recovery in this interval.

6.1.1 Tertiary

The Tertiary succession consists of two fairly distinct units. The upper one (0-115 m) is a sticky blue-grey clay with a few interbeds of fine rounded sand. Above the base of oxidation (56 m) the clays are lateritic and sandy. The age of this unit is not certain, but has tentatively been assigned to the Miocene by analogy with other holes in the basin, pending the outcome of the SADME palynological study.

The lower part of the Tertiary section (115-301 m approx.) consists of fine to medium, sub-angular to sub-rounded quartz sands, occasionally with a matrix of white clay, containing thin interbeds of coarse sands, clays, carbonaceous clays and lignite. The main lignite seam is 5.5 m thick at 199 m and correlates with the 15 m seam intersected at 222 m in an earlier CRAE drillhole (81L41C) 1700 m to the north, and with a 2 m intersection at 158 m in 81LRM64 500 m to the south. This unit is assumed to be equivalent to the Poelpena Formation of Eocene age.

The depth of the Tertiary/Jurassic boundary is somewhat conjectural but is based on the geophysical logs which show a distinct change from the mainly sandy Tertiary to a cyclic sand/silt sequence.

6.1.2 Jurassic

From 301 to 516.5 m, the Jurassic consists of many cycles of upwards-fining sand and silt, together with minor beds of carbonaceous mudstone and coal. The cycles, which vary in thickness from 10 to 20 m, have a fine to medium, occasionally coarse, base of sub-angular to rounded quartz sand grading into a silty top.

Several thin coal beds occur, the thickest of which is 1.5 m and lies at a depth of 456.8 m within a section of mudstone and carbonaceous mudstone. Analyses carried out by Amdel (for SADME) (see Appendix I) indicate that the coal is a sub-bituminous, high ash type, not unlike the coal in the deposit at Lock, 45 km to the west.

From 516.5 - 583.2 m, the Jurassic consists mainly of pyritic grits, gritty sandstones and siltstone except for a layer of mudstone, carbonaceous mudstone and minor coal from 555.4 - 573.3 m. The grits are poorly sorted, light grey and friable and contain angular to rounded grains varying in size from silt to pebbles. Lithologies are mainly clear quartz with some pale blue and milky quartz, and minor feldspar, ironstone, mica, diopsidic rock and gneiss. Framboidal pyrite is common.

The age of this unit is confirmed by palynology as Upper Jurassic, and it is therefore assigned to the Polda Formation.

6.1.3 Permo-Carboniferous

Two distinct Permo-Carboniferous lithotypes were intersected in 83KD1A. The upper one extends from 583.2-593.3 m and is a white, well sorted, very fine, thinly bedded kaolinitic sandstone containing occasional pebbles and bands of diamictite. Scouring of the sandstone is evident in places and pyrite framboids are common.

The lower lithotype, from 593.3-605.3 m, is a dark grey, hard, massive diamictite containing angular to rounded matrix-supported cobbles up to 6 cm across. The commonest cobble lithologies are pink (low biotite) granite and fine to medium white quartzite. Others are quartz-feldspar-biotite schist, gneissic granite, granodiorite, biotite quartzite, feldspar-biotite-garnet granofels, black siliceous slate, grey slate, quartz-feldspar-tourmaline schist, siltstone and sandstone. The bottom 0.3 m contains many clasts of red-brown siltstone.

These lithologies are very similar to Permo-Carboniferous diamictites of the Coolardie Formation intersected elsewhere in the Polda Basin.

6.1.4 (?)Cambrian

The (?)Cambrian consists of a monotonous sequence of laminated red-brown siltstone and shale with major intercalations of altered amygdaloidal basalt and tuff.

Petrographic exàminations were made of 12 samples of drill core, and these are attached in Appendix II.

From 605.3 to 990.4 m the red beds are mainly micaceous siltstone containing some thin bands of fine sandy siltstone and thicker zones of darker brown mudstone. Pyrite framboids and blue-grey reduction zones occur from place to place. Thin veins of anhydrite, generally sub-vertical, occur sporadically throughout the core. Shallow water sedimentary structures are common and include cross-bedding, scour and fill, flame structures, dewatering channels, intraformational brecciation and slumping, graded bedding, dessication cracks and ripple marks.

From 1023.8 to 1097.95 m, the laminated sequence contains more mudstone than siltstone. Below about 1050 m, cyclic graded bedding is common: each cycle is 1-3 cm thick, and has a silty base (often with a few granules of granitic material in a tiny scour channel) which grades upward into mudstone. Dessication cracks, scour and fill structures and flame structures are common. Anhydrite veins occur throughout the section, and are especially abundant in the top 4 m just beneath the basalt flow.

A dark grey amygdaloidal tuff occurs at 1097.95-1100.6 m. It has a sharp basal contact, and a gradual change at the top into banded red beds. It contains flattened amygdales of anhydrite and calcite.

From 1100.6 to 1308.45 m the cyclic graded bed sequence of red beds contains approximately equal quantities of mudstone and siltstone, although there is an increase in the thickness and frequency of conglomeratic beds. There are a few thin beds of fine sandstone. This interval again contains anhydrite veins and nodules, and many sedimentary structures.

The basalt intervals at 990.4-1023.8 m and 1308.45-1398.2 m contain vesicular, amygdaloidal and massive basalt flows. The basalt mainly consists of sericitised and albitised plagioclase, chloritised pyroxene and oxidised magnetite. Amygdales are filled by prehnite or chlorite, or their alteration clays.

The upper basalt interval appears to consist of one amygdaloidal flow, whereas the lower interval contains about 10 individual flows, each characterised by a vesicular purplish-brown top, a medium to coarse grained amygdaloidal centre, and a finer grained massive basal section. Their thickness varies from 0.5 m to 24 m. Native Cu occurs disseminated and in veins around 1380 m, and large hematite grains are common below 1388 m.

The red bed/basalt sequence is tentatively ascribed a Cambrian age by analogy with similar sequences in the Officer Basin. It is hoped that K-Ar age dating of the basalts to be carried out by SADME will provide a definite age for this sequence.

6.2 Mineralisation

No evaporitic minerals were intersected in the hole, except for the veins of anhydrite which occur sporadically throughout the red beds.

The 5.5 m thick lignite intersection at 199 m is part of a known seam that was drilled and evaluated by CRAE in 1981 (see CRAE report no. 10307). The Jurassic coal intersection at 456.8 m is thin and of very poor quality. Analyses are given in Appendix I.

Native copper was noted in basalt between 1378.4 and 1382.5 m as disseminations, joint coatings and vein fillings. Maximum assay was 0.4% Cu over the interval 1378-1379 m.

In order to check for any unsuspected occurrences of metals, five samples of the grits at the base of the Jurassic and four samples of diamictite were assayed for U and Au but all values were below detection limit (see log sheets in Appendix V). Also, four samples of red beds, one of tuff and six of basalt were analysed for Cu, Pb, Zn, Ni, Co, Ag, U and Au. These assays are also given on the log sheets in Appendix V. Furthermore, 26 samples of basalt were analysed for the above elements plus Bi, Cr, Ba, Ce, Nb, Rb, Sn, V, Sr, Y, Zr and Ti as part of a SADME project to characterise the basalts geographically and chronologically by comparison with similar data from other basalt suites elsewhere in the state. These trace element analyses appear in Appendix III.

Specific gravity determinations were carried out on 10 samples of red bed mudstone/siltstone and 10 samples of basalt. A table of results is given in Appendix IV. For the mudstone/siltstone sequence, there appears to be significant change in s.g. around 900 m, the average above that depth being 2.51 and below being 2.68. For basalt, the average s.g. of the vesicular variety is 2.66, the amygdaloidal type 2.86 and the fine grained dense parts 3.00. It is estimated that these three sub-types occur in the ratio 1:7:2 in the drill core, thus giving an average s.g. for basalt of 2.87.

6.3 Geophysical Logging

The hole was logged at 596 m and again at total depth by Geoscience Associates Pty. Ltd.

At 596 m, before casing was set, the following tools were run: caliper, natural gamma, neutron, 30 cm density, 80 cm density, sonic and drift. At total depth the HQ casing was removed so that the hole was uncased below 596 m. Logs run below 596 m were natural gamma, neutron, self potential and resistivity (0.4 m and 1.6 m normal and 1.8 m lateral) to a depth of 1384 m (due to shortage of cable) and caliper and long and short spaced density to 701 m (due to hole blockage). All of these, except 0.4 m normal and 1.8 m lateral resistivity, are shown on the composite borehole log (plan no. SAa 2805).

7. INTERPRETATION OF DRILLING RESULTS

7.1 Re-interpretation of Seismic Section

On the basis of the lithological and palynological data derived from 83KD1A, the Kilroo seismic traverse (plan no. SAa 2653) can be re-interpreted. The new interpretation is shown on a transparent overlay (plan no. SAa 2654) to the section.

The main changes to the pre-drilling interpretation are:
(a) the increase in thickness of the Jurassic section and consequent thinning of the Permo-Carboniferous, and
(b) the recognition that the upper volcanic intersection (990-1024 m) is represented by the interval between the two strong reflections at about 0.77 and 0.80 seconds.

The position of the lower volcanic unit (the top of which was at 1308 m) is not obvious from the profile, and the depth to Precambrian basement is still unknown.

7.2 Depositional Environments

7.2.1 Tertiary

The clays, sands and lignite of the Tertiary sequence were deposited in a variety of environments including a possible marine barred basin, and non-marine fluviatile and paludal environments.

7.2.2 Jurassic

The alternating silts and sands in the upper three-quarters of the Jurassic section in 83KD1A appear to have characteristics of flysch-type sedimentation.

Deep marine conditions would have prevailed, with periodic rapid influxes of detritus. The grits and clays at the base of the Jurassic suggest initial basin development, with occasional still-stands providing swampy conditions of limited areal extent.

7.2.3 Permo-Carboniferous

The fine grained laminated white sands in the top half of the sequence were probably deposited in a terminal glacial lake in which floating ice dumped pebbles and other detritus from time to time. The grey diamictite is a typical unsorted glacial deposit.

7.2.4 (?)Cambrian

The abundance of dessication cracks, fine scours and intraclasts of mudstone show that the red beds were deposited in very shallow water with frequent periods of emergence, whilst the absence of evaporite mineral casts strongly suggests that the water was non-marine. The depositional environment is envisaged as a large shallow inland lake in which intermittent inundation from both runoff and direct precipitation caused reworking of the upper few millimetres of sediment to produce a thin graded bed, followed by deposition of another few millimetres of fine detritus. After drying, the clayey surface layer cracked and was incorporated as intraclasts in the later overlying layer of sediment.

The basalts appear to have been extruded subaerially as evidenced by abundant vesicular, purplish-brown (oxidised) layers and lack of pillow structures. A flat topography is indicated by sub-horizontal layering in places and absence of brecciation on flow bottoms, whether they be basalt/basalt contacts or mudstone/basalt contacts. If the above two assumptions are correct, they imply that a large volume of lava spread over a fairly wide area, and this in turn suggests a deep seated source. The lack of brecciation and presence of tuffaceous sediments may also indicate considerable distance from the vent.

7.3 Geological History

A revised stratigraphic chart for the Polda Basin appears in Table 1.

Prior to (?)Cambrian sedimentation, the area must have had little topographic relief. A large inland depression then developed in which fine sediment (containing iron hydroxides?) was slowly deposited and then reworked during periods of intermittent inundation by fresh water. Although saline evaporite minerals were absent from the succession, gypsum must have been deposited in small amounts, to be subsequently altered by diagenesis to veins and nodules of anhydrite.

At various times during the (?)Cambrian deep fractures apparently tapped mantle magmas allowing extrusion of basalts over wide areas. Deuteric or later effects caused extensive alteration to the basalts and may have been accompanied by the introduction of native copper.

It is interesting to speculate whether these deep fractures were an early indication of an inherent weakness in this part of the earth's crust where the Polda Trough was later to form.

There is a large gap in the stratigraphic record until the Permo-Carboniferous when glacial activity was widespread, presumably on a terrain of high relief. The assumed uplift may have been the first significant event in the period of tectonic instability that culminated in the development of the later rift.

At the site of 83KD1A, the Permo-Carboniferous record of unsorted diamictites overlain by laminated lake sediments suggests the retreat of a glacier.

By the early Jurassic, isolated rift grabens such as the Polda and Robe-Penola Troughs had begun forming (Fraser and Tilbury, 1979). The chief structure in the Kilroo Sub-basin is the east-west fault marking its northern boundary. The seismic section (plan no. SAa 2653) suggests that the sub-basin is a half-graben. Continued faulting lead to the development of more extensive rift valleys parallel to the continental shelf, but the Polda was bypassed by this phase.

Initial sediment influx into the Polda rift valley consisted of a mixture of coarse and fine material of probable fluviatile origin together with the development of coal swamps in places. The bulk of Jurassic sedimentation, however, was a deep marine flysch facies of alternating silts, silty sands and sands, typical of rapidly filling deep troughs, although shallower facies were deposited locally.

Separation of the Australian and Antarctic plates was completed by the Eocene, at which time the Polda Trough was accumulating fluviatile and lacustrine sequences of sands, silts and lignite.

TABLE 1 STRATIGRAPHY OF THE POLDA BASIN

AGE			NAME	ROCK UNIT	MAXIMUM THICKNESS (metres)	LITHOLOGY	STRATIGRAPHIC RELATIONS	EXPRESSION
CAINOZOIC	QUATERNARY	Pleistocene		Bridgewater Formation	30 m	Sand, off-white, cemented calcareous, clay interbeds	Uppermost unit in sequence	Outcrops west of Lock and in cliffs Drill holes
		?		Undifferentiated	6-7 m	Clay, vari-coloured, calcareous	Underlies Bridgewater Formation	
	TERTIARY	Middle Miocene		Undifferentiated	70 m	Green to grey clay & carbonaceous clays. Grey poorly sorted coarse sand & carbonaceous sand	Relationships unknown. Correlated with Munno Para Clay.	Many holes in Polda Trough
		Middle Eocene		Poelpena Formation	Greater than 200 m	Grey, dark grey & brown coarse sand & lignite. Very carbonaceous	Unconformably on Jurassic. Overlain unconformably by ?Miocene or Quaternary	Many holes in Polda Trough - absent on southern edge. 81L41C cored hole.
MESOZOIC		Upper Jurassic		Polda Formation	500 m	Dark grey to black very carbonaceous fine sand, silt & lignite and very coarse grey sands	Unconformably on Permain & Precambrian. Unconformably overlain by Tertiary	Many drill holes in Polda Trough
PALAEOZOIC		Permo-Carboniferous		Coolardie Formation	Greater than 180 m	Pyritic diamictite & clay	Unconformably on Archaean & Proterozoic. Unconformably overlain by Jurassic	Polda No. 1 stratigraphic drill hole. Tuckey No. 1 stratigraphic drill hole. 80L30C & 83KD1A cored holes.
		Lower Cambrian			2200 m	Red shales & silt-stones, massive halite, amygdaloidal basalts	Lower contact not observed. Unconformably overlain by Permo-Carboniferous	Mercury No. 1, Columbia No. 1, 83KD1A.
PROTEROZOIC		Adelaidean		Corunna Conglomerate	Exceeds 200 m	Conglomerate, sandstone & shale	Unconformably on Lincoln Complex. Unconformably overlain by Permian, Jurassic & Tertiary	
		Carpentarian	Lincoln Complex			Granite, gneiss, migmatite, granulite, augen gneiss, quartzo-feldspathic gneiss. Synkimban Orogeny granites. Basic intrusives.	Overlain unconformably Corunna Conglomerate. Underlain by Hutchison Group	Southeast and northeast of Lock
		Nullaginian	Hutchison Group	Middleback Formation Warrow Quartzite		Metasiltstone, schist, iron formation, marble & quartzite	Overlain by Lincoln complex & underlain unconformably by Sleaford Complex	Outcrops southeast of Lock. May occur in drill holes
		Lower Proterozoic & Archaean	Sleaford Complex	Widbey Granite Kiana Granite	?	Granite, granite gneiss, schist, granulite metasediments, basic intrusives	Overlain unconformably by Hutchison Group	Outcrops north & south of Lock. May occur in drill holes

8. IMPLICATIONS FOR POTASH EXPLORATION

8.1 Regional Correlations

The pre-Permian red bed sequence intersected in 83KD1A appears very similar to the red beds in Mercury No. 1 between the Permian diamictites and massive halite, and also to the Trainor Hill Sandstone of the Officer Basin as found in the Marla area (e.g. in Byilkaoora No. 1) (Benbow and Pitt, 1979).

Further, the basalts in 83KD1A are almost identical to descriptions of basalts from the Kulyong Volcanics of the Officer Basin. The Kulyong Volcanics are generally believed to lie approximately at the boundary between the Observatory Hill Beds and the overlying Trainor Hill Sandstone.

Thus, if the halite in Mercury No. 1 is assumed to be equivalent to the evaporites and carbonates of the Observatory Hill Beds, then the following regional correlation can be made.

Polda Basin		Officer Basin
Mercury No. 1	83KD1A	
Red Beds	Red Beds	Red Beds (Trainor Hill Sst)
	Basalt	Basalt (Kulyong Volcanics)
Evaporites	?	Evaporites (Observatory Hill Beds)

If these correlations are correct (and there is a large amount of supposition about them at the present time) then it is clear that 83KD1A was not drilled deep enough to determine whether the evaporite sequence is present or not beneath the basalt in the Kilroo Sub-basin.

8.2 Potash Potential

The stratigraphy of the Kilroo Sub-basin below 1400 m at the site of 83KD1A is not known. Two suggestions arising from a study of the seismic section are that the basalt may continue to the bottom of the basin at about 2300 m, or that Corunna Conglomerate may lie beneath the basalt with

basement occurring somewhere between 1900 and 2200 m. Both of these suggestions are very tentative.

From the seismic section and from regional gravity, it is believed that 83KD1A was drilled in, or close to, the deepest part of the sub-basin, and therefore in the most favourable location for intersecting evaporites if they exist. Although the same stratigraphy is likely to be shallower in areas around the margin of the sub-basin, these areas are unlikely to be favourable for evaporite accumulation. Furthermore, a compilation of the SADME Kilroo seismic data and a 1976 SADME seismic traverse from Lock to Tuckey (McInerney, 1977) suggests that the pre-Permian stratigraphy rises about 400 m from Kilroo to Lock, but this still leaves the top of any evaporite sequence beneath the basalt at a depth no shallower than about 1000 m (see plan no. SAa 2812).

Although the quality of the 1976 seismic data is not good, and the interpretation was based on very limited drillhole information, there does seem to be some thinning of the pre-Permian sequence westwards towards a possible basement ridge in the Lock area (suggested by the regional gravity). If this is so, it would indicate that the ridge was a topographic feature during pre-Permian sedimentation, thus confirming that the geographic centre of the sub-basin was also the depocentre and likely site for evaporite accumulation.

9. CONCLUSION

Although there is no proof of age relationships yet available for the pre-Permian stratigraphy intersected in 83KD1A, there is reasonable circumstantial evidence to suggest that the stratigraphic position of an evaporite sequence in the Kilroo Sub-basin is beneath the basalt at the bottom of the hole. However, this is not to say that evaporites do exist in this sub-basin: they could be replaced by a thick sequence of basalt, Corunna Conglomerate or some other (unknown) unit.

If evaporites do exist, they are most likely to occur in the vicinity of 83KD1A and will be at a depth greater than 1400 m. They are unlikely to occur at shallower depths closer to the basin margins.

A.K. SCOTT

AKS/pw

EXPENDITURE

Expenditure for the period ended 30th April, 1984, the nearest accounting period was $160 073.00, as listed below.

	$
Drilling	123 696
Payroll	16 930
Supplies	2 807
Vehicle	3 486
Travel	2 162
Property	575
Contractors	3 213
Overheads	7 204
Total	$160 073

REFERENCES

Benbow, M.C. and Pitt, G.M., 1979.

Byilkaoora No. 1 Well Completion Report.
SADME Rept. Bk. No. 79/115.

Fraser, A.R. and Tilbury, L.A., 1979.

Structure and Stratigraphy of the Ceduna Terrace Region, Great Australian Bight Basin.
APEA Jour. Vol. 19, Pt. 1.

McInerney, P.M., 1977.

Seismic Refraction Investigations in the Polda Basin.
SADME Rept. Bk. No. 77/74.

LOCATION

Kimba SI 53-7 1:250 000

KEYWORDS

Coal, Potash, Basin, Drill-rotary, Geophys-seismic, Drill-diamond.

LIST OF PLANS

Plan No.	Title	Scale
SAa 1932	Tuckey E.L. 1054 Location Map	1:250 000
SAa 2361	Tuckey E.L. 1054 Polda Basin - S.A. Geology, Geophysics and Drillholes	1:250 000
SAa 2657	Tuckey E.L. 1054 Comparison between Prognosed and Actual Stratigraphy in 83KD1A	1: 5 000
SAa 2653	Tuckey E.L. 1054 Kilroo Seismic Section	1: 25 000
SAa 2654	Tuckey E.L. 1054 Kilroo Seismic Section. Interpretation	1: 25 000
SAa 2812	Tuckey E.L. 1054 Seismic Interpretation from Lock to Kilroo	1:250 000
SAa 2805	Tuckey E.L. 1054 Composite Borehole Log 83KD1A.	1: 500

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Table 1 Stratigraphy Of The Polda Basin

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I Coal Analyses
II Petrographic Examinations
III Drillcore Analyses
IV Specific Gravity Determinations
V Detailed Geological Log of 83KD1A

APPENDIX I

COAL ANALYSES

The Australian
Mineral Development
Laboratories

Flemington Street, Frewville,
South Australia 5063
Phone Adelaide 79 1662
Telex AA 82520

Please address all
correspondence to
P.O. Box 114 Eastwood
SA 5063
In reply quote:

amdel

1698
83 KD 1A

13 March 1984

F1/16/0
6472/84

Department of Mines & Energy S.A,
PO Box 151,
EASTWOOD SA 5063

Attention: George Kwitko

REPORT F6472/84

CLIENT REFERENCE:	EX-135, 12/06/234
TITLE:	Coal quality and rank of seven coal samples from CRA KD-1A
SAMPLE IDENTIFICATION:	Samples 1-7
MATERIAL:	Coal
LOCALITY:	CRA KD-1A; Polda Basin
DATE RECEIVED:	23 February 1984
WORK REQUIRED:	Proximate analyses, ultimate analyses, specific energy and vitrinite reflectance

Investigation and Report by: Brian L. Watson

Chief - Fuels Section: Dr Brian G. Steveson

Manager, Mineral and Materials Sciences Division: Dr William G. Spence

Brian J Hickman.

for Brian S. Hickman
Managing Director

cah

Head Office:
Flemington Street, Frewville
South Australia 5063,
Telephone (08) 79 1662
Telex: Amdel AA82520
Pilot Plant:
Osman Place
Thebarton, S.A.
Telephone (08) 43 8053
Branch Laboratories:
Melbourne, Vic.
Telephone (03) 645 3093
Perth, W.A.
Telephone (09) 325 7311
Townsville
Queensland 4814
Telephone (077) 75 1377

TABLE 1: PROXIMATE ANALYSES

	Sample No.	Depth (m)	Moisture (%)	Volatile matter (%)	Fixed carbon (%)	Ash (%)
Jurassic	1	456.80-457.09	15.0	29.8	19.3	35.9
	2	457.09-457.30	7.1	22.3	8.4	62.2
	3	457.30-457.60	12.1	28.2	16.1	43.6
	4	457.60-458.01	11.8	29.2	15.9	43.1
	5	458.01-458.20	7.6	25.0	8.3	59.1
	6	458.20-458.40	12.9	30.6	16.2	40.3
Permo-Carboniferous	7	568.20-568.60	21.5	27.1	24.3	27.1
	3&4*	457.30-458.01	11.4	-	-	-

* composited on an equal weight, as received basis

TABLE 2: ULTIMATE ANALYSES AND SPECIFIC ENERGY

Sample No	Depth (m)	C (%)	H (%)	S (%)	Cl (%)	Na (%)	Gross Specific Energy (MJ/kg)
3&4*	457.30-458.01	28.9	3.00	0.23	0.71	0.76	11.64
7	568.20-568.60	35.0	2.88	1.38	0.96	0.99	13.92

*Composited on an equal weight, as received basis

TABLE 3: VITRINITE REFLECTANCE MEASUREMENTS

Sample No	Depth (m)	Mean Maximum Reflectance (%)	Standard Deviation	Range	Number of Determinations
3&4*	457.30-458.01	0.26	0.03	0.21-0.35	42
7	568.20-568.60	0.29	0.04	0.21-0.36	41

*Composited on an equal weight, as received basis

APPENDIX II

PETROGRAPHIC EXAMINATIONS

V

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Pontifex & Associates Pty. Ltd.

TEL. 332 6744
A.H. 31 3816

26 KENSINGTON ROAD, ROSE PARK
SOUTH AUSTRALIA

P.O. BOX 91, NORWOOD
SOUTH AUSTRALIA 5067

MINERALOGICAL REPORT NO. 4266

27th March, 1984

TO: Mr. David Andrews
Mr. Tony Scott,
CRA Exploration Pty. Ltd.,
PO Box 254
NORWOOD SA 5067

COPY TO: The Administrator,
CRA Exploration Pty. Ltd.,
PO Box 254
NORWOOD S.A 5067

The Manager,
Information Services
CRA Exploration Pty. Ltd.,
PO Box 656
FYSHWICK ACT 2069

YOUR REFERENCE: Order No. B0859

MATERIAL: Drill core

IDENTIFICATION: 1158223
1158224
1158225

WORK REQUESTED: Thin section, petrographic description

SAMPLES & SECTIONS: Returned to you with this report.

PONTIFEX & ASSOCIATES PTY. LTD.

1706

1158223 : strongly vesicular basalt;
vesicules filled by chlorite, sericitic clays
Depth and prehnite;
992.4 m rock also albitised and oxidised.

This core represents a relatively coarse basalt, gradational in texture to (subophitic) fine dolerite; it contains abundant vesicles (7 to 10% of the rock).

Albitised plagioclase laths 0.2 - 0.7 mm in length, are interlocked with vague common orientation to form the essential rock-forming aggregate, which contains scattered subophitic pyroxene grains (10 - 12%) about 0.3 mm in size, also small oxidised magnetite grains.

Vesicles have a random size to 10 mm in diameter. They are slightly irregular in shape, rimmed by chlorite, with in some vesicles a more sericitic clay interleaved with the chlorite. In-fillings of fibrous (rather than platy) prehnite occur in the larger vesicles, but appear to be partly to completely altered to a nearly isotropic brownish clay. There is a generalised parallelism of some of the more elongate vesicles (?flow orientation).

1158224 : coarse grained vesicular basalt (gradational to micro-dolerite); abundant, highly irregular vesicles,
Depth more or less interstitial, filled by chlorite ±
1007.6 m trace prehnite.

This rock is broadly similar to 1158223, but is coarser crystalline. The essential aggregate of plagioclase laths, 0.2 to 1.2 mm. long, are relatively more randomly interlocked, and clouded by clay alteration, as well as albitised, and partly altered to fine prehnite. Pyroxene crystals (15%) to 1 mm, are scattered with a subophitic textural relationship. These are altered to chlorite with hematite on fractures, and grain boundaries. Opaque oxide grains are disseminated.

Vesicles in this rock are highly irregular, and more or less interstitial, with their margins defined by projecting plagioclase crystal faces. They are up to 4 mm in length and are filled by chlorite with very rare interleaved ?prehnite.

1148225 : altered olivine-bearing basalt;
abundant vesicles filled with chloritic clays.

Depth
1022.8 m

This is a finer-grained basalt than 1158223 - 4, with smaller (0.2 to 0.8 mm), random felspar laths forming an aggregate studded with abundant pyroxene crystals 0.2 mm in size. The plagioclase is altered to albite and very fine sericite; the pyroxene is altered to chloritic-clays.

Clay-limonite pseudomorphs after olivine crystals (3 - 5%). Disseminated Fe $\pm$ Ti oxides are oxidised and very fine grained.

Irregular vesicles 0.5 - 5 mm in length have a vaguely layered distribution with the elongate vesicles showing a common (?flow) orientation, (although the felspar laths are not oriented). Fibrous yellow chloritic clays fill the vesicles with fractures filled by ?saponite.

Pontifex & Associates Pty. Ltd.

TEL. 332 6744
A.H. 31 3816

26 KENSINGTON ROAD, ROSE PARK
SOUTH AUSTRALIA

P.O. BOX 91, NORWOOD
SOUTH AUSTRALIA 5067

MINERALOGICAL REPORT NO. 4270

5th April, 1984

TO: Mr. A.K. Scott,
CRA Exploration Pty. Ltd.,
PO Box 254
NORWOOD S.A. 5067

COPY TO: The Administrator,
CRA Exploration Pty. Ltd.,
PO Box 254
NORWOOD S.A 5067

The Manager,
Information Services,
CRA Exploration Ltd.,
PO Box 656
FYSHWICK ACT 2069

YOUR REFERENCE: Order No. B0619
A/C No. 4479

MATERIAL: Drill core samples

IDENTIFICATION: 1159017 to 1159025

WORK REQUESTED: Thin section preparation, petrographic description with comments as specified.

SAMPLES & SECTIONS: Returned to you with this report.

PONTIFEX & ASSOCIATES PTY. LTD.

1705

COMMENTS

The core samples in this batch represent three essential lithologies.

1. Samples 1159017, 1159021, 1159023, 1159024, all represent a fine, commonly graded, thin bedded, sandstone-siltstone-claystone facies, dominated by detrital quartz-muscovite and microcline but including minor to abundant authigenic anhydrite, quartz and carbonate. These sequences may result from the repeated flooding of an ancient playa lake backswamp, or saline flood plain environment. The detritus is derived mainly from fine grained, micaceous metasediments. There is no tuffaceous component in any of these rocks.

2. Samples 1159018, 19, 20 and 25, are amygdaloidal basalts, with vesicles filled variously by chlorite, interlayered chlorite and sericite, carbonate, and prehnite, rarely with traces of pumpellyite and anhydrite. This assemblage indicates temperatures in the range 150 - 300^{o}C, depending on pressure. One of these (1159020), was an olivine basalt, with the olivine now replaced by hematite and chlorite.

3. Samples 1159022 is a volcaniclastic fine sandstone with some admixed clastic detritus from facies (1), above, and small vesicle-shaped concretions mostly of anhydrite, but with less abundant carbonate, quartz and albite.

Objectively, based only on the petrography, the depositional environment of this sequence may be interpreted as one of broad mature streams, possibly ephemeral type, crossing a system of playa lakes or saline flood plains, with sporadic intercalated basaltic flows. Most of the sediments are derived from a metamorphic area of probably low-grade metasediments(quartz-biotite-muscovite $\pm$ chlorite $\pm$ microcline), but with sparse shallow-water carbonate

.../. 2

The volcaniclastic sediment 1159022 is probably an epiclastic facies, distal from the then main centre of volcanism.

Saline groundwaters were conceivably responsible for the deposition of sulphate, quartz/chalcedony, and some carbonate in the sediments, although the sulphate may be primary of evaporite genesis.

Burial metamorphism with temperatures of 150^{o}C plus, has then caused the formation of the anhydrite as now seen, also of some calcite and quartz in the sedimentary facies. The chlorite, and the prehnite $\pm$ pumpellyite $\pm$ chlorite $\pm$ calcite $\pm$ anhydrite assemblages in the basalts, have also most likely formed by percolating groundwaters rich in dissolved salts, becoming localised in voids, and interstitial areas, and finally crystallising the minerals during burial metamorphism.

**

1159017 : limonitic, micaceous and felspathic, fine quartz sandstone, with siltstone lenses and minor authigenic carbonate

Depth
613.7 m

This is a thin bedded micaceous sandstone, with a bedding foliation defined by strongly oriented flakes of detrital white mica (7 - 10% of the whole rock). Detrital grains of quartz and microcline in subequal proportions form the bulk of the rock, with a grain size of 0.1 to 0.2 mm. LImonite is common on grain boundaries.

Lenses of siltstone up to 2 mm thick occur in some parts of the sandstone. These are parallel to the bedding and have variously, sharp or diffuse contacts with the sandstone. They are richer in mica and limonite than the sand. Most of the siltstone bodies appear to be lenses but some appear to be fragments (intraclasts).

Authigenic carbonate (5 - 7%) occurs as patches about 1 mm in size, composed of one or two grains.

Accessory minerals include oxidised opaque grains and chlorite after biotite. There is no obvious volcanic detritus.

1159018 : coarse crystalline basalt or dolerite, with interstitial areas filled by chlorite, lesser clouded clinozoisite; also accessory prehnite and trace pumpellyite

Depth 1370.9 m

At least 50% of this rock consists of randomly and intimately interlocked laths of albitised, weakly chloritised and sericitised, plagioclase laths 0.5 - 2 mm in length, and about 30% consists of granular to subophitic clinopyroxene.

Opaque oxides (10%) are disseminated, and irregular, amoeboidal to skeletal intersticies between plagioclase laths are mostly occupied by extremely fine fibrous chlorite of apparent deuteric origin. Clouded clinozoisite/epidote occurs in some of these interstitial areas with very minor prehnite and traces of pale green pumpellyite. Rare replacement of plagioclase by prehnite occurs in some areas.

1159019 : limonitised-glassy and vesicular basalt, vesicles filled by fibrous prehnite and trace pumpellyite

Depth
1384.6 m

The bulk of this rock consists of a densely limonitised glassy groundmass crowded with random very small felspar crystals (35%), and euhedral to skeletal clinopyroxene crystals (15%).

Numerous vesicles up to 8 mm in mean diameter, are lined by chlorite and filled by fibrous (rather than platy) prehnite. Small rosettes of pale green pumpellyite occur on the walls of some of the vesicles.

1159020 : vesicular olivine basalt, intersticies and vesicles filled by prehnite, calcite, chlorite and rare anhydrite; fine hematite-chlorite pseudomorphs after olivine (reddish metallic mineral)

Depth
1390.0 m

Field note : identify the reddish metallic mineral

About 40% of this rock consists of random, albitised plagioclase laths 0.2 - 2 mm long, aggregated with granular to subophitic pyroxene crystals (30%), and hematite-chlorite pseudomorphs after olivine crystals (7%).

The reddish material mentioned in your field note is probably the hematite in these pseudomorphs, although accessory disseminated magnetite is also hematised (oxidised).

Numerous irregular intersticies, mostly between plagioclase laths are filled by various mixtures of fine fibrous chlorite, rarer calcite, and prehnite, with rare calcite-anhydrite pseudomorphs of thin platy crystals (?gypsum).

Vesicles which are really enlarged intersticies, are filled mainly by fibrous prehnite and carbonate.

1159021 : micaceous-felspathic-limonitic siltstone grading into limonitic mudstone; minor, scattered small reduction spots, including a thick conformable vein or recrystallised bed of anhydrite

Depth
1025.0 m

Field note : identify the whitish translucent mineral

This sample has weakly graded beds of a finer clastic (more distal?) facies than that represented by samples 1159017 and 1159024.

Basically it consists of thin beds (0.2 to 1 mm) with silty bases grading into thicker limonitic mudstone, which may have originally been sideritic (?flood-plain/backswamp deposits). Muscovite, quartz and microcline are the main detrital minerals, with minor chlorite, possibly after biotite.

Relatively thicker siltstones(15 mm thick) occur at the top and bottom of the core sample. One of these thick siltstones is separated from the apparently overlying mudstone by a thick conformable vein (?? or recrystallised bed) of blocky anhydrite, which sends a thin irregular offshoot cutting across the whole siltstone-mudstone sequence. This anhydrite is presumably the "whitish translucent mineral" mentioned in your field notes.

1159022 : mixed volcaniclastic, and clastic-micaceous-felspathic siltstone to very fine sandstone; minor small ovoid nodules variously of anhydrite, calcite, lesser albite and quartz

Depth
1099.3 m

This rock is a very fine grained epiclastic sediment, despite its remarkable similarity in hand specimen to a vesicular basalt.

The main detrital component is variously chloritised, silicified and/or limonitised glassy volcanic fragments (but not shards), with minor quartz, plagioclase, microcline and white mica. The grain size is 0.03 - 0.1 mm - i.e. silt to very fine sand size.

The mica tends to be more altered (expanded across the cleavage and ?kaolinised) than in the sediments with no volcanic components. Rare larger limonitised clasts to 1.5 mm long are present.

Authigenic concretions form about 10% of the rock; they are 0.2 to 2 mm in maximum diameter, with a circular to elliptical shape and filled mainly by granular to bladed anhydrite and granular calcite. Minor quartz and albite occur in some of them, and rare detrital grains occur in some.

1159023 : disrupted, carbonate-rich, micaceous-felspathic-limonitic sandstone, siltstone and mudstone, with authigenic carbonate, anhydrite, quartz and rare adularia

Depth
1181.9 m

This sample represents a graded sandstone-siltstone-mudstone sequence, with disrupted sandstone layers, overlying a predominantly muddy unit incorporating abundant authigenic anhydrite, quartz and carbonate. The graded sequence is right way up, in relation to the "up" arrow on the sample.

This graded sequence occupied 15 mm of the thin section and has units 2 - 7 mm thick, with fine detrital muscovite, quartz, microcline, varying rapidly within each unit from a size of 0.2 mm (fine sand) to <0.1 mm (mud, fine silt).

The matrix is rich in carbonate, including scattered patches of authigenic carbonate, and scattered small blades of authigenic anhydrite. Large lenses of quartz (with some chalcedony in a spherulitic pattern) and anhydrite occur in sandy parts of the two uppermost, thickest units. Minor authigenic adularia occurs locally.

The disrupted mudstone unit has lenses and shreds of micaceous-limonitic mudstone 0.2 - 10 mm in length, in a clear matrix dominated by granular to bladed anhydrite with minor carbonate and granular to radiating quartz and/or chalcedony. The mudstone contains minor detrital muscovite, quartz and microcline silt.

1159024 :

Depth
1183.6 m

sequence of graded, quartz-muscovite-microcline, very fine sandstone-siltstone-claystone units, including greenish claystones, and accessory carbonates;
minor authigenic anhydrite

Field note : do the greenish bands contain tuffaceous material?

This sedimentary sequence consists of graded very fine sandstone-siltstone-claystone units 4 - 15 mm thick. The main detrital minerals are quartz, muscovite and microcline, with minor chlorite, accessory carbonate, and fine greenish clays in the finer grained units. There is no recognisable tuffaceous component.

The grading is right-way-up in relation to the "up" arrow on the sample, with a grain size variation from 0.1 mm (very fine sand) to less than 0.03 mm (fine silt-clay). A quartzofelspathic layer with minor chlorite and biotite, at the base of each unit is followed by a more micaceous layer with abundant muscovite, and minor biotite and chlorite, as thin, strongly oriented flakes, to 0.4 mm long. The quartz and felspar in this layer are about 0.05 mm in size (coarse silt). Opaque oxides are most abundant in these layers. with accessory leucoxene in the claystone layers.

Minor authigenic anhydrite occurs in the sandier layers. It has a bladed habit like that of the detrital micas but blockier, or a granular habit, when finer grained.

1159025 : flow-layered basalt with vesicular schlieren containing chlorite, and/or sericite; disseminated oxidised opaque grains and oxidised pyroxenes

Depth
1330.4 m

Despite the fine clastic, volcaniclastic layered appearance of this hand specimen, the rock is seen in hand specimen to be holocrystalline, manifest as a felted aggregate of small sericitised felspar laths 0.1 - 0.2 mm long, and subordinate pyroxene granules 0.05 - 0.1 mm in diameter, with a limonitised mesostasis.

The layers in this rock consist largely of discontinuous, thin elongate voids along schlieren, 0.5 to 2 mm thick, within the felted aggregate and filled by fibrous chlorite and/or sericite, with scattered oxidised opaque crystals (?pyrite). The vesicles are also lined by altered felspars and oxidised pyroxene crystals.

The schlieren were probably formed by shearing when the extrusive magma was very thick and viscous.

APPENDIX III

DRILLCORE ANALYSES

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

Head Office and Central Laboratory
305 SOUTH ROAD,
MILE END SOUTH
STH. AUST. 5031
TEL.: (08) 43 5722
TELEX: AA89323

1715

NATA REGISTERED No. 1526

OUR REF.: COM 840503

YOUR REF.: DPO B 0621

Mr. A. Scott,
CRA Exploration Pty Ltd,
31 Osmond Terrace,
NORWOOD SA 5067,

5.4.84

Dear Tony,

RE: JOB COM 840503

Enclosed are the assays for the samples delivered to our laboratory on the 20th March 1984.

Yours sincerely,
COMLABS PTY LTD

per :

P R Harvey

c.c.: NORWOOD .
c.c.: FYSHWICK

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

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ANALYTICAL REPORT

JOB COM840503 O/N : B 0621

Results in ppm

SAMPLE	Cu	Pb	Zn	Ni	Co	Bi	Cr
1159026	18	6	65	48	28	<4	14
1159027	20	8	80	38	26	<4	6
1159028	24	6	38	38	26	<4	6
1159029	18	8	65	60	32	<4	6
1159030	14	4	65	48	24	<4	4
1159031	20	6	36	50	30	<4	6
1159032	26	4	120	70	34	<4	18
1159033	12	6	135	60	36	<4	12
1159034	12	6	85	38	28	<4	6
1159035	38	6	70	50	30	<4	6
1159036	26	4	90	60	38	<4	14
1159037	42	4	95	48	28	<4	8
1159038	16	6	32	36	22	<4	6
1159039	12	6	48	36	22	<4	6
1159040	12	4	65	34	20	<4	6
1159041	28	4	120	46	30	<4	8
1159042	14	6	120	38	26	<4	6
1159043	16	6	80	38	30	<4	8
1159044	20	6	55	46	32	<4	10
1159045	55	6	210	32	26	<4	6
1159046	55	4	65	36	28	<4	6
1159047	700	6	60	28	18	<4	6
1159048	24	4	75	40	28	<4	8
1159049	16	6	85	34	28	<4	8
1159050	32	6	75	32	28	<4	8

.../ 2

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ANALYTICAL REPORT

JOB COM840503 O/N : B 0621

Results in ppm

SAMPLE	Cu	Pb	Zn	Ni	Co	Bi	Cr
1159051	6	6	80	36	28	<4	8

Method of Analysis : Cu Pb Zn Ni Co Bi : AAS1
Cr : AAS2

.../ 3

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ANALYTICAL REPORT

JOB COM840503 O/N : B 0621

Results in ppm

SAMPLE	Ba	Ce	Nb	Rb	Sn	Ag	V
1159026	10	<20	8	8	<4	<1	200
1159027	<10	20	7	6	<4	<1	220
1159028	45	20	7	16	8	<1	170
1159029	<10	20	5	8	<4	<1	160
1159030	85	<20	6	38	4	<1	170
1159031	230	<20	6	55	<4	<1	180
1159032	50	<20	7	20	6	<1	200
1159033	65	20	10	22	4	<1	310
1159034	50	20	10	8	<4	<1	240
1159035	25	20	9	14	<4	<1	220
1159036	60	20	10	9	<4	<1	230
1159037	95	<20	10	32	<4	<1	210
1159038	300	30	10	85	<4	<1	200
1159039	170	<20	9	75	<4	<1	220
1159040	140	20	8	60	<4	<1	230
1159041	<10	<20	9	3	<4	<1	290
1159042	15	20	10	7	4	<1	250
1159043	15	20	10	6	<4	<1	260
1159044	<10	20	12	6	4	<1	260
1159045	20	20	10	10	8	<1	260
1159046	<10	20	10	2	4	<1	250
1159047	320	20	10	65	6	<1	240
1159048	15	20	10	8	6	<1	230
1159049	<10	20	9	6	<4	<1	270
1159050	45	20	12	10	<4	<1	230

.../ 4

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ANALYTICAL REPORT

JOB COM840503 O/N : B 0621

Results in ppm

SAMPLE	Ba	Ce	Nb	Rb	Sn	Ag	V
1159051	70	<20	9	20	<4	<1	240

Method of Analysis : Ba Ce Nb Rb Sn : XRF1
Ag V : AAS3

.../ 5

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ANALYTICAL REPORT

JOB COM840503 O/N : B 0621

Results in ppm

SAMPLE	Sr	U	Y	Zr	%Ti	Au
1159026	26	<4	12	70	0.70	0.05
1159027	44	<4	14	75	0.72	<0.01
1159028	90	<4	16	75	0.74	<0.01
1159029	38	<4	8	60	0.64	<0.01
1159030	125	<4	12	60	0.70	<0.01
1159031	150	<4	12	65	0.68	<0.01
1159032	100	<4	14	70	0.74	<0.01
1159033	75	<4	18	95	0.92	<0.01
1159034	55	<4	20	105	0.96	<0.01
1159035	75	<4	16	90	0.82	<0.01
1159036	90	<4	20	95	0.84	<0.01
1159037	120	<4	18	95	0.90	<0.01
1159038	230	<4	20	95	0.98	<0.01
1159039	220	<4	16	95	0.90	<0.01
1159040	220	<4	18	100	0.88	<0.01
1159041	70	<4	16	95	0.86	<0.01
1159042	55	<4	16	90	0.76	<0.01
1159043	65	<4	18	105	0.98	<0.01
1159044	38	<4	18	100	0.84	<0.01
1159045	65	<4	18	100	0.86	<0.01
1159046	32	<4	18	100	0.84	<0.01
1159047	180	<4	16	100	0.82	<0.01
1159048	75	<4	18	95	0.82	<0.01
1159049	46	<4	20	100	0.88	<0.01
1159050	125	<4	18	100	1.00	<0.01

.../ 6

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ANALYTICAL REPORT

JOB COM840503 O/N : B 0621

Results in ppm

SAMPLE	Sr	U	Y	Zr	%Ti	Au
1159051	115	<4	16	90	0.96	<0.01

Method of Analysis : Sr U Y Zr : XRF1
Ti : COL4
Au : FAS1

172.

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

Head Office and
Central Laboratory
305 SOUTH ROAD,
MILE END SOUTH
STH. AUST. 5031
TEL.: (08) 43 5722
TELEX: AA89323

NATA REGISTERED No. 1526

OUR REF.: COM 840662

YOUR REF.: DPO B 0622

Mr. A. Scott,
CRA Exploration Pty Ltd.,
P.O. Box 254,
NORWOOD SA 5067,

18.4.84

Dear Sir,

RE: JOB COM 840662

Enclosed are the assays for the samples delivered to our laboratory on the 6th April 1984.

Yours sincerely,
COMLABS PTY LTD

per :

c.c.: FYSHWICK
c.c.: NORWOOD

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

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ANALYTICAL REPORT

JOB COM840662 O/N : B 0622

Results in ppm

SAMPLE	U	Au
1159052	<4	<0.01
1159053	<4	<0.01
1159054	<4	<0.01
1159055	<4	<0.01
1159056	<4	<0.01
1159057	<4	<0.01
1159058	<4	<0.01
1159059	<4	<0.01
1159060	<4	<0.01
1159061	<4	<0.01
1159062	<4	<0.01
1159063	<4	<0.01
1159064	<4	<0.01
1159065	<4	<0.01
1159066	<4	<0.01
1159067	<4	<0.01
1159068	<4	<0.01
1159069	<4	<0.01
1159070	<4	<0.01
1159071	<4	<0.01

Method of Analysis : U : XRF1
Au : FAS1

.../ 2

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ANALYTICAL REPORT

JOB COM840662 O/N : B 0622

Results in ppm

SAMPLE	Cu	Pb	Zn	Ni	Co	Ag
1159061	20	8	46	42	16	<1
1159062	12	10	60	48	18	<1
1159063	390	6	160	100	36	<1
1159064	18	10	42	40	16	<1
1159065	12	16	65	44	18	<1
1159066	340	<4	85	48	26	<1
1159067	3800	6	90	40	24	<1
1159068	2900	6	100	32	22	<1
1159069	1950	8	110	32	22	<1
1159070	1850	6	80	30	24	<1
1159071	44	6	110	42	28	<1

Method of Analysis : Cu Pb Zn Ni Co : AAS1
Ag : AAS3

APPENDIX IV

SPECIFIC GRAVITY DETERMINATIONS

83KD1A - SPECIFIC GRAVITY DETERMINATIONS

Sample No.	Depth (m)	S.G.	Lithology
1159072	616	2.49	Laminated micaceous shale
1159073	692	2.61	Banded mudstone/siltstone (60/40)
1159074	693	2.43	Banded siltstone/sandy siltstone (40/60)
1159075	753	2.56	Laminated mudstone/siltstone (60/40)
1159076	756	2.42	Laminated siltstone
1159077	850	2.53	Banded mudstone/siltstone
1159078	950	2.66	Laminated mudstone/siltstone (70/30)
1159079	1053	2.67	Laminated siltstone/mudstone (50/50)
1159080	1154	2.68	Laminated mudstone/siltstone (60/40)
1159081	1271	2.69	Laminated mudstone/siltstone (50/50)
1159082(²)	995	2.81	Amygdaloidal basalt
1159083(³)	1014	2.97	F.-m.gr. massive basalt
1159084(²)	1312	2.90	Amygdaloidal basalt
1159085(¹)	1326	2.56*	Purple vesicular basalt
1159086(³)	1333	3.01	F.gr. banded dense basalt
1159087(³)	1348	3.02	F.gr. massive basalt
1159088(¹)	1356	2.68*	Vesicular and amygdaloidal basalt
1159089(²)	1372	2.89	M.gr. massive basalt
1159090(¹)	1386	2.73*	Purple vesicular and amygdaloidal basalt
1159091(²)	1392	2.85	Massive amygdaloidal basalt.

* Wax impregnated.

CALCULATIONS

Siltstone/Mudstone: 600- 900 m 2.51
900-1300 m 2.68

Basalt:

Vesicular(¹)	2.66	@ 10%	Average = 2.87
Amygdaloidal(²)	2.86	@ 70%	
F/gr dense(³)	3.00	@ 20%	

APPENDIX V

DETAILED GEOLOGICAL LOG OF 83KD1A

C.R.A. EXPLORATION PTY. LIMITED

ROTARY DRILL CORE LOG

PROJECT EAST PELDA, POTASH, TUCKEY ELIOSY

CO-ORDINATES _____ AZIMUTH _____ DRILLERS E.A. KELLY P/L (K. JOHNS C. JAMES) COMMENCED 19·12·83 DEPTH 1398.2 HOLE No. 83 KD 1

RL COLLAR 108 m (approx) INCLINATION VERTICAL DRILL TYPE WARMAN 1500 COMPLETED 10·3·84 CASING LEFT _____ DPO No(s) B 0621, B 0622

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2		20mm (8⅝")		Calcrete, sand.						
2	4				Calcrete, red-brn clay, sand						
4	6				Red-brn, lateritic clay, sand						
6	8				As above						
8	10				Buff, v.f.gr. sub-ang. sand and clay. Some sand grains coated with red Fe oxides.						
10	12				As above, but redder.						
12	14				No sample. Hydropol caused flocculation of clay						
14	22				Buff and red clays. Minor f.gr. sand.						
22	24				V.F.gr. buff and red sands, and clay.						
24	32				F.gr. sub-ang. to sub-rd. sands, minor clay. Sand is qtz (many grains with red Fe oxide) and red and wh. felspar.						
32	34				Similar to above, but coarser grained.						
34	36				As above.						
36	42				Mottled lt. brn, yell., and red-brn clay; some qtz grains						
42	44				Pinkish, f.gr. lateritic sand and clay. Qtz and felspar grains common. Clay is mottled yell., brn, gy.						
44	48				As above.						
48	50				Mottled sandy clay. Sand ~20%.						
50	56				As above.						
56	58				Gy-gn clay.						
58	64				As above.						
64	66				Lt. brn., f.gr., rd. to well rd. qtz sand.						
66	70				Lt. brn. sand. Hydropol curdled.						
70	72				As above. No sample.						
72	78				Minor sample of blue-gy. clay.						
78	94				Dk blue-gy. clay, and dk. gy-blue clay						
94	96				F.gr., white, sub.rd.-rd., clean quartz sand, with v. minor white felspar.						
96	98				Sand and blue-gy. clay.						

SUMMARY AND SPECIAL COMMENTS

LOGGED BY A.K. Scott DATE _____

SHEET 1 OF 13

CRAE 117
PLAN No M 414

C.R.A. EXPLORATION PTY. LIMITED

PROJECT EAST KOLDA POTASH. TUCKEY EL 104

ROTARY DRILL CORE LOG

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 83 KD 1

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
98	100				F-m. gr, white qtz sand with some blue-gy. clay						
100	102				Blue - gy. clay. Possibly minor sand.						
102	104		C		Blue - gy. to gy.-gn. clay; some yellowish						
104	110				Black clay. Foetid odour. Carbonaceous.						
			C								
110	112		110		Blue - gy clay.						
112	116				Gy. and lt. gy. clay.						
116	118				Clay and sand.						
118	130		120		F-m. gr., lt. bn., sub-ang. to sub-rd., qtz sand. Many grains are pale yellow.						
			140mm (5½") C		Minor c. gr. sand. Minor carbonaceous shale interbedded — water is v. dark brown.						
130	132		130		V. f. gr. sands and minor carb. shale.						
132	134		C		F-m. gr. sands, and minor carb. shale.						
134	144				F-c. gr. sands, most m. gr.						
			140								
144	146		C		F-m. gr., lt. bn., sub-ang. to sub-rd. sands. Minor carbonaceous shale.						
146	150		150		F. gr. sands. Possibly minor shale.						
150	154				M. gr, ang. to sub-rd., lt. bn. sand with minor felspar. V. minor shale.						
154	156				F-m gr. sands; minor felspar.						
156	160				F-c gr. sands with minor felspar. Minor lt. gy. shale.						
160	162		160		F. gr, lt. bn., sub-ang. to sub-rd. qtz sands; minor felspar.						
162	164				F-c gr. sands						
164	166				V. f gr., lt. bn., clean qtz sands.						
166	170		170		C. gr sands; minor felspar.						
170	174				F. gr sands.						
174	192				M gr sands, sub-ang. to sub-rd. Some gy. clay 186 - 188.						
			180		(Drillers reported significant lignite occurrences between 160 - 200 m when redrilling 83 KD 1A).						
			190								
192	194				C. gr. sands; nearly all qtz.						
194	200				M-c gr. sands.						
			200								

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY A.K. Scott DATE

SHEET 2 OF 13

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT EAST YOLDA POTASH. TUCKEY EL 1054

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 83 KD 1

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
200	204		C		M.-c.gr. sands with carb. shale.						
204	206				M.-c.gr. sands with blue-gy. clay.						
206	214				M.-c.gr., lt. bn., sub-ang. to sub-rd. sand. Most qtz. grains clear, some milky. Minor pyrite.						
214	224			P	F.-m.gr. sand; otherwise as above.						
224	228				M.gr. sand.						
228	230				C.gr., sub-ang. to sub-rd., qtz. sand						
230	240				M.gr. sands.						
240	244				C.gr. sands.						
244	248				M.gr. clean sands.						
248	250				C.gr. sands.						
250	260				M.gr. sand in a matrix of white clay.						
260	268				M-c.gr. sand in matrix of white clay.						
268	270				F.gr. sand with minor white clay matrix.						
270	272				C.gr. sand with white clay matrix.						
272	276				M.gr. sand with matrix of white clay.						
276	280				White clay and v.f.gr. sand.						
280	282				M.gr. sand and white clay.						
282	298				M.gr. clean qtz sand.						
298	300		C		No sample, but probably carb. shale.						

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY A.K. SCOTT DATE _____

SHEET 3 OF 13

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT EAST POLDA POTASH. TUCKEY EL 1054

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 83 KD 1

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
300	302				F.gr. sand, possibly with white clay matrix.						
302	304				M.gr. sand with white clay.						
304	316				F.-m.gr. sand, probably with matrix of white clay.						
					310						
316	320				C gr. sand and clay. Sand has about 30 % blueish milky qtz grains. Minor py						
					320						
320	322				No sample. Hard. Probably shale.						
322	326				As above.						
326	328				Blue shale.						
328	330				F.-m.gr., sub-rd., qtz sand with clayey matrix(?)						
330	336				330 No sample, but some carb. shale and blue shale cuttings obtained. Probably similar to 320-322. Hard at 336 m.						
336	356		C		Soft, f.-m.gr., sub-ang. to sub-rd. quartz sands with probable clay matrix. Contains thin interbeds of carb. and bn. shale up to 10 cm thick. One of these at 336 m. Sand/clay ratio uncertain but about 60/40.						
					340						
					350						
356	360		C		Soft, dk. bn. clay with some sand, containing 5-10 cm thick interbeds of hard dk. bn. carb. shale.						
					360						
360	364				Gy-bn clay and f.gr. sand.						
364	366				F.-m.gr., sub-ang. to rd., white quartz sand.						
366	368				F.gr. sand and clay, 75/25. Thin bands hard shale						
368	372				Gy. clay (85 %) and f.-c.gr. sand (15 %).						
					370						
372	376		C		Dk. bn. clay.						
376	378				Dk. bn. clay and sand.						
378	382				F.-m.gr., lt-gy., sub-ang. to sub-rd. quartz sand with occasional larger grains. Minor felspar						
					380						
382	392		C		Dk. bn. clay.						
					390						
392	394				Dk. bn. shale and coal.						
394	396				Bn. shale						
396	398		C		F.gr. sand with thin beds of carb. shale.						
398	400				F.-m.gr., sub-ang. to rd. sand.						
					400						

SUMMARY AND SPECIAL COMMENTS: No drilling carried out between 22.12.83 and 16.1.84. On re-entering Hole had collapsed at top in expanding clay (0-118 m). New Hole 83 KD 1A collared 10 m south.

LOGGED BY A.K. SCOTT DATE _____

SHEET 4 OF 13

CRAE 117
PLAN No M 414

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT Potash. Tuckey 4L 1054.

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 83 KD 1A

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
400	404				Bn. clay.						
404	408				Bn. clay and sand.						
408	416		410		F.gr., sub-ang. to rd. sand with minor wh. felspar. Possibly some minor clay bands.						
416	418				F-c gr (most f.-m. gr.) sub-ang. to sub-rd. sand with some bn. clay.						
			420								
418	420				Sand and clay.						
420	428				F.gr., lt. bn., sub-ang. to rd. quartz sands, with some wh. felspar. Minor clays.						
428	430		430		M.gr. sub-ang. to sub-rd. qtz sand.						
430	456		C		Hard and slow. Nearly all return is m-c gr. sand, but very few chips of a dk. bn, hard, carb. shale also obtained. Some patches softer. In light of core at 456-459 this interval is likely to consist of alternating bands of gy. mst. and lignite or carb. shale.						
			C								
			440								
			C								
			450								
456	459		C		Covered. Mainly dk. bn. carb. shale (or lignite) and gy. mst. 456.3 - 456.8: Dk. bn. carb. mst., containing flecks of black carb. matter. 456.8 - 458.35: Black to dk. bn. lignite with thin bands of dk. bn. carb. mst., and coal. 458.35 - 459.4: Lt. gy interbedded mst. and stst. F.gr. mica common.						
			460								
			470								
459	474				Very poor samples, Fairly hard. Much sand and occasional lignite fragments obtained.						
474	515				No samples obtained. Alternating hard and soft bands. When bit retrieved, all rollers had been lost. This section probably contains bands of siltstone, sandstone and a mixture of the two. Electric logs will aid in final interpretation.						
			480								
			490								
			500								

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS: HQ coring commenced at 515.

LOGGED BY A.K. Scott DATE _____

SHEET 5 OF 13

C.R.A. EXPLORATION PTY. LIMITED

DIAMOND DRILL CORE LOG

PROJECT EAST POLDA POTASH. TUCKEY EL 1054

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 83 KD 1A

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES (ppm) U	ASSAY VALUES (ppm) Au
515.0	517.0	0.28	HQ		515.0 – 555.4. Gritty sst. with interleds of slst. and silty sst. Mainly poorly bedded poorly sorted, lt. gy., friable gritty sst. Grains ang. to rd., but most sub-ang. to sub-rd. Size from f.gr. to pebbles, but most m.–c.gr. Grain lithologies mainly clear qtz, but some pale blue and milky white; minor to common wh. felspar; minor black ironstone, black coal, white mica diopsidic rock. Large fragment (4 cm) of biotite-felspar-qtz. gneiss at 534.7. Pyrite framboids up to 5 cm very common. F.gr. silty sst. at 515.0 – 516.5 (?); 529.6-531.7; 537.2 – 538.7; 548.0 – 549.5 (?). Lt.–mid gy. laminated slst. containing wisps of carb. matter at 521.3 – 523.4; 524.3 – 525.6; 529.2 – 529.6; 543.5 (?) – 547.0 (?); 550.2 – 555.4 plus other thin bands 1–5 cm thick. Section 543.5 – 547.0 contains part of large felspathic quartzite cobble at top, also coaly bands. Hard m.gr. felspathic zone, a few bands of coarse ang.–rd. grit and framboidal pyrite. At 547.1 is a thin band of coarse grit containing a 15 mm qtz. pebble. Bedding angles with LCA: 75° at 519.4 in grit; 85° at 523.0 in slst; 83° at 537.5 in slst; 55° at 539.8 in grit; 87° at 550.4 in slst.								
517.0	520.0	2.29										
520.0	521.3	0.85										
521.3	524.4	2.31										
524.4	528.2	3.01										
528.2	531.0	2.23					1159052	520.0	521.3	0.82	<4	<0.01
531.0	534.0	2.38										
534.0	537.0	0.74										
537.0	540.0	2.63										
540.0	543.0	1.44										
543.0	544.3	0.74										
544.3	548.0	1.00										
548.0	550.3	1.27										
550.3	554.4	0.14					1159053	528.2	529.2	0.72	<4	<0.01
554.4	555.4	0.13										
555.4	558.0	1.23										
558.0	561.1	3.10										
561.1	562.0	0.89					1159054	532.0	535.0	1.50	<4	<0.01
562.0	565.0	3.05										
565.0	566.8	1.65										
566.8	567.4	0.60										
567.4	569.9	2.09										
569.9	572.2	2.08										
572.2	575.3	3.00										
575.3	580.0	0.47										
580.0	583.0	1.31					1159055	542.0	544.0	0.80	<4	<0.01
583.0	586.0	1.42										
586.0	589.0	2.36										
589.0	592.0	3.09										
592.0	595.0	2.82										
595.0	596.4	1.40										
596.4	598.0	1.89										
598.0	601.0	3.12										
601.0	606.2	5.13										
606.2	610.0	3.97										
610.0	616.0	6.10										
616.0	622.0	5.89										
622.0	628.0	6.16			555.4 – 573.3. Alternating carb. mst. (with minor coal) and non-carb., lt. gy.–bn. mst. Hard, greasy, dk. bn.–bl., carb. mst. at 556.8 (?) – 559.7; 560.95 – 561.25; 561.85 – 562.45; 563.1 – 564.1; 568.1 – 569.1. Brittle black coal at 568.3 – 568.7.								
628.0	634.0	6.06										
634.0	640.0	6.00										
640.0	642.0	2.11										
642.0	646.0	3.88										
646.0	652.0	6.07										
652.0	658.0	6.05										
658.0	664.0	6.00										
664.0	665.1	0.96			Non-carb. mst. is soft and contains flakes and wisps of carb. material. An indurated section (by silicification?) occurs at 561.7 – 561.8.							
665.1	667.0	1.63	NQ									
667.0	673.0	5.87										
673.0	679.0	6.03										
679.0	685.0	5.97										

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS

LOGGED BY A.K. SCOTT DATE

SHEET 6 OF 13

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT EAST POLDA POTASH. TUCKEY EL 1054

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 83 KD 1A

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES (ppm) Cu	Pb	Zn	Ni	Co	Ag	U	Au
685.0	691.0	5.92	NQ		573.3 – 583.2. Alternating pyritic stst. and grits.													
691.0	697.0	5.94			Laminated lt. and dk. gy. stst. with													
697.0	703.0	5.96			many small (1-10 mm) pyrite framboids													
703.0	709.0	5.99			and wisps of carb. matter at													
709.0	715.0	5.95			573.3 – 574.2; 574.45 – 574.85; 582.9 –													
715.0	721.0	5.99			583.2.													
721.0	727.0	5.96			Remainder is mainly coarse, poorly													
727.0	733.0	5.92			sorted, ang. to sub-rd. lithic grit													
733.0	739.0	6.09			containing qtz, felspar, granite,													
739.0	745.0	5.98			ironstone, stst, quartzite.													
745.0	751.0	6.02																
751.0	757.0	5.90																
757.0	763.0	6.03			583.2 – 593.3. White, well sorted, v. f.gr,		1159056	580.0	583.0	1.23							<4	<0.01
763.0	769.0	5.95			sub-ang. to rd., thinly bedded													
769.0	775.0	5.90			sst. containing bands of diamictite													
775.0	781.0	5.92			in places. Whiteness possibly due													
781.0	787.0	6.03			to kaolin. Pyrite framboids common.													
787.0	793.0	6.01			583.2 – 588.5: Mainly diamictite													
793.0	799.0	5.89			containing cobbles of granite,													
799.0	805.0	5.97			quartzite, mst, felspar-biotite schist													
805.0	811.0	5.96			up to 5 cm diameter in matrix sst. Also contains													
811.0	817.0	5.98			laminations of lt. gy. mst and		1159057	591.0	592.0	1.0							<4	<0.01
817.0	823.0	5.94			v. f.gr., scoured sst. Pyrite common.													
823.0	829.0	5.95			588.5 – 591.6: White, v. f.gr. laminated													
829.0	835.0	5.98			sst. with occasional small pebbles.													
835.0	841.0	5.94			Cross-bedded and scoured. Small		1159058	595.0	596.0								<4	<0.01
841.0	846.0	4.94			faults evident. Pyrite framboids													
846.0	850.0	4.07			up to 15 mm.													
850.0	856.0	5.95			591.6 – 593.3: Similar to top section													
856.0	862.0	6.05			but with more thin (1-3 mm) clay		1159059	599.0	600.0								<4	<0.01
862.0	868.0	6.01			bands.													
868.0	874.0	5.96																
874.0	880.0	5.97			593.3 – 605.3. Dk. gy, unsorted diamictite													
880.0	886.0	5.99			with matrix-supported cobbles up													
886.0	892.0	5.85			to 6 cm. Matrix contains much		1159060	604.4	605.4								<4	<0.01
892.0	898.0	5.91			silt-sized dk. gy. material and													
898.0	901.7	3.60			sand. Cobbles are generally sub-													
901.7	907.0	5.18			rd., but vary from ang. to rd.													
907.0	913.0	5.88			Commonest cobbles are m. - c.gr.													
913.0	919.0	6.00			pink granite with low biotite													
919.0	925.0	6.01			content, and f. - m. gr. white													
925.0	931.0	5.99			quartzite. Others are qtz-felspar-													
931.0	937.0	5.97			biotite schist, gneissic granite,		1159061	612.0	613.0		20	8	46	42	16	<1	<4	<0.01
937.0	941.8	4.78			granodiorite, biotite quartzite,													
941.8	943.0	1.18			felspar-biotite-garnet granofels,													
943.0	949.0	5.98			black siliceous slate, grey slate,	Two sub-horizontal												
949.0	955.0	5.90			f.gr. quartz-felspar-tourmaline(?)	veins of (?) anhydrite,												
955.0	960.0	4.90			schist, lt. gy. stst, f.gr. sst.	each 5 mm thick, at 597.0												
960.0	964.0	4.00																
964.0	970.0	5.91			The bottom 0.3 m contains many													

SUMMARY AND SPECIAL COMMENTS: HQ hole reamed out to 140 mm to 596, and 100 mm casing cemented in to this depth. Coring continued in HQ.

LOGGED BY A.K. SCOTT DATE _____

SHEET 7 OF 13

CRAE 117
PLAN No M 414

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT EAST KOLPA POTASH TUCKEY EL1054

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 83 KD 1A

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES (ppm) Cu	Pb	Zn	Ni	Co	Ag	U	Au
970.0	976.0	5.99	NQ		clasts of red-bn. sltst (the underlying unit). Although there may be some slumping, the contact appears erosional.													
976.0	982.0	5.99																
982.0	988.0	5.99																
988.0	990.4	1.62																
990.4	994.0	3.71																
994.0	1000.0	6.01			605.3 - 990.4. Laminated red-bn, micaceous sltst, with increasing content of f.gr. sandy sltst towards base. Contains bands up to 30 cm thick of lt. gy., dk. gy., or cream micaceous sltst and thin (1-30 mm) partings of blue-gy. or blue-gn. mst and laminae of biotite. Reduction spots also blue-gy.													
1000.0	1006.0	6.03																
1006.0	1008.2	2.15																
1008.2	1009.0	0.80																
1009.0	1014.4	5.40																
1014.4	1019.2	4.80				Core parts easily on blue-gy. and blue-gn. mst partings and bn biotite laminae.												
1019.2	1022.8	3.61																
1022.8	1027.0	4.22																
1027.0	1033.0	6.05																
1033.0	1039.0	5.95			Dk red-bn. mst also occurs in thin bands and thicker zones up to several metres (shown on detailed graphic log). Most of these disrupted by intraformational brecciation.													
1039.0	1045.0	5.93																
1045.0	1051.0	6.04																
1051.0	1057.0	6.06																
1057.0	1063.0	5.95																
1063.0	1069.0	5.99																
1069.0	1074.2	5.20			Biotite flakes are prominent throughout core. Pyrite framboids 1-5 mm diameter are common from 605.3 - 635; 838-840; 854.6 - 854.9; 908.8-912.0; 928.	Bedding angles generally 87°-88° to LCA in top part of this section. At 800m, bedding angle is approx. horizontal in sltst, but up to 65° to LCA in fine sandy silts												
1074.2	1078.0	3.80																
1078.0	1084.0	5.97																
1084.0	1090.0	6.05																
1090.0	1096.0	5.96																
1096.0	1097.0	0.92																
1097.0	1099.4	2.38																
1099.4	1105.0	5.70			Shallow water sedimentary structures very common: cross-bedding, scour and fill, flame structures, dewatering structures, intraformational brecciation, graded bedding, desiccation cracks and ripple marks.													
1105.0	1111.0	5.94																
1111.0	1117.0	6.00																
1117.0	1123.0	6.00																
1123.0	1129.0	5.95																
1129.0	1133.8	4.78			Top 50 m or so (and several isolated small patches below) contains small voids (0.5-2 mm) on the core surface, or have calcite-filled cavities of the same shape. Shapes vary from rectangular (flat-lying) to squarish to triangular to indefinite. Most common shape is squarish, about 1 mm on edge.	Thin (up to 2 mm) calcite veins 620-626, mostly between 70° and 90° to LCA.												
1133.8	1138.0	4.22																
1138.0	1144.0	6.05																
1144.0	1150.0	6.05																
1150.0	1155.1	5.08																
1155.1	1159.0	3.91																
1159.0	1165.0	5.93				Sub-vertical veins of semi-transparent, white, non-calcareous material at 793, 803, 806.5. Probably anhydrite.												
1165.0	1171.0	6.02																
1171.0	1177.0	6.01																
1177.0	1183.0	5.99																
1183.0	1189.0	6.04																
1189.0	1195.0	5.98			Sub-vertical breccia zones (usually with calcareous cement) occur at 606.4 - 606.6; 636.1 - 636.7; 637.2 - 639.8;													
1195.0	1198.0	2.96																
1198.0	1204.0	6.02					1159062	970.0	971.0		12	10	60	48	18	<1	<4	<0.01
1204.0	1210.0	6.02				Sub-vertical veins of gy. clay occur sporadically, esp. 816.5												
1210.0	1216.0	5.87			At 818.2 - 825.3, laminae of detrital hematite occur in red-bn., v. f.gr., thinly bedded silty sst.													
1216.0	1218.7	2.72																
1218.7	1222.0	3.30																

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS: HQ rods left in hole as casing (uncemented) to depth of 665. Coring continued in NQ. Mud changed to concentrated KCl/polymer at 616m.

LOGGED BY A.K SCOTT DATE

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT EAST POLDA POTASH. TUCKEY EL 1054.

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 83 KD 1A

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES (ppm) Cu	Pb	Zn	Ni	Co	Ag	U	Au
1222.0	1225.6	3.64	NQ		Mst. content increases downwards. Below 933, rock consists of thin alternating bands of mst and stst (approx. 50/50), and many thin cgl. beds from 897. Below this depth, dewatering channels, graded bedding and dessication cracks very common.	Below 965 several sub-vertical fractures occur.												
1225.6	1231.0	5.42																
1231.0	1237.0	6.05																
1237.0	1243.0	6.01																
1243.0	1249.0	6.00																
1249.0	1255.0	5.97																
1255.0	1257.3	2.30																
1257.3	1261.0	3.66				Sub vertical veins of anhydrite (about 1 mm thick) reasonably common below 909.												
1261.0	1267.0	6.05			Small anhydrite veinlets (1-5 mm) are common at places shown on graphic log.													
1267.0	1273.0	5.96																
1273.0	1279.0	5.95																
1279.0	1285.0	5.96																
1285.0	1291.0	6.09			Bottom 4 m contains more of the gy-gn mst bands than above.	Gy-gn mst possibly pyrophyllite?												
1291.0	1297.0	6.02																
1297.0	1303.0	5.96																
1303.0	1309.0	5.97			990.4 - 1023.8. Hard, m.gr., dk.gy., massive crystalline rock with a groundmass of epidote(?) - garnet(?) - magnetite - plagioclase(?) - white acicular mineral and dk.gn. softish mineral (pyrophyllite?). Latter mineral is very common and occurs throughout unit usually in rounded masses 1-5 mm across. Some parts, especially 991.0 - 997.5 and 1004.5 - 1007.0 are c.gr. and amygdaloidal having large (up to 1 cm) amygdales filled with pyrophyllite (?) or with a hard white - lt. gn. transparent mineral with radiating habit - possibly pectolite or a zeolite.													
1309.0	1315.0	6.08																
1315.0	1321.0	6.02					1159026	992.0	993.0		18	6	65	48	28	<1	<4	0.05
1321.0	1323.2	2.20																
1323.2	1326.2	2.86																
1326.2	1328.5	2.27																
1328.5	1330.0	1.73																
1330.0	1332.6	2.61					1159027	997	998		20	8	80	38	26	<1	<4	<0.01
1332.6	1336.0	3.40																
1336.0	1342.0	6.00																
1342.0	1348.0	5.97																
1348.0	1349.6	1.63																
1349.6	1350.4	0.75					1159028	1002	1003		24	6	38	38	26	<1	<4	<0.01
1350.4	1352.8	2.40																
1352.8	1357.0	4.17																
1357.0	1360.8	3.80																
1360.8	1366.0	5.21																
1366.0	1372.0	6.01			The unit contains several prominent veins of talc/serpentine/antigorite at 10 - 20° to LCA		1159029	1007	1008		18	8	65	60	32	<1	<4	<0.01
1372.0	1378.0	5.99																
1378.0	1384.0	6.04																
1384.0	1387.6	3.58																
1387.6	1391.8	4.10			Top 1 cm is banded, bottom 1 m is f.gr., and orange-bn in bottom few cm. Unit is massive.													
1391.8	1396.2	4.31					1159030	1012	1013		14	4	65	48	24	<1	<4	<0.01
1396.2	1398.2	2.01																
END OF HOLE																		
					1023.8 - 1097.95. Laminated red-bn. mst and minor stst, the latter calcareous in places. Top 1 m rather indurated, and many sub-horizontal veins of white mineral (anhydrite?) 0.5 - 2 mm thick in top 4 m. From 1040 - 1060, more silty and mst/stst ≈ 50/50. Above 1040 and below 1060, mst/stst ≈ 70/30.													
							1159031	1017	1018		20	6	36	50	30	<1	<4	0.01
							1159032	1022	1023		26	4	120	70	34	<1	<4	<0.01

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY A.K. SCOTT DATE _____

SHEET 9 OF 13

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT East Polda Potash. Tuckey EL 1054

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 83 KD 1A

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES (ppm) Cu	Pb	Zn	Ni	Co	Ag	U	Au
					Below 1050, cyclic graded bedding common. Cycles generally 1-3 cm thick but some much thicker. Of each cycle, the lower part is lt. bn., sometimes weakly calcareous, and occasionally with a little granitic cgl. at base in a scour channel; this grades into the upper part of dk. bn. mst. Sedimentary structures very common especially dewatering channels, desiccation cracks, scour and fill channels.	Much fracturing 1096.2 - 1096.9. Mostly sub-vertical. Fractures contain anhydrite.										
					Thin cgl. bands especially at 1041, 1045, 1049, 1054, 1066.5, 1075. f. gr., red-bn., silty sst. at 1041.6 - 1044.8. Anhydrite nodules at 1043, 1061, 1075.5. Small ovoids of anhydrite common below 1090 (See next unit).	At 1096 bedding generally at 90° to LCA.										
					1097.95 - 1100.6. Dk. gy., f. gr. (silt sized) amygdaloidal tuff with few thin bn. mst. bands.		1159063	1099.0	1100.0		390	6	160	100	36	<1	<4	<0.01
					Base of unit has 6 cm of green stst. which stem merges into dk. gy. rock containing a few very faint graded beds. Amygdales up to 4 mm are common and contain both (3) compact, fibrous, radiating, colourless crystals with at least one good cleavage - zeolites ?? They are flattened horizontally and occur mainly from 1100.0 up to 1098.2 but also into overlying mst. to about 1090. This zone also contains a few thin (1-5 mm) bn. mst. bands. Top of unit merges into graded beds of gy-bn mst./stst, which are probably tuffaceous up to about 1096 (because of greyer colour).											
					1100.6 - 1308.45. Laminated red-bn. stst/mst sequence (similar to 1023.8 - 1097.95) but about 50/50. Graded bedding common. Minor gy-gn. mst. thin bands. Very thin cgl. beds (usually < 5 mm thick) containing mostly granite pebbles, but a few anhydrite(?) also. Some silty sections weakly calcareous. Towards base, rock becomes darker	Fractures at 0-20° to LCA relatively common throughout this section. Filled with anhydrite or anhydrite/calcite mixture. Major fractures at 1133, 1141, 1144, 1152, 1155, 1160, 1170-3, 1178, 1183, 1189, 1192, 1215, 1216-8, 1224	1159064	1122.0	1123.0		18	10	42	40	16	<1	<4	<0.01

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY A.K. Scott DATE _____

SHEET 10 OF 13

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT EAST HOLDA POTASH. TUCKEY EL1014

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 83 KD 1A

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES (ppm) Cu	Pb	Zn	Ni	Co	Ag	U	Au
					and contains sections of Rand, v. f. gr., silicified (?) sandy stst. Also few beds of sst.	1129-33, 1244, 1245-7, 1274, 1300, 1305. At 30° to LCA at 1278.5, 1280, 1281.												
					Cgl. at 1111, 1119, 1139, 1140, 1171, 1210, 1228, 1248, 1250.5, 1255, 1269, 1275, 1279, 1286, 1296, 1297, 1299 and elsewhere. Anhydrite at 1142.5, 1144, 1183.2, 1183.8 (both sub-horizontal veins), 1187, 1231, 1236-8 and 1245 (brecciated veins), 1262, 1274, 1289, 1302.5 and elsewhere. Hard f. gr. silicified sandy stst at 1133.0 - 1133.5, 1135.7 - 1136.0, 1136.6 - 1137.6, 1144.2 - 1144.5, 1149.4 - 1150.0, 1213, 1226, 1233 - 1233.5, 1248, 1253, 1257.6 - 1258.3. Generally more common 1285 - 1297. Hard calcareous stst 1304.15 - 1304.4.												
					Very Rand, f. gr., ang. to sub-rd. sst containing clear g/z and red jasper(?) at 1288, 1290 and 1293.4 - 1294.1. V. f. gr. silty sst 1246.8 - 1247.3.		1159065	1272.0	1273.0		12	16	65	44	18	<1	<4	<0.01
					Granular mixture of anhydrite g/z (?) and mst. fragments 1181.7 - 1182.1.													
					Mst/stst ≈ 30/70 1117 - 1125 and 1131 - 1189.													
					Grains of granite and anhydrite (?) scattered through mst/stst 1300 - 1306.													
					1308.45 - 1398.2. Series of mafic volcanic flows, each with a top (about 50 - 100 cm thick of dk. purplish-gy vesicular and amygdaloidal rock, with prehnite, grading to a lower section of mid gy-gn., f. - m. gr. amygdaloidal or non-amygdaloidal rock. Individual flows are described below.		1159033	1309.0	1310.0		12	6	135	60	36	<1	<4	<0.01
					1308.45 - 1324.8: M gr., massive, dk. gy., amygdaloidal volcanic, very similar to section 990.4 - 1023.8. Top 10 cm f. gr. with fragments and fillings of red-brn. mst. Most amygdales occur 1313 - 1321.	Sub-vertical fracture filled with soft talcy material at 1313.5. Soft red material in horizontal joint at 1314.4.	1159034	1314	1315		12	6	85	38	28	<1	<4	<0.01
					1324.8 - 1348.3: Abrupt change to dk. purplish-brn. vesicular rock, brecciated in places. Vesicles sub-rd. and generally 1-5 mm diameter (most about 2 mm). Most are empty		1159035	1319	1320		38	6	70	50	30	<1	<4	<0.01

CRAE 117
PLAN No M 414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY A.K. SCOTT DATE _____

SHEET 11 OF 13

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT EAST POLDA POTASH . TUCKEY EL 1014

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 83 KD 1A

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES (ppm) Cu	Pb	Zn	Ni	Co	Ag	U	Au
					but some contain a zeolite. Large veins or vesicles contain prehnite, red jasperoidal(?) material or earthy dk. purple or dk. bn. material. Fat 1327.5, a change over 10 cm to a f.gr., dk gy. mafic rock, massive and amygdaloidal in upper part, weakly banded and non-amygdaloidal in lower part (dolerite?). Amygdales are large (10–45 mm), flattened horizontally and generally several cm apart in vertical direction. Rare below 1330, none below 1333. Most contain a thin rim of white mineral and filling of prehnite but a few are empty, save for a thin rim of soft dk.gn. mineral. Banding in lower part is 1–2 mm thick and rather irregular and indistinct. Possible cuprite(?) in bands.		1159036	1324	1325		26	4	90	60	38	<1	<4	<0.01
							1159037	1329	1330		42	4	95	48	28	<1	<4	<0.01
						Rock contains several sub-vertical fractures. Vein of zeolite at 17° to LCA at 1334.	1159038	1334	1335		16	6	32	36	22	<1	<4	<0.01
							1159039	1339	1340		12	6	48	36	22	<1	<4	<0.01
					1348.3 – 1350.2: Sharp change to v. dk. gy. vesicular f.gr. volcanic, becoming gradually less vesicular till it resembles the above f.gr. section with few amygdales.		1159040	1344	1345		12	4	65	34	20	<1	<4	<0.01
					1350.2 – 1355.8: Vesicular dk. gy-gn volcanic with much prehnite fully or partly filling cavities. Gradually becomes less vesicular and lighter in colour downwards		1159041	1349	1350		28	4	120	46	30	<1	<4	<0.01
					1355.8 – 1359.5: Change over 5 cm to dk. purplish-gy. vesicular/amygdaloidal volcanic with much prehnite. Gradual change to gy-gn amygdaloidal rock and then an abrupt change (at 70° to LCA) to a f.gr. non-amygdaloidal volcanic at 1358.5.		1159042	1354	1355		14	6	120	38	26	<1	<4	<0.01
					1359.5 – 1360.0: Abrupt change to purplish-gy. amygdaloidal volcanic then gradation to gy-gn amygdaloidal rock.		1159043	1359	1360		16	6	80	38	30	<1	<4	<0.01
					1360.0 – 1362.5: Gradual change over 10 cm to dk. gy. vesicular and amygdaloidal volcanic, then gradual change to lighter, finer grained amygdaloidal rock.		1159044	1364	1365		20	6	55	46	32	<1	<4	<0.01
					1362.5 – 1364.45: Gradual change over 5 cm to dk. purplish – gy. vesicular/amygdaloidal volcanic. Gradual change to lighter amygdaloidal rock.		1159045	1369	1370		55	6	210	32	26	<1	<4	<0.01

CRAE 117
PLAN No M414

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY A.K. SCOTT DATE _____

SHEET 12 OF 13

C.R.A. EXPLORATION PTY LIMITED

DRILL CORE LOG

PROJECT EAST POLDA POTASH. TUCKEY 1:10K

CO-ORDINATES _____ AZIMUTH _____ DRILLERS _____ COMMENCED _____ DEPTH _____ HOLE No. 83 KD 1A

RL COLLAR _____ INCLINATION _____ DRILL TYPE _____ COMPLETED _____ CASING LEFT _____ DPO No(s) _____

DEPTH FROM(M)	DEPTH TO(M)	CORE REC (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES (ppm) Cu	Pb	Zn	Ni	Co	Ag	U	Au
					1364.45 – 1384.5 : Abrupt change to dk purplish-gy, vesicular and amygdaloidal volcanic with prehnite in amygdales. Gradually becoming less vesicular and mid gy-gn in colour although amygdales still common to about 1370.		1159046	1374	1375		55	4	65	36	28	<1	<4	<0.01
							1159066	1377	1378		340	<4	85	48	26	<1	<4	<0.01
							1159067	1378	1379		3800	6	90	40	24	<1	<4	<0.01
							1159047	1379	1380		700	6	60	28	18	<1	<4	<0.01
					Grains of native Cu disseminated throughout core from 1378.4 – 1382.5, with best around 1380.7. Also on joint surfaces and in veins with prehnite. Bulk content estimated as less than 0.5 % Cu.	Pink alteration of felspar(?) common 1370 – 1384.	1159068	1380	1381		2900	6	100	32	22	<1	<4	<0.01
							1159069	1381	1382		1950	8	110	32	22	<1	<4	<0.01
							1159070	1382	1383		1850	6	80	30	24	<1	<4	<0.01
							1159071	1383	1384		44	6	110	42	28	<1	<4	<0.01
							1159048	1384	1385		24	4	75	40	28	<1	<4	<0.01
					1384.5 – 1398.2 : Change over 5 cm to dk purplish-gy, vesicular and amygdaloidal volcanic although m.gr. and dk. gy-gn at 1384.8 – 1385.05 and 1385.15 – 1385.35. Below 1386, gradual change to mid gy-gn, m.gr. amygdaloidal volcanic.		1159049	1389	1390		16	6	85	34	28	<1	<4	<0.01
							1159050	1394	1395		32	6	75	32	28	<1	<4	<0.01
					Contains disseminated cuprite (?) 1388.3 – 1393.4 (estimated 1% cuprite) 1395.1 – 1395.3 (estimated 1–2% cuprite) and 1398.0 – 1398.2 (estimated 5% cuprite). "Cuprite" later found to be hematite with a metallic coppery lustre. END OF HOLE		1159051	1398.0	1398.2		6	6	80	36	28	<1	<4	<0.01

ABBREVIATIONS

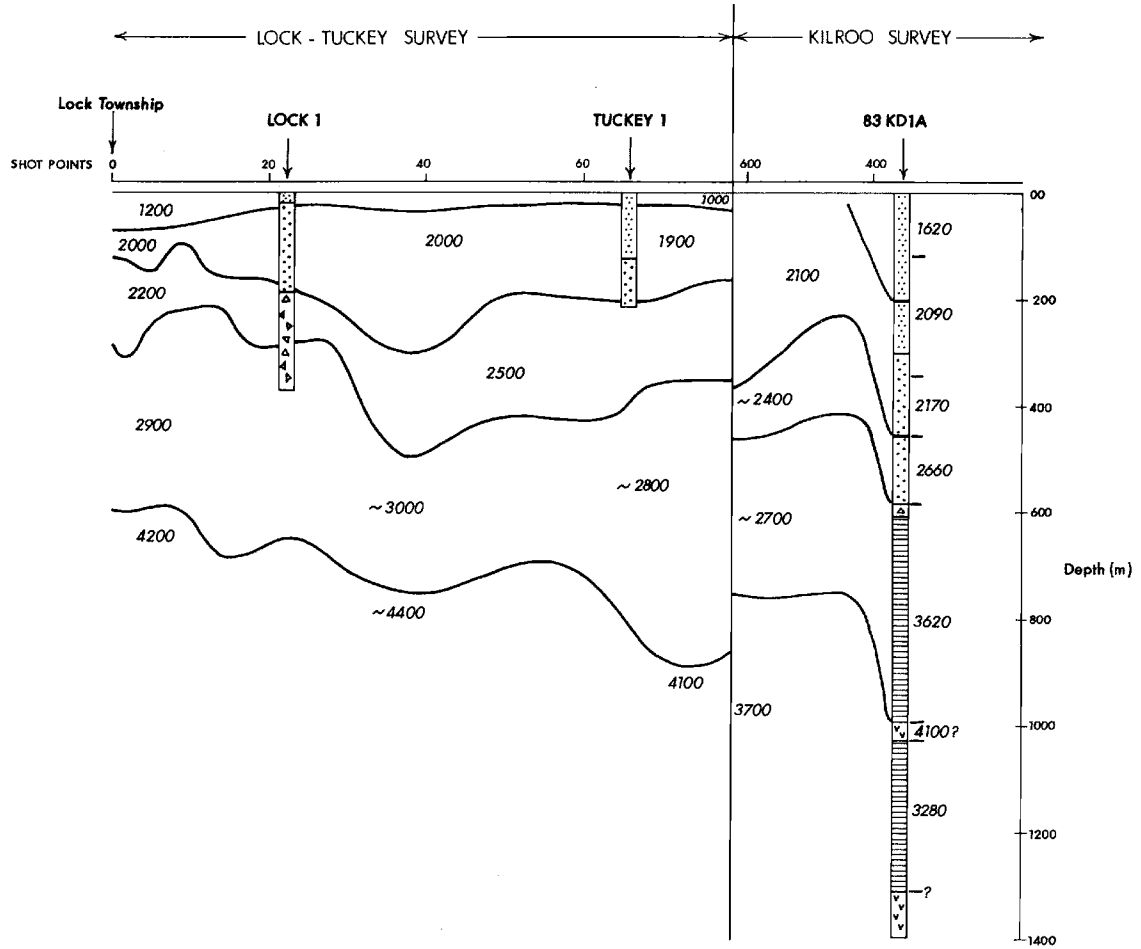
sst	sandstone	q/z	quartz
slst	siltstone	v	very
mst	mudstone	f	fine
cgl	conglomerate	m	medium
		c	coarse
lt	light	gr	grained
dk	dark	ang	angular
gy	grey	rd	rounded
gn	green	carb	carbonaceous
wh	white		
bl	black		
bn	brown		

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY A.K. SCOTT DATE _____

SHEET 13 OF 13

CRAE 117
PLAN No M414



LEGEND

- Coal or lignite
- Tertiary
- Jurassic
- Permo-Carboniferous
- Cambrian ? Basalt
- 2500 Calculated seismic velocity (m/sec)
- Interpreted reflection

HORIZONTAL 0 5 10 15 20 25 kilometres

VERTICAL 0 200 400 600 800 1000 metres

CRA EXPLORATION PTY LIMITED

TUCKEY, EL 1054 — S.A. SEISMIC INTERPRETATION FROM LOCK TO KILROO

REF	KIMBA SI 53-7		
SCALE	H: 1:250000 V: 1:10,000		
AUTHOR	AKS	REPORT	12673
DATE	1-6-84	PLAN No	SAa 2812

CRA EXPLORATION PTY. LIMITED

COMPOSITE BOREHOLE LOG

83 KD 1A

Report No. 12673
Plan No. SAa 2858

3973-81a

Tenement TUCKEY E L1054 - S A
1:250000 Sheet KIMBA SI 53-7
Location LAT. 33° 34' 58"
LONG 136° 02' 37"
Commenced 20 JANUARY 1984
Completed 10 MARCH 1984
Geologycal log A K SCOTT
Geophysycal log GEOSCIENCE ASSOC P/L
Vertical Scale 1 : 500

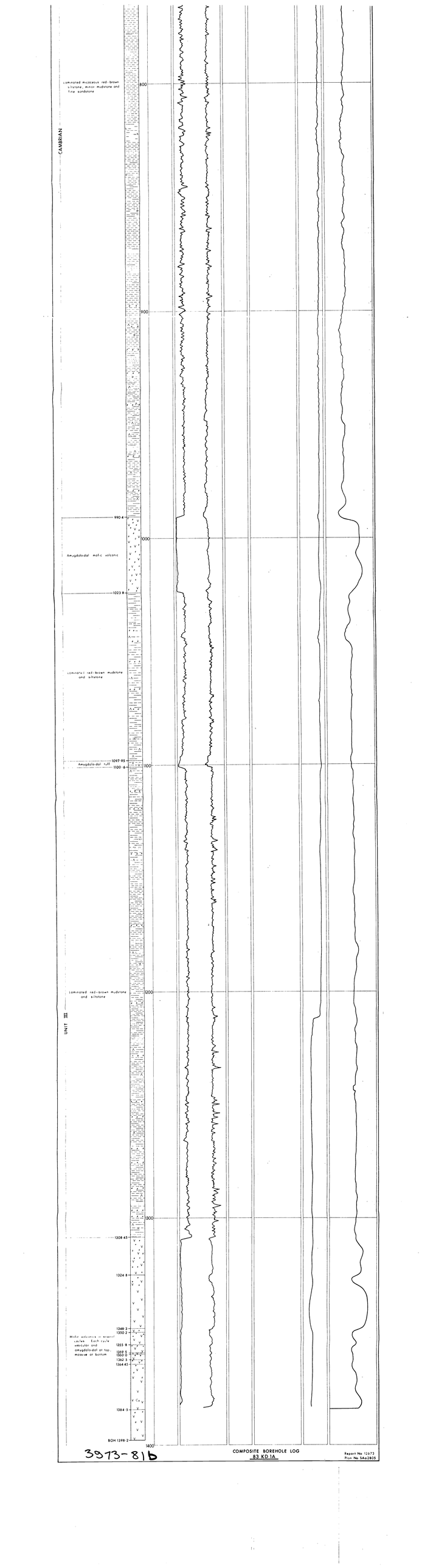
Mudstone, Shale
Siltstone
Sandy Siltstone
Silty Sandstone
Fine to Medium Sandstone
Coarse Sandstone
Grit
Coal, Lignite
Amygdaloidal & Vesicular Volcanic
Volcanic
Tuff

P Pyrite
• Pebble, Cobble
h Hematite
Cu Copper
c Carbonaceous
A Anhydrite
cm Calcareous Matrix

Description | Lithology | DEPTH (M) | Caliper | Gamma | Neutron | Density | 12 Density | Sonic | S.P. | Resistivity | 1-0-Normal

Colcrete, sand
Lateritic clay and sand
Lateritic clayey sand
Lateritic clay (mottled red-brown, brown)
Base of oxidation 56
Fine sand
Blue-grey clay
Fine sand
Blue-grey clay, minor carbonaceous clay
PCSELVENA FORMATION
Fine-medium sands, minor coarse sand, carbonaceous mudstone and lignite
Medium sands with minor siltstone, carbonaceous shale and lignite
Interbedded siltstone and fine-medium sands, minor lignite and coal
POLDA FORMATION
519.3
Gritty sandstone with minor siltstone and silty sandstone
555.4
Mudstone and carbonaceous mudstone with minor coal
573.3
Grit with minor pyritic siltstone
583.2
very fine white sandstone and diamictite
593.3
Dark grey coarse diamictite
COOLARDIE FM
603.3

100
200
300
400
500
600
700



3973-81b

COMPOSITE BOREHOLE LOG
83 KD 1A

Report No 12673
Plan No SAo2803

CRA EXPLORATION PTY. LIMITED

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SEVENTH QUARTERLY REPORT ON TUCKEY E.L. 1054, SOUTH AUSTRALIA, FOR THE PERIOD ENDING 18TH JULY, 1984.

AUTHOR: A.K. SCOTT

COPIES TO: CIS CANBERRA
SADME

DATE: 23RD AUGUST, 1984

SUBMITTED BY: A.K. Scott

ACCEPTED BY: C.D. Tulbert

12824
RECEIVED
31 AUG 1984
DEPT. OF MINES AND ENERGY SECURITY
3973 - VII

1743

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1. INTRODUCTION

E.L. 1054 covers part of the Polda Trough on Eyre Peninsula (see plan no. SAa 1932). It was obtained to search for potash in the pre-Permian sediments of the eastern (or Kilroo) sub-basin of the Polda Trough.

Details of previous exploration in the E.L. are given in CRAE reports nos. 12527 and 12673.

2. EXPLORATION

No exploration activities were carried out during the quarter.

A.K. SCOTT

AKS/pw

EXPENDITURE

Expenditure for the period ended 31st July, 1984, the nearest accounting period was $6930.00, as listed below.

	$
Drilling	(394)
Payroll	1722
Supplies	282
Vehicle	224
Property	1034
Tenements	1521
Contractors	211
Laboratory	1657
Overheads	673
Total	$6930

LOCATION

Kimba SI 53-7 1:250 000 sheet

KEYWORDS

Potash, Basin.

LIST OF PLANS

Plan No.	Title	Scale
SAa 1932	Tuckey E.L. 1054 Location Plan	1:250 000

CRA EXPLORATION PTY. LIMITED

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EIGHTH QUARTERLY REPORT ON TUCKEY E.L. 1054, SOUTH AUSTRALIA, FOR THE PERIOD ENDING 18TH OCTOBER, 1984

AUTHOR: A. K. SCOTT

COPIES TO: CIS CANBERRA
SADME

DATE: 1ST NOVEMBER, 1984

SUBMITTED BY:

ACCEPTED BY:

12942
RECEIVED
4 DEC 1984
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1.0 INTRODUCTION

E.L. 1054 covers part of the Polda Trough on Eyre Peninsula (see plan no. SAa 1932). It was obtained to search for potash in the pre-Permian sediments of the eastern (or Kilroo) sub-basin of the Polda Trough.

Details of previous exploration in the E.L. are given in CRAE reports nos. 12527, 12673 and 12824.

2.0 EXPLORATION

No exploration activities were carried out during the quarter.

A.K. SCOTT

AKS/pw

1750

EXPENDITURE

Expenditure for the period ended 31st October, 1984, the nearest accounting period was $$1178.00, as listed below.

	$
Payroll	897
Overheads	281
Total	$1178

1751

LOCATION

Kimba SI 53-7 1:250 000 sheet

KEYWORDS

Potash, Basin.

LIST OF PLANS

Plan No.	Title	Scale
SAa 1932	Tuckey E.L. 1054 Location Plan	1:250 000

CRA EXPLORATION PTY. LIMITED

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NINTH QUARTERLY & FINAL REPORT ON TUCKEY E.L. 1054, SOUTH AUSTRALIA, FOR THE PERIOD ENDING 18TH JANUARY, 1985.

AUTHOR: P. LEWIS

COPIES TO: CIS CANBERRA
SADME

DATE: 25TH MARCH, 1985

SUBMITTED BY:

ACCEPTED BY:

RECEIVED
3 APR 1985
DEPT. OF MINES AND ENERGY SECURITY
3973-7

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1. SUMMARY

Tuckey E.L. 1054 covers part of, one of three tenements which were taken out to explore for economic lignite deposits within the Polda Basin. Interest in the area was generated by the Lock Coalfield in the central part of the basin and the reported lignitic intervals in previous company, SADME and water bores drilled within the basin. An assessment of this data outlined prospective areas to be tested by drilling. In addition detailed gravity data was obtained over the northern margin fault in an attempt to define the basement topography.

Seventy two rotary mud holes (including three partially cored holes) for a total of 7922 m were drilled by CRAE in the Polda Basin. Sixteen open holes and two partially cored holes were drilled within Tuckey E.L. 1054. The thickest lignite intersections made by CRAE occur in this area being a 15.3 m seam from 221 m in 81LRM41C and an 8.9 m seam from 60 m in 80LRM5C. The results of drilling in the area have indicated a potential lignite resource of 220 million tonnes, of which 140 million tonnes occurs below 200 m. The quality of the lignite is comparable to other South Australian lignites. The depth of the lignite precludes further exploration for a mineable resource at present.

The intersection of halite in Lower Palaeozoic sequences in Mercury No. 1 drilled in the offshore Polda Basin generated interest in the Tuckey area for potash associated with similar evaporitic sequences. A 17 km seismic traverse complete over the Polda Basin within the Tuckey area indicated the presence of Pre-Permian sediments. A 1398 m rotary mud/diamond drill hole intersected 793 m of ?Cambrian argillaceous red beds and basalts.

No evaporitic sediments were intersected. Stratigraphic correlation of this sequence with holes drilled in the offshore Polda Basin and in Officer Basin suggest that evaporites if present would occur below the basalts at the base of the hole. There is no certainty that evaporites exist in this part of the basin. Further exploration for potash is not justified on present results.

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2. INTRODUCTION

Tuckey E.L. 1054 was granted to CRA Exploration Pty. Limited on 19th October, 1982. The term of the licence was extended to 36 months on 19th October, 1984. The licence covers an area of 355 square kilometres over the eastern part of the Polda Basin (plan SAa 1932) and coincides with the northern retained portion of E.L. 687 previously held by CRAE.

3. CONCLUSIONS

The results of drilling by CRAE within Tuckey E.L. 1054 have indicated a potential lignite resource of 220 million tonnes. However, the depth to and quality of the lignite precludes further exploration of this resource at present.

The potash potential of the eastern onshore part of the Polda Basin remains untested. However, if evaporitic sequences are present they would occur below 1000 m on the basin margin and 1400 m in the centre of the basin. If potash was associated with such sequences it is most likely to occur in the deepest part of the basin (Scott 1984b). The presence of the basalts in the sequence downgrades the potential of the area. The cost of further exploration for potash below 1400 m in this area is not considered justified at present.

4. WORK CARRIED OUT

4.1 Coal Exploration

4.1.1 Data Evaluation

All open file data on the onshore portion of the Polda Basin was reviewed. Data from 211 drill holes (Company, SADME and water bore) was summarised noting the depth to and thickness of reported carbonaceous/lignite intervals and basement lithologies. This data was compiled onto 1:250 000 base plans and used to define target areas for drill testing (Flitcroft, 1980).

4.1.2 1980 Gravity Survey

Gravity data was acquired at 113 stations along two traverses (station spacing 500 m) across the eastern end of the Polda Basin in an attempt to define the basement topography. Qualitative interpretation of the data indicated a sub-basin

adjacent to the northern margin fault. The location of the traverses, survey specifications, data listings, profiles and interpretation occur in Flitcroft, 1980.

4.1.3 1981 Gravity Survey

Following the first phase of drilling Geoterrex Pty. Limited were contracted to complete a gravity survey over the northern margin fault. Gravity data was acquired at 130 stations along five 5 km traverses. Interpretation of the data indicated the fault is near vertical within the Tuckey E.L. but dips 45°-60° to the south to the west of the licence. Throw on the fault is interpreted to be around 1000 m. Survey specifications, data listings, location of traverses and interpretation of the data occur in McBain, 1981.

4.1.4 Drilling

Two drilling programmes were completed to assess the lignite potential of the Polda Basin tenements. The first comprising 42 holes (including two partially cored holes) was completed by Thompson Drilling during August-October, 1980, and the second comprising 30 holes (including one partially cored hole) was completed by W.L. Sides and Sons during May-July, 1981. Sixteen open holes and two partially cored holes were completed in the area covered by Tuckey E.L. 1054.

4.1.4.1 Drill Hole Results

Lignite was intersected in eight holes drilled within Tuckey E.L. 1054, the thickest intersections being a 15.3 m seam from 221 m in 81LRM41C and an 8.9 m seam from 60 m in 80LRM5C. The results of the drilling completed around these holes have indicated a potential lignite resource of 220 million tonnes of which 140 million tonnes occurs below 200 m of cover. The lignite occurs in narrow zones roughly parallel to the northern margin fault, the shallow lignite occurring on the upthrown side of the fault. Both lignite occurrences remain open to the east. Detailed drill logs, cross sections and a full evaluation of the drilling programmes occur in Flitcroft, 1980 and 1982.

4.1.4.2 Lignite Analyses

Samples of the lignite intersected in holes 80LRM5C and 81LRM41C were submitted for proximate and ultimate analyses. The lignites have high moisture, moderate to high ash, and moderately high sodium, chlorine and sulphur contents. The lignites are comparable to the Tertiary lignites of the north St. Vincent Basin and Kingston areas. Full analyses are presented in Flitcroft, 1982.

4.1.4.3 Geochemistry

Samples of the basement and selected samples of the cover sediments were analysed for copper, lead, zinc, cobalt, gold, silver and molybdenum by AAS techniques and tin, tungsten, uranium and tantalum by XRF techniques. No anomalous assays worthy of follow up were returned. Full assay results occur in Flitcroft, 1982.

4.1.3.4 Palynology

Palynological examination of three core samples of the lignite in 80LRM5C indicated an Eocene age. A report on all age determinations is presented in Appendix IV of Flitcroft, 1982.

4.1.5 Downhole Geophysics

All holes drilled in the 1980 and 1981 drilling programmes were geophysically logged by Geoex Pty. Limited for caliper, natural gamma, neutron, short and long spaced density, resistance and self potential. Downhole geophysical logs occur in Flitcroft, 1980 and 1982.

4.1.6 Geophysical Surveys

Gravity and experimental seismic and E.M. surveys were conducted along a 3 km north south traverse through drill holes 81LRM41-80LRM5-81LRM42. Gravity readings were taken at 40 m intervals from 400 mN to 3000 mN. The survey specifications, data listings, profiles and interpretation occur in Flitcroft, 1981. The results were consistent with those obtained from the earlier surveys.

An experimental seismic reflection survey was conducted by the SADME from 650 mN to 1700 mN. All data and results are held by the SADME.

An experimental E.M. survey was conducted by Geoterrex along the traverse from 200 mN to 2700 mN using the 'maxi-probe' EMR-16 system developed by Geoprobe Limited. The apparent resistivities and an interpretation report occur in Flitcroft, 1981.

4.2 Potash Exploration

4.2.1 Data Evaluation

Thick sequences of ?Lower Palaeozoic sediments were intersected in two oil exploration wells (Mercury No. 1, Columbia No. 1) drilled by Australian Occidental Pty. Ltd. in the offshore Polda Basin. Mercury No. 1 which was drilled on an interpreted salt dome intersected 1700 m of interbedded halite and red siltstones. Five metre composite samples were taken from this interval and submitted for bromine in salt analyses. Bromine values ranged from 8-400 ppm but no trends were evident. Full analyses were presented in Appendix II of Scott, 1984a.

Although the bromine profile of the salt intersection in Mercury No. 1 was inconclusive the presence of the salt indicated exploration of the onshore portion of the Polda Basin for potash associated with similar sequences was warranted.

The SADME initially planned to drill a stratigraphic hole in the eastern part of the Polda Basin. A 17 km seismic traverse was completed by the SADME mainly within Tuckey E.L. 1054 to provide better definition of the bottom of the basin and to site the drill hole. With the SADME stratigraphic hole being drilled in the eastern part of the Polda Basin, CRAE planned to drill a hole in the western part of the basin. The SADME drill hole was later cancelled and CRAE decided to drill the first hole in the eastern part of the basin. An interpretation of the stratigraphy and structure of this part of the basin was made from available drill hole data, gravity data and the SADME seismic section (Scott, 1984a). A hole was proposed to test an interpreted sub-basin marginal to the deepest part of the basin.

4.2.2 Drilling

The drilling was completed by F.A. Kelly Pty. Ltd. during the period December, 1983 - March, 1984, using a Warman 1500 drill rig. The initial drill hole 83KD1 was abandoned at 336 m due to problems with lost circulation and swelling clays. Drill hole 83KD1A sited approximately 7 m away from 83KD1 was completed at 1398 m after penetrating 90 m of basalt. The hole intersected 301 m of Tertiary sands, clays and lignite, 282 m of Jurassic sands, grits and minor coal, 22 m of Permo-Carboniferous diamictite and 793 m of ?Cambrian argillaceous red beds and basalts. No evaporitic sediments were intersected. Detailed descriptions of the stratigraphy intersected in the drill hole occur in Scott, 1984b. Stratigraphic correlation of this sequence with that in holes drilled in the offshore Polda Basin and the Officer Basin suggests that evaporites, if present, would occur below the basalts. However, there is no certainty that evaporites exist in this part of the basin.

Selected samples of the Jurassic grits, Permian diamictite and ?Cambrian red-beds, tuffs and basalts were analysed for selected elements. Native copper occurs in the basalt between 1378.4 m and 1382.5 m. Maximum copper assay over this interval was 4000 ppm. Full assay results, detailed drill log, petrological descriptions and discussion of the drilling programme occur in Scott, 1984a and 1984b.

4.2.3 Downhole Geophysics

The drill hole was geophysically logged by Geoscience Associates Pty. Ltd. Natural gamma, caliper, long (80 cm) and short (30 cm) spaced density, neutron, sonic and drift logs were obtained to 596 m at the completion of the rotary mud drilling. Natural gamma, neutron, self potential and resistivity (0.4 m and 1.6 m normal and 1.8 m lateral) logs were obtained from 596 m to 1384m. Caliper and short spaced density logs were only obtained to 701 m due to a blockage in the hole. All geophysical logs except the 0.4 m normal and 1.8 m lateral logs are shown on plan SAa 2805, in Scott, 1984b.

Paul Lewis

P. LEWIS

PL/pw

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EXPENDITURE

Expenditure for the period ended 31st January, 1985, the nearest accounting period was $1202.00, as listed below.

	$
Payroll	1287
Supplies	4
Tenement	662
Contractors	-1431
Overheads	680
Total	$1202

REFERENCES

Flitcroft, M.J.N. 1980 — First Quarterly Report on Polda Basin, South Australia. McLachlan E.L. 670 For The Period Ending October 7, 1980, Tuckey E.L. 687, Sheringa E.L. 688 For The Period Ending November 11, 1980. CRAE Report No. 10307.

Flitcroft, M.J.N. 1981 — Fourth Quarterly Report on Polda Basin, South Australia. McLachlan E.L. 670 For The Period Ending July 7, 1981, Tuckey E.L. 687, Sheringa E.L. 688 For The Period Ending August 11, 1981. CRAE Report No. 10307

Flitcroft, M.J.N. 1982 — Sixth Quarterly Report on Polda Basin, South Australia. McLachlan E.L. 670 For The Period Ending January 7, 1982, Tuckey E.L. 687, Sheringa E.L. 688 For The Period Ending February 11, 1982. CRAE Report No. 10307

McBain, D.R. 1981 — Third Quarterly Report on Polda Basin, South Australia. McLachlan E.L. 670 For The Period Ending April 7, 1981, Tuckey E.L. 687, Sheringa E.L. 688 For The Period Ending May 11, 1981. CRAE Report No. 10307

Scott, A.K. 1984a — Fifth Quarterly Report on Tuckey E.L. 1054, South Australia, For The Period Ending 18th January, 1984. CRAE Report No. 12527

Scott, A.K. 1984b — Sixth Quarterly Report on Tuckey E.L. 1054, South Australia, For The Period Ending 18th April, 1984. CRAE Report No. 12675

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LOCATION

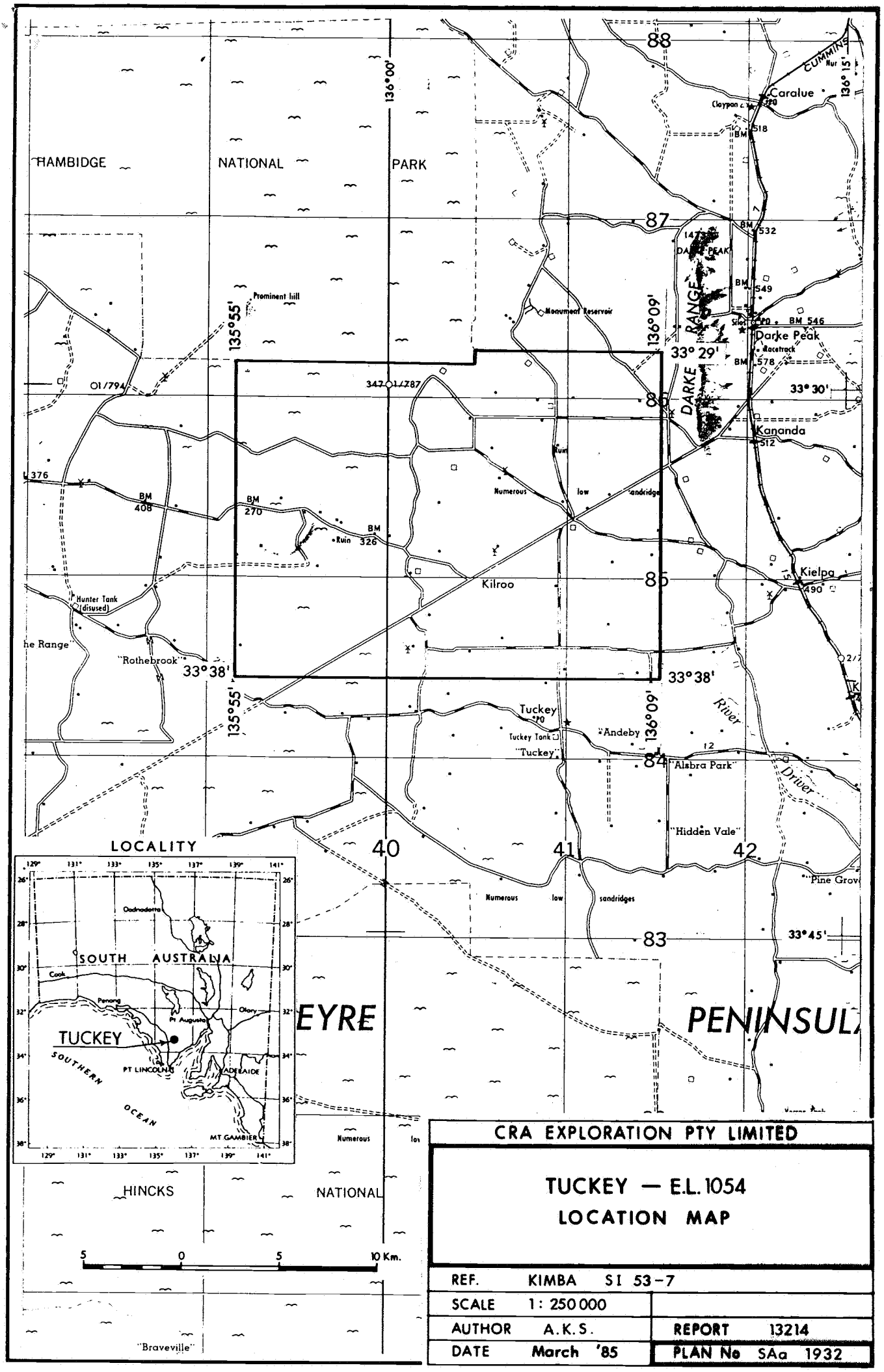
Kimba SI 53-07 1:250 000 sheet

KEYWORDS

History

LIST OF PLANS

Plan No.	Title	Scale
SAa 1932	Tuckey E.L. 1054 Location Map	1:250 000



CRA EXPLORATION PTY LIMITED

TUCKEY — E.L. 1054
LOCATION MAP

REF.	KIMBA SI 53-7		
SCALE	1 : 250 000		
AUTHOR	A.K.S.	REPORT	13214
DATE	March '85	PLAN No	SAa 1932