C.R. 5073

EXPLORATION LICENCE 3061
BONE LAGOON, MOUNT YOUNG, NORTHERN TERRITORY

FINAL REPORT

D. CARVILLE

JUNE 1986

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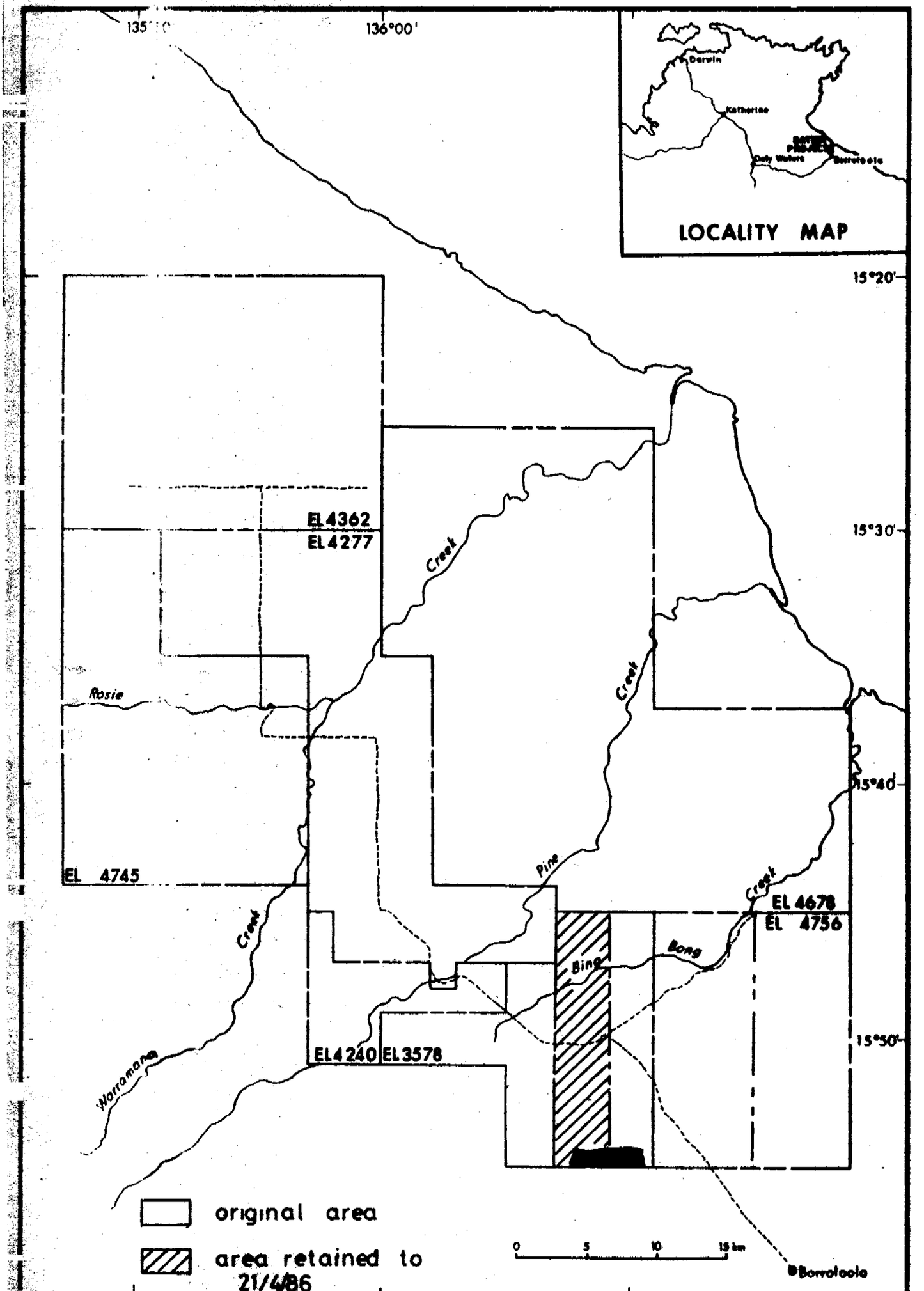


Centre:	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No:
Date:	EL 3061 BONE LAGOON, N.T.	Drawing No: A4-105
	LOCATION	

EXPLORATION LICENCE 3061

BONE LAGOON, MOUNT YOUNG, NORTHERN TERRITORY

FINAL REPORT

1. INTRODUCTION

Exploration Licence 3061 was granted to BHP Minerals Limited on the 5th August, 1981 covering 80 graticule blocks (about 258 square kilometres). Area reduction normally required at the end of the second year of tenure was deferred under Section 28 of the Mining Act 1980. The area covered by the licence was reduced by forty blocks on the third anniversary, and subsequently reduced by a further twenty blocks on the 5th August, 1985. The final area was relinquished on 21st April, 1986.

The north-east corner of the original exploration licence was located at latitude 15^{o} 45'S, longitude 136^{o} 15'E on the Mount Young 1:250,000 sheet (SD53-15, Figure 1). Access is gained via dry-weather tracks which leave the Borroloola to Bing Bong Station road about seven and thirty-six kilometres from Borroloola.

The initial exploration target in EL 3061 was Groote Eylandt-type manganese deposits in the Cretaceous sediments overlying Carpentarian sediments of the McArthur Basin. Exploration has subsequently been directed toward sediment-hosted base metal massive sulphide deposits. The target is modelled on the HYC deposit at McArthur River which is hosted by dolomitic, carbonaceous and pyritic shale of the Barney Creek Formation of the Carpentarian McArthur Group.

Work carried out within EL 3061 has consisted of:

1. Systematic rotary percussion drilling of Cretaceous sediments for manganese deposits.

2. Detailed aeromagnetic survey.

.../2

3. Electromagnetic soundings using the Geonics EM-37 system.

4. Three diamond drill holes totalling 795 metres.

2. GEOLOGY

Outcrop geology in EL 3061 is dominated by Cambrian and Cretaceous sandstone and is obscured by recent sand cover (Figure 2).

Geological information is added by the three diamond drill holes drilled in 1983 indicating that stratigraphic units lower than the Barney Creek Formation occur in the southern, central and north-eastern parts of the area.

3. GEOPHYSICS

3.1 Aeromagnetic Survey

A detailed high resolution aeromagnetic survey was flown over EL 3061 in May 1983 in conjunction with surveys over adjacent exploration licences. Flight lines were orientated north-south with 300 metre spacing. Nominal terrain clearance was 80 metres. Total magnetic intensity contours are shown in Plate 1.

The aeromagnetic pattern is dominated by a magnetic high in the north-eastern part of the area, and an adjacent area to the south with a confused magnetic pattern dissected by north and north-east trending lineaments. The easternmost north-trending lineament is interpreted as the eastern branch of the Emu Fault.

3.2 1983 EM-37 Soundings

The Geonics EM-37 electromagnetic system was used in the sounding mode at seven locations in EL 3061 in 1983. One sounding was carried out over each of the three diamond drill hole collar positions, one sounding was located in the south-western part of the area at a proposed drill hole location which was subsequently not drilled, and three soundings were carried out on an east-west grid line, (Figure 2).

.../3

The raw data for these soundings was provided in the annual report to 4th August, 1984.

All soundings along the traverse line (soundings numbered 11, 12 and 18) and sounding 14 indicated a surficial conductive zone overlying highly resistive material. Red shale units intersected in drill holes McA13 and McA14 are reflected by zones of lower resistivity.

3.3 1984 EM-37 Soundings

EM-37 soundings were carried out at seven locations in the south-west corner of the licence area in 1984 as part of an extensive survey covering adjacent tenements. Interpretation methods and results are shown in Appendix 1.

None of the sounding interpretations produced a conductor comparable to massive sulphide mineralisation or black shale with a significant sulphide component.

4. DIAMOND DRILLING

Three diamond drill holes totalling 795 metres were drilled in EL 3061 in 1983. Collar locations are shown in Figure 2, and summary geological, geochemical and geophysical logs in Plates 2, 3 and 4. All holes were collared in HQ diameter core, and completed in NQ. A core-grinder was used to take 3 metre continuous edge-ground samples of all core. Resistivity and self-potential logs were run where possible, and PVC pipe run to enable further logging. Gamma and density logs were then run where possible.

Drill hole McA12 was completed at 137 metres having intersected pink cyclic algal dolomite, intraclast breccia and dolomitic shale of the Mallapunyah Formation.

Drill hole McA13 was completed at 311 metres after passing through quartz arenite and red shale into grey dolarenite and dololutite.

.../4

The sequence is interpreted as part of the Tawallah Group, probably the Wollogorang Formation. A similar sequence was drilled in drill hole McA14 which was drilled to 347 metres.

Water bores were drilled at each of the diamond drill hole sites because of difficulties in carting water due to sandy conditions. Steel casing was run in each hole with slotted steel casing near the base. A submersible pump was used, and the bores are temporarily capped.

5. ROTARY PERCUSSION DRILLING 1981.

Thirty rotary percussion drill holes were drilled in EL 3061 as part of the exploration for Groote Eylandt-type manganese deposits. Drilling totalled 832 metres and was targeted to test Cretaceous stratigraphy overlying McArthur Group sediments or Cambrian Bukalara Sandstone.

Gamma logs were run down-hole in an attempt to establish stratigraphic correlations.

Graphic geological logs and gamma logs are shown in Figure 3.

6. CONCLUSIONS

Rotary percussion drilling failed to indicate the presence of manganese mineralisation in EL 3061.

Geophysical surveys and diamond drilling failed to indicate areas prospective for base metals.

The last portion of twenty graticule blocks was relinquished on the 21st April, 1986.

.../5

7. EXPENDITURE

Wages and Salaries	37,699
Field Support	7,697
Drilling	59,503
Vehicles	9,112
Equipment	17,080
Geochemistry	7,024
Geophysics	29,797
Surveys	5,109
Tenement Fees	2,800
Sundry Office Costs	1,113
Capital Items	9,654
Other Items	858
Inhouse Services	20,450
General & Administrative Overheads	20,790
	$228,686

APPENDIX 1

1984 EM-37 SURVEY

SOUNDING INTERPRETATION

1984 EM-37 SURVEY

SOUNDING INTERPRETATION

Transmitter loops were 300m x 300m with the current generally being 13-17 amps. Twenty channels were read at the centre of the loop while two out-of-loop readings of the last 5 or 6 channels were taken. The out-of-loop readings were used to -

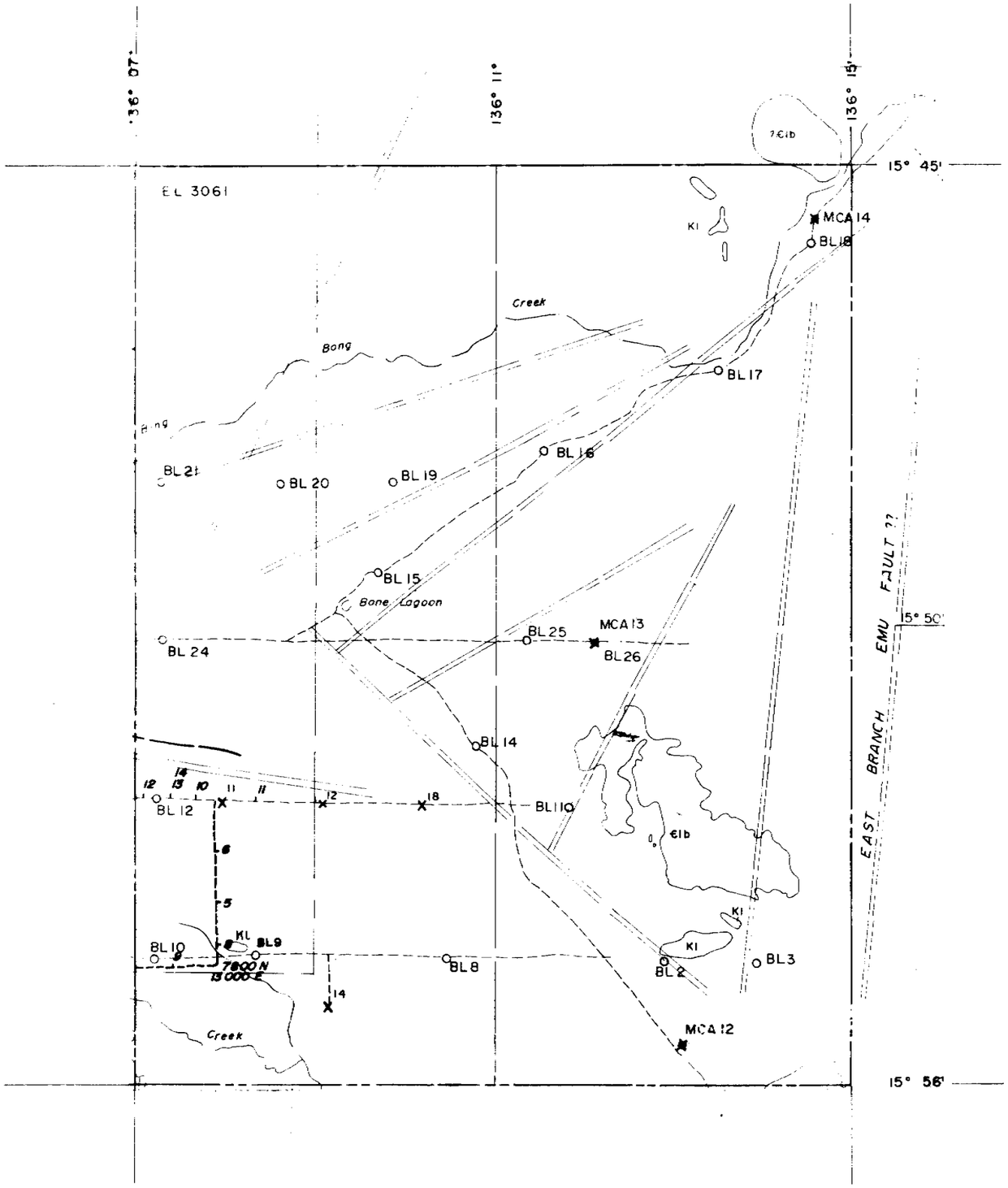
(a) test for lateral homogeneity
(b) apply a correction to remove the "loop effect"

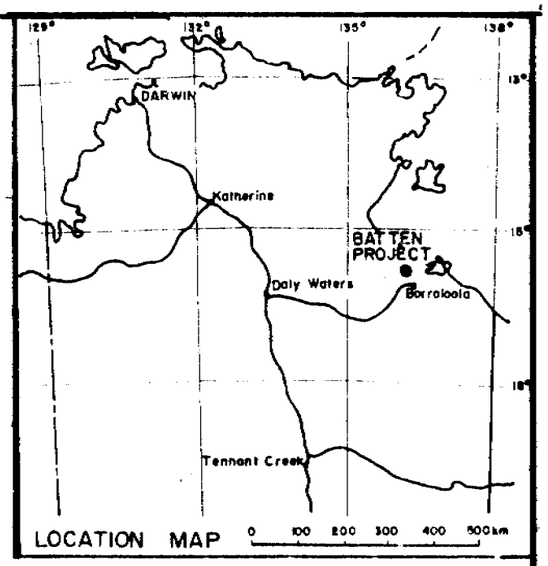
Standard EM-37 channels were used ranging from 0.08 msecs to 7.1 msecs.

Using the late time approximation by Kaufman, apparent resistivity-time plots were prepared in the field and matched to master curves to give a first pass ID interpretation. Inversion of the field data, using this first interpretation as a starting point, was computed on either a VAX 11/780 or MV6000 computer.

Attached for each sounding is -

(a) The field measured Raiche apparent resistivity-time plots.
(b) The model apparent resistivity-time plot superimposed on (a).
(c) The interpreted ID section.





KI — Cretaceous

€lb — Cambrian - Bukalara Sandstone

Aeromagnetic lineament

EM-37 Sounding Location. 1983

EM-37 Sounding Locations. 1984

Diamond Drillhole, 1983

Percussion Drillhole, 1981

Scale 1:100,000

0 20 40 60 80km

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

EL 3061, BONE LAGOON N.T.

GEOLOGY AND DRILL HOLE LOCATIONS

Revisions: 23 - 9 - 85

Prepared by : D. P. Carville	Centre : Darwin	
Date : 22 - 8 - 84	Project No. B39	Drawing No. A3 - 66
Drawn : Hilary		

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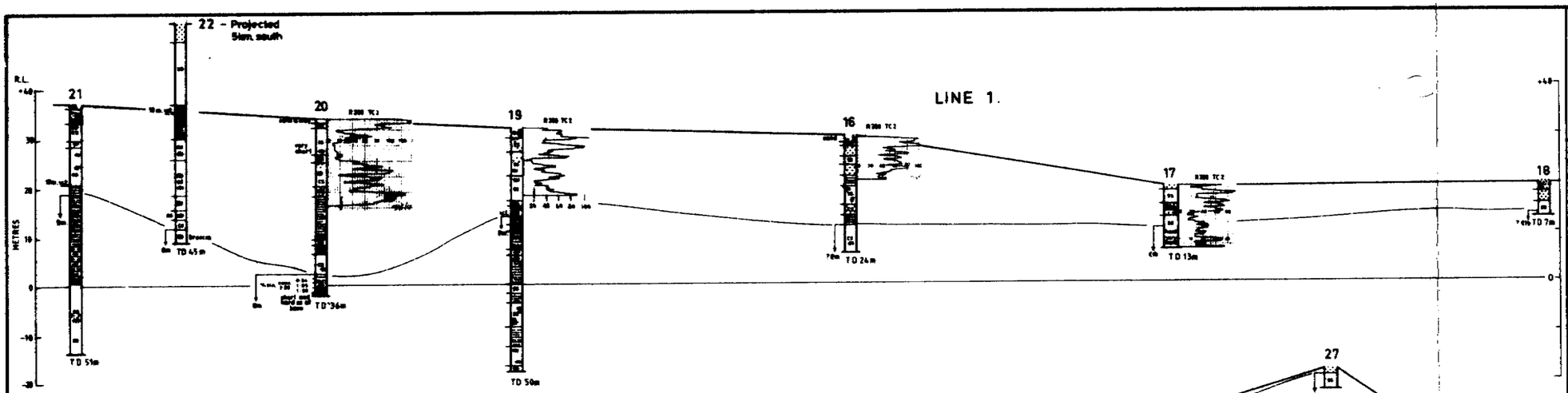

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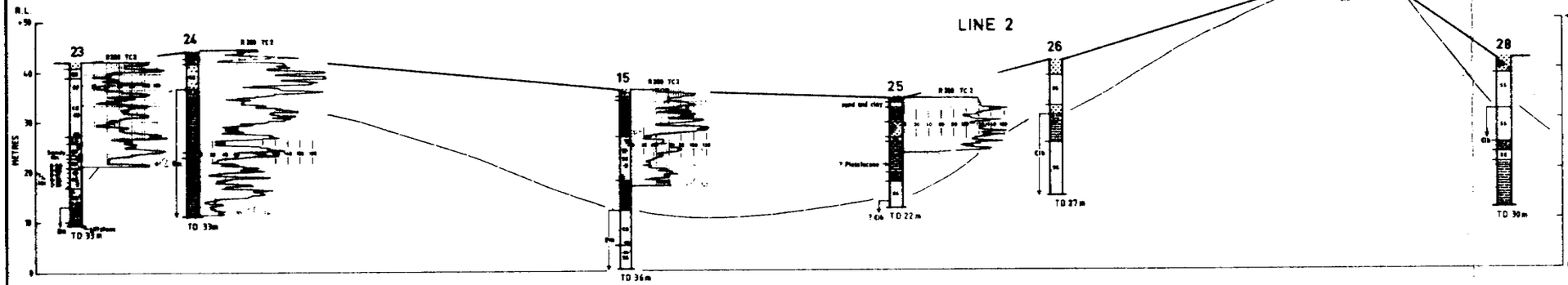

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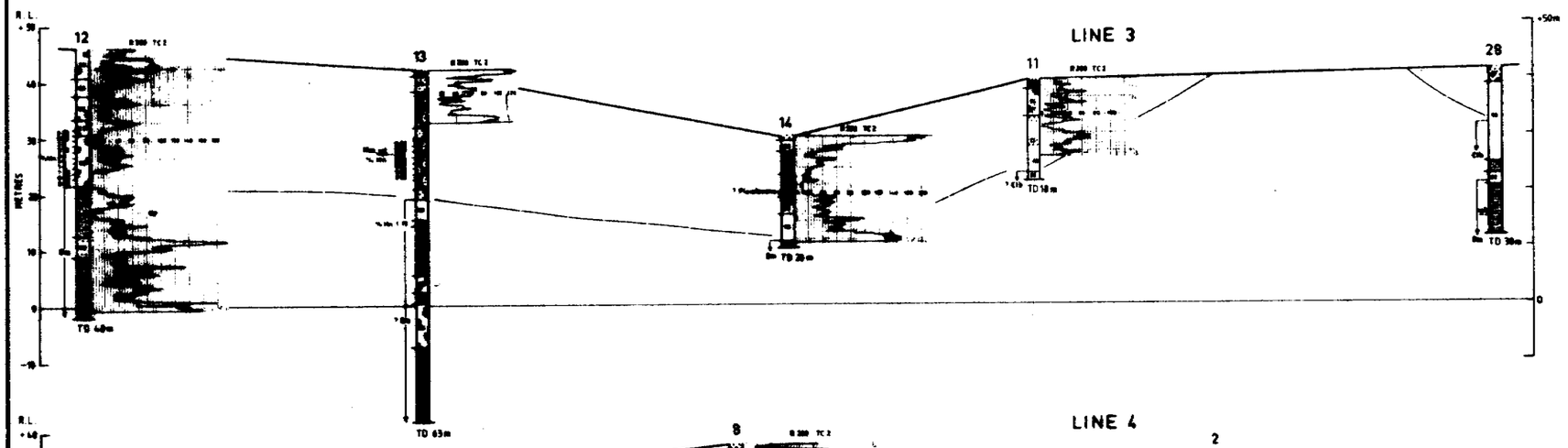

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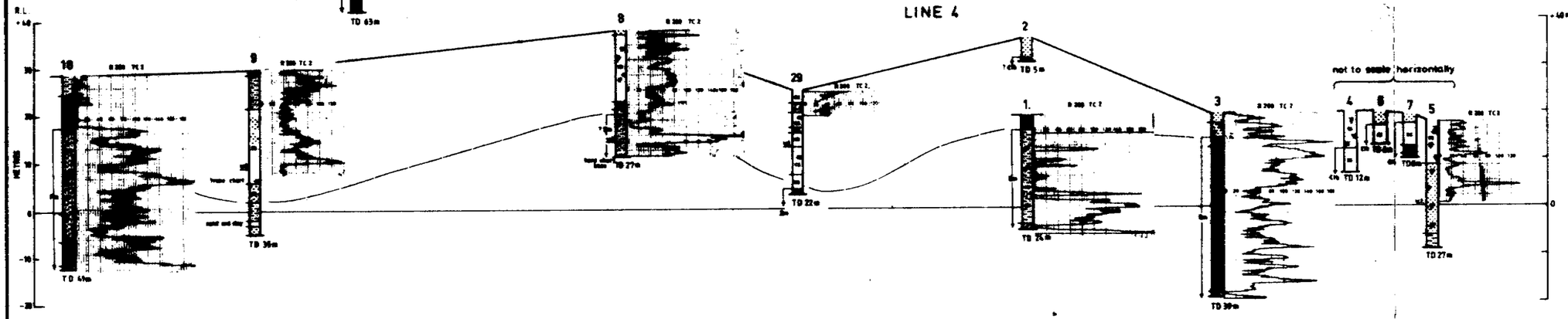
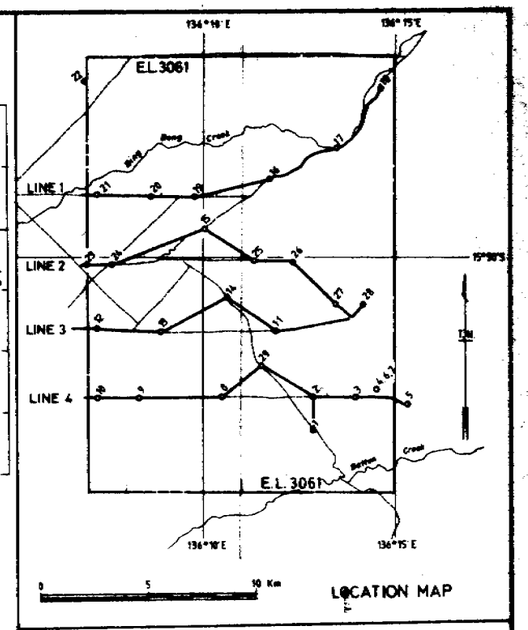
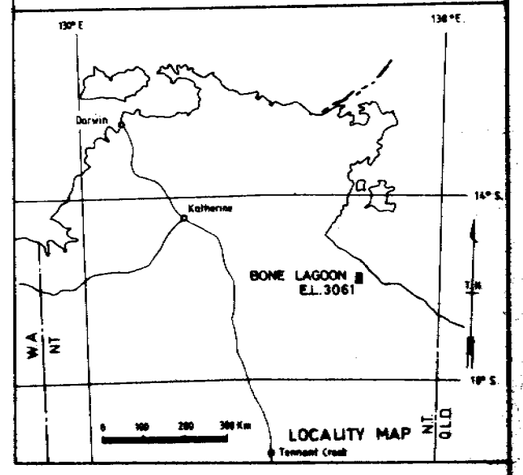


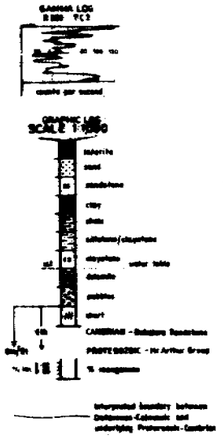




HORIZONTAL SCALE 1:50,000 Approx.

0 500 1000 1500 2000 2500 M.

VERTICAL SCALE 1:1,000.



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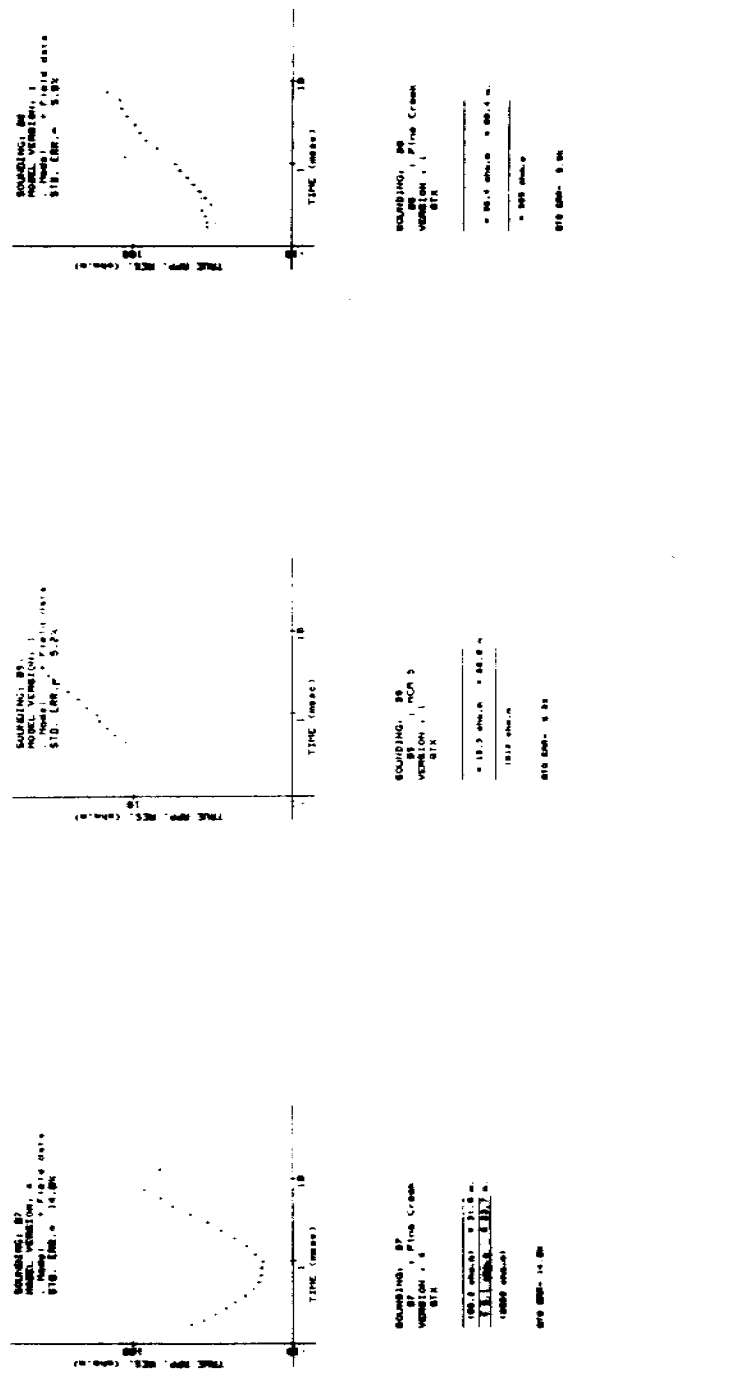
EXPLORATION DEPARTMENT

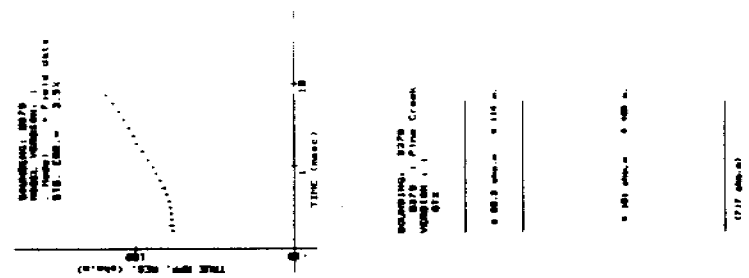
E.L.3061 - BONE LAGOON N.T.
GRAPHIC AND GAMMA LOGS
PERCUSSION DRILLING
LINES 1,2,3,4.

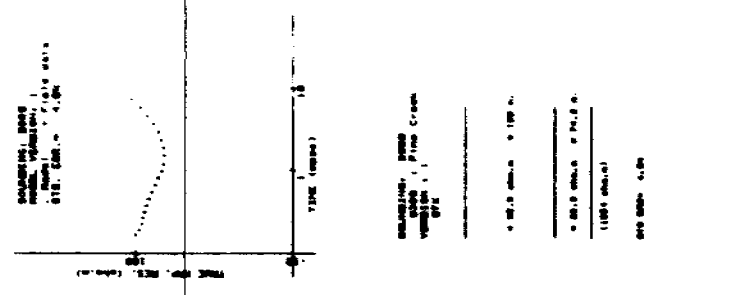
Drawn:	Date: 4.7.80	Country: Australia
Traced: C.G.	Project No: M330-4	Drawing No: A3-1571
Checked:		

Revisions:

Fig 5







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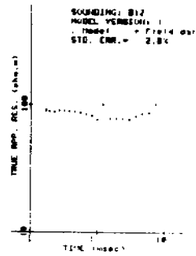
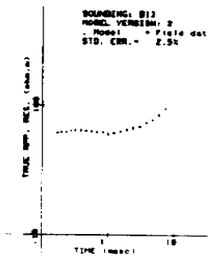
EXPLORATION DEPARTMENT

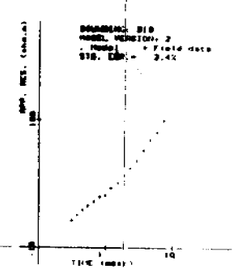
EL 3081, BONE LAGOON, N.T.
EM 37 SOUNDINGS
MCA 5 AREA

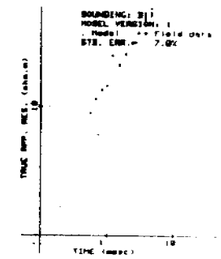
Drawn: A.S. Ross	Date: 11 - 2 - 88	Checked:
Traced: S.E.A.	Report No:	Drawing No: A1-
Checked:		

Fig 6.13









1000 W

98L 1

SOUNDING: B15
B15 : MCA5
VERSION : 1
GTX

1000 E

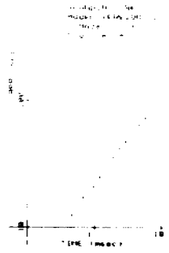
SOUNDING: B12
B12 : Pine Creek
VERSION : 1
GTX

SOUNDING: B13
B13 : Pine Creek
VERSION : 2
DGP

2 900 E

SOUNDING: B11
B11 : Pine Creek
VERSION : 1
GTX

SOUNDING: B6
VERSION : 2

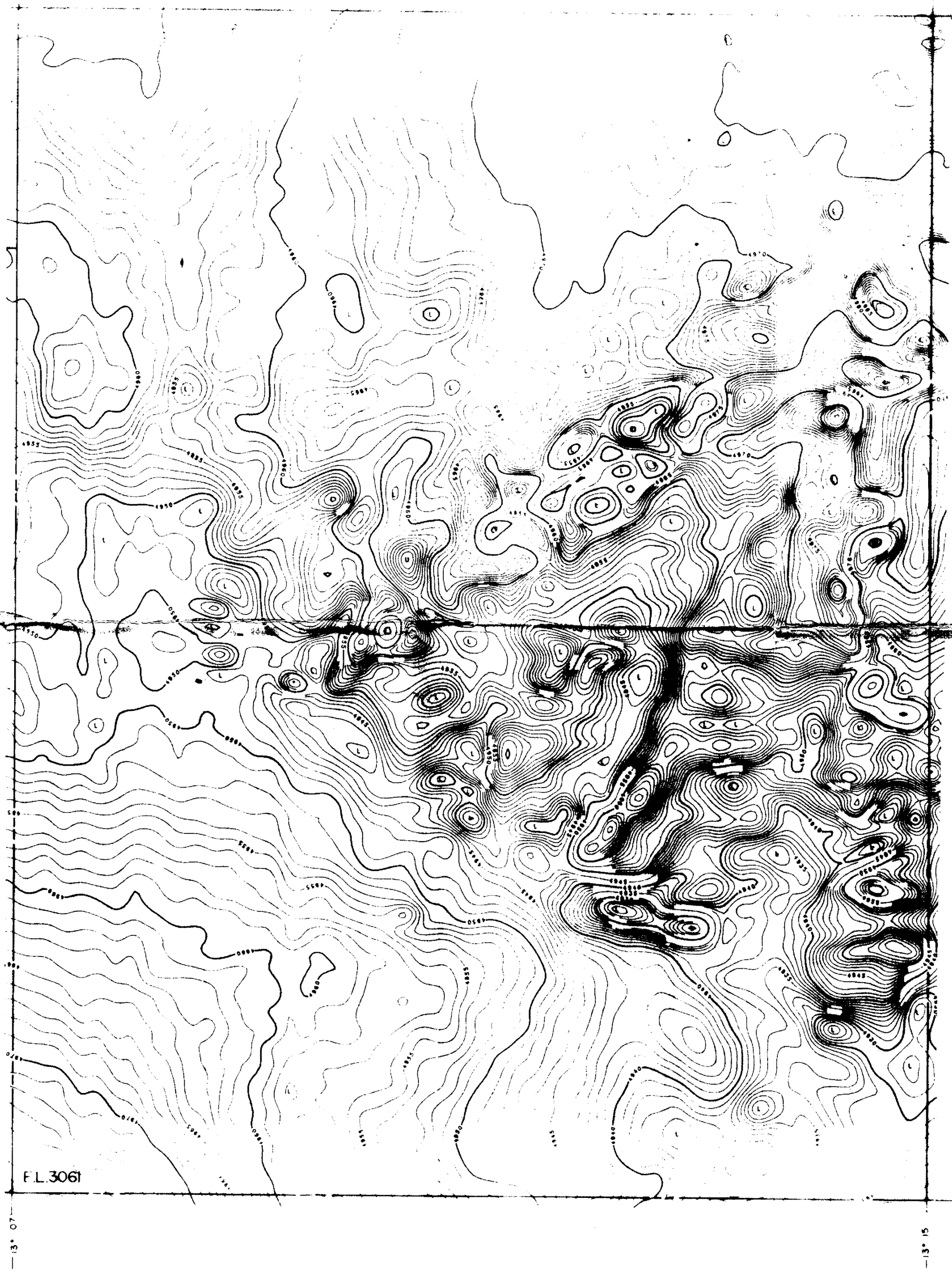


THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

EL 3081, BONE LAGOON, N.T.
EM 37 SOUNDINGS
MCA 5 AREA

Drawn B. G. Price	Date 11 - 2 - 88	Centre Darwin
Traced K S L	Project No	Drawing No A1-
Checked		

Revisions



CR86/219A

NORTHERN TERRITORY GEOLOGICAL SURVEY

DETAILS OF SURVEY

FLOWN BY : GEOTERREX
DATE : MAY 1983
1:250,000 SHEET : MT YOUNG SD53-15
TENEMENT : 3061
PROJECTION IS TRANSVERSE MERCATOR. AMG ZONE : 53

LINE SPACING : 300m
SURVEY HEIGHT : 80m
MAGNETOMETER : CESIUM VAPOUR

COMPTON SCATTERING RATIO ALPHA : 0.29
COMPTON SCATTERING RATIO BETA : 0.43
COMPTON SCATTERING RATIO GAMMA : 0.72

DETAILS OF PROCESSING

PROCESSED BY BHP EXPLORATION : CAMBERWELL

IGRF REMOVED 25-Aug-83
ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE) 25-Aug-83
FLIGHT / TIE LINE CROSSOVER ADJUSTMENT "
GRADIENT CUTOFF = 0.2 . MAXIMUM MOVE DISTANCE = 60 METRES
5000 nT ADDED TO DATA 29-Nov-83
DATA WAS GRIDDED AND CONTOURED USING GRID PROGRAM GPCONL 29-Nov-83
TIE LINES WERE NOT CONTOURED
CONTOUR INTERVAL 1.0 nT
GRIDDING PARAMETERS:
MESH SIZE 60m x 60m
SCAN DISTANCE (1000m,500m)
CORRELATION USED: MINIMUM ANOMALY AMPLITUDE 50nT
FILTER WAVE LENGTH 1500m
CORRELATION DISTANCE 400m
PIECEWISE SPLINE TECHNIQUE USED
SMOOTHING USED: POLYNOMIAL SMOOTHING
SMOOTHING RADIUS 300 m

Survey and processing carried out by Geoterrex Pty Ltd. - May '83.

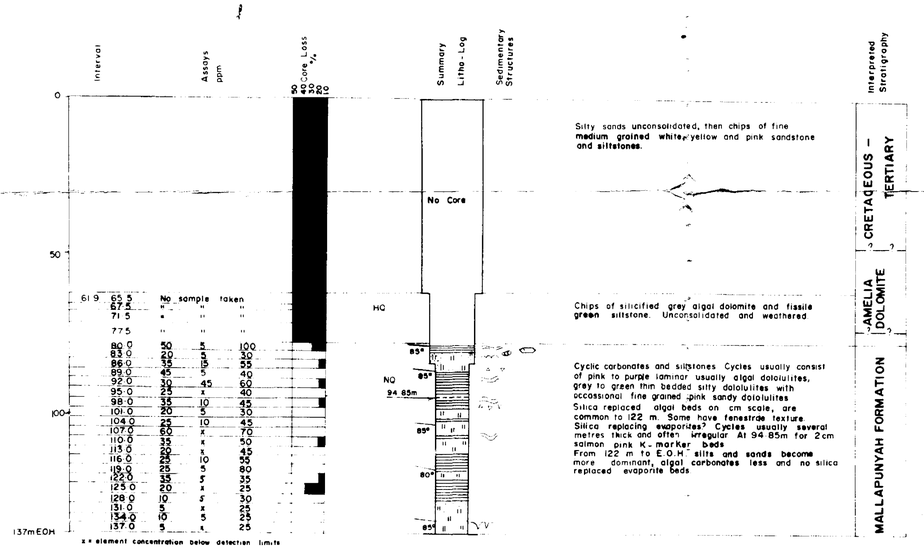
THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

EL 3061, BONE LAGOON, N.T.
AEROMAGNETIC CONTOURS

Revisions:	Drawn: D. P Carville	Date: 23 - 8 - 84
	Traced: Hilary	Project No: B 39
	Checked:	Drawing No: A2-121
		Centre: Darwin

SUMMARY LOG MCA 12

Vertical Scale 1:1,000



Silty sands unconsolidated, then chips of fine medium grained white, yellow and pink sandstone and siltstones.

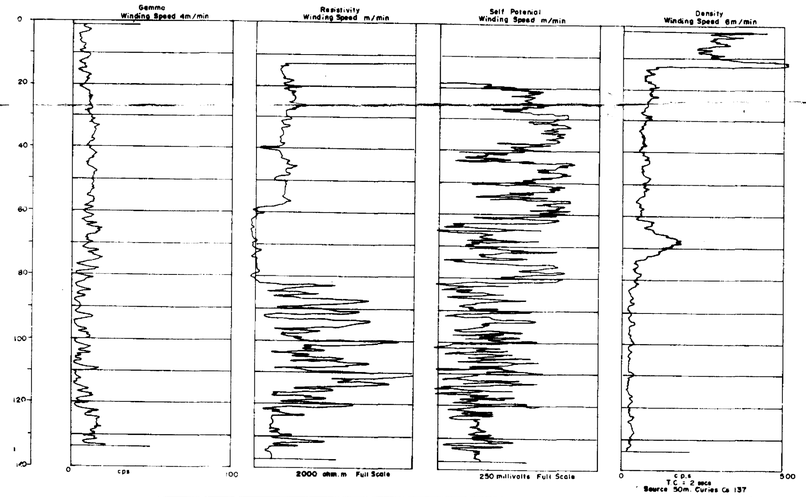
Chips of silicified grey algal dolomite and fissile green siltstone. Unconsolidated and weathered

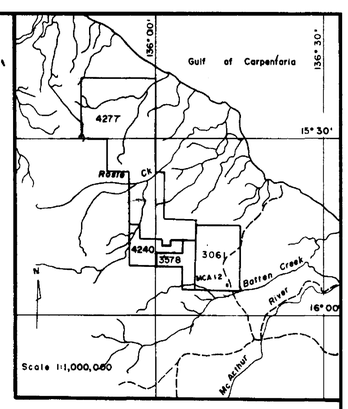
Cyclic carbonates and siltstones Cycles usually consist of pink to purple laminar usually algal dololutites, gray to green thin bedded silty dololutites with occassional fine grained pink sandy dololutites Silica replaced algal beds on cm scale, are common to 122 m. Some have fenestrde texture. Silica replacing evaporites? Cycles usually several metres thick and often irregular At 94.85m for 2cm salmon pink K- marker beds From 122 m to E.O.H. silts and sands become more dominant, algal carbonates less and no silica replaced evaporite beds

CRETACEOUS – TERTIARY

AMELIA DOLOMITE

MALLAPUNYAH FORMATION





DRILLING DETAILS

Precollar : Company, Gorey and Cole, Alice Springs Ingersoll Rand TH60 Cyclone. Depth 61.9m, Hole started and completed. 10-10-83.

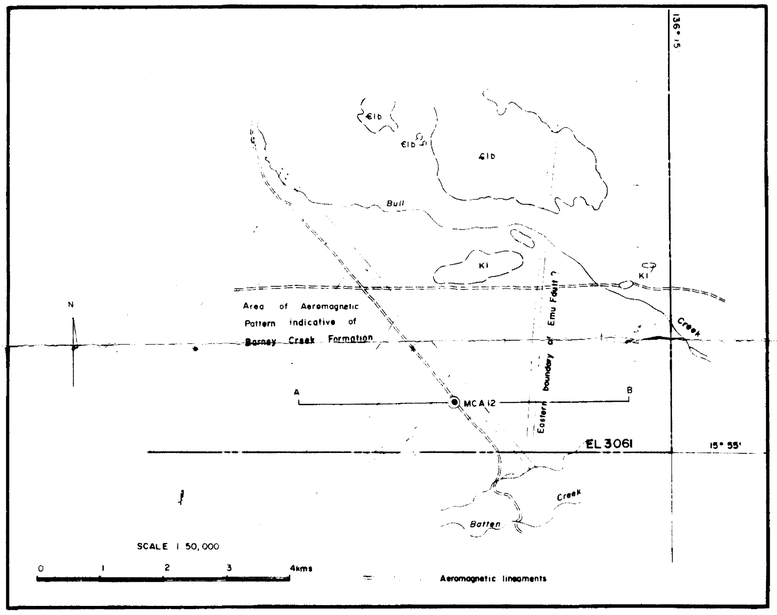
Cored : Company, Action Core Drillers, Adelaide, Rig Longyear 44. Driller, P Vietnichs, Hole commenced 22-10-83; completed 25-10-83

Hole Details : Declination, vertical Final depth 137.00m
Co-ordinates Lat 15° 54' 38" S, Long 136° 13' 07"E
Amg 8240530mN, 630440mE, AHD 22m
Casing left in hole 2m 8" steel, 6m 6" PVC, 61.9m 4" steel, 137m 50mm PVC

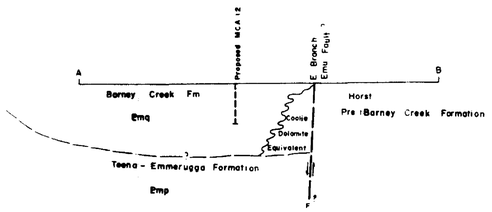
Logged : P.M. Rush. 30-10-83

Samples : Continuous 3m edge ground.

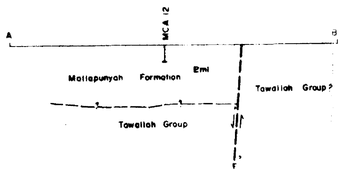
Analysis : Analabs, Darwin. Method 101, AAS Cu, Pb, Zn.



SECTION BEFORE DRILLING (Looking North)



INTERPRETED SECTION AFTER DRILLING



SCALE 1:50,000

0 1 2 3 4 5kms

V : 2
H : 1

MT ARTHUR GROUP

- Kl — Cretaceous sands and clays
- €lb — Cambrian Bukalara Sandstone
- Emq — Barney Creek Formation
- Emp — Teena Formation
- Ema — Amelia Dolomite
- Emi — Mallapunyah Formation
- Tawallah Group

- Dololutite
- Silty dololutite.
- Interbedded silty dololutite and sandy dololutite, minor dolarenite.

- Laminar algal mats
- Low domal stromatolytes
- Chert usually fracture infillings
- Gypsum cast
- Mudcracks.
- Intra formational Breccia
- Core to bedding angle

NORTHERN TERRITORY GEOLOGICAL SURVEY

CR86/219A

THE BROKEN HILL PROPRIETARY CO LTD
EXPLORATION DEPARTMENT

EL 3061 BONE LAGOON N.T.
GEOLOGICAL, GEOCHEMICAL AND GEOPHYSICAL DRILL LOGS MCA 12

Drawn PMR	Date 10 : 84	Centre Darwin
Traced	Project No	Drawing No A1-102.
Checked		

Revisions

MCA 13

From	To	Interval	Cu	Zn	Pb	Core Loss %
0	43	43				
43	46	3	45	45	x	
46	49	3	45	45	x	
49	52	3	55	50	x	
52	55	3	75	65	x	
55	58	3	90	80	x	
58	61	3	70	65	x	
61	64	3	85	60	x	
64	67	3	55	40	x	
67	70	3	35	30	x	
70	73	3	65	50	x	
73	76	3	65	55	x	
76	79	3	45	40	x	
79	82	3	30	25	x	
82	85	3	40	50	x	
85	88	3	40	40	5	
88	91	3	40	30	5	
91	94	3	30	60	5	
94	97	3	45	70	x	
97	100	3	35	30	x	
100	103	3	30	85	5	
103	106	3	25	25	x	
106	109	3	10	10	x	
109	112	3	15	15	5	
112	115	3	15	15	x	
115	118	3	20	20	x	
118	121	3	15	15	x	
121	124	3	25	25	x	
124	127	3	20	25	x	
127	130	3	15	15	x	
130	133	3	20	20	5	
133	136	3	20	20	5	
136	139	3	20	20	20	
139	142	3	70	25	5	
142	145	3	135	80	35	
145	148	3	35	40	5	
148	151	3	30	35	10	
151	154	3	25	30	5	
154	157	3	20	40	5	
157	160	3	10	35	20	
160	163	3	20	30	5	
163	166	3	20	20	5	
166	169	3	20	15	5	
169	172	3	25	15	x	
172	175	3	10	15	5	
175	178	3	15	15	x	
178	181	3	15	20	x	
181	184	3	10	15	5	
184	187	3	10	15	x	
187	190	3	10	20	5	
190	193	3	10	20	5	
193	196	3	15	15	x	
196	199	3	10	15	x	
199	202	3	10	15	x	
202	205	3	15	15	x	
205	208	3	15	15	x	
208	211	3	10	10	x	
211	214	3	10	15	x	
214	217	3	15	25	5	
217	220	3	5	55	10	
220	223	3	5	80	10	
223	226	3	10	80	20	
226	229	3	15	60	15	
229	232	3	10	75	15	
232	235	3	5	70	15	
235	238	3	10	65	10	
238	241	3	5	60	20	
241	244	3	5	65	10	
244	247	3	5	65	25	
247	250	3	35	75	20	
250	253	3	10	60	35	
253	256	3	20	55	20	
256	259	3	10	70	15	
259	262	3	10	50	5	
262	265	3	20	40	15	
265	268	3	10	35	5	
268	271	3	5	30	x	
271	274	3	5	40	5	
274	277	3	10	35	15	
277	280	3	10	30	x	
280	283	3	2	40	10	
283	286	3	25	30	x	
286	289	3	10	35	x	
289	292	3	40	30	10	
292	295	3	265	35	10	
295	298	3	215	60	20	
298	301	3	40	20	5	
301	304	3	70	20	10	
304	307	3	75	15	35	
307	311	4	525	15	20	
EOH 311						

5" Roller

HQ

No Core

31.2m

48.0m

NQ

90°

90°

90°

Py

Py

Cpy

MCA 13 Summary Litho-Log

Sedimentary Structures

Summary Description

Medium to coarse grained pale pink quartz arenite, sub-rounded, well sorted grains, very minor shale minor limonite staining, partial solution of siliceous matrix down to 67.0m (weathered zone).

Green/grey to black spotting of matrix (Reduction spots)

Greyish pink medium to coarse-grained quartz arenite

Dark pink medium to coarse-grained quartz arenite bands (feldspathic?); minor black spotting of matrix (Reduction spots)

Very minor green/black shale.

Pink medium-grained quartz arenite with irregular patches and bands of red/purple and red mudstone matrix; trace glauconitic sandstone

Fine to medium grained quartz arenite interbedded with red/green shale in proportions about 60% 40% sandstone micaceous in part, green shale generally oxidised to red shale.

Pink laminated dololutite interbedded with red/purple and minor green shale, minor pink fine to medium grained quartz arenite; pink chalcedonic nodules. (Tannhydrite pseudomorphs).

Green/grey shale; minor arenite; chalcedonic nodules.

Grey/cream coloured dololutite and minor dolomitic shale, pods (?nodules) fine dolarenite, dolomitic flake breccia and intraclast breccia common; minor green shale beds and parting laminations. Trace chalcopyrite.

WOLLOGORANG FORMATION
TAWALLAH GROUP

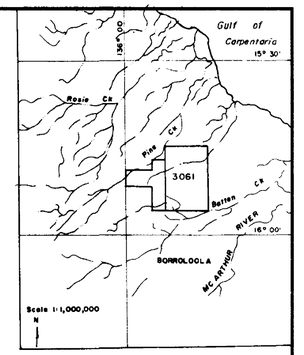
Gamma Winding Speed 4m/min

Density Winding Speed m/min

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 310

Depth Drilled 311m
Depth logged 307m
Logging Unit SIE T450 E
Date 25-11-83

Resistivity and Self-potential Logs not run due to equipment failure.



DRILLING DETAILS

Company	Action Core Drillers, Adelaide
Rig	Longyear 44
Driller	P Vietnichs
Commenced	26 - 10 - 83
Completed	3 - 11 - 83
Logged by	D.P Carville, Nov'83
Samples	Continous 3m edge ground samples, using J.K. Smit grinder.
Analysis	Analabs, Darwin; AAS code 101
Casing	36m HQ casing between 12m and 48m; 311m 50mm PVC

Sandstone

Interbedded sandstone and shale

Dololutite

Interbedded dololutite and shale

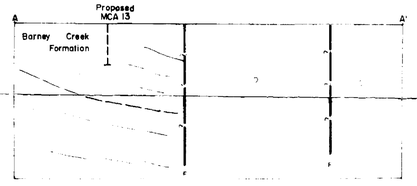
Intraclast breccia

Flake breccia

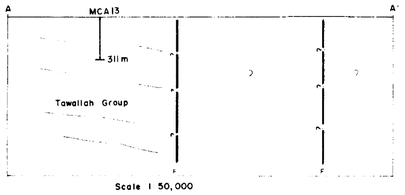
Gypsum pseudomorphs

Anhydrite pseudomorphs

SECTION BEFORE DRILLING

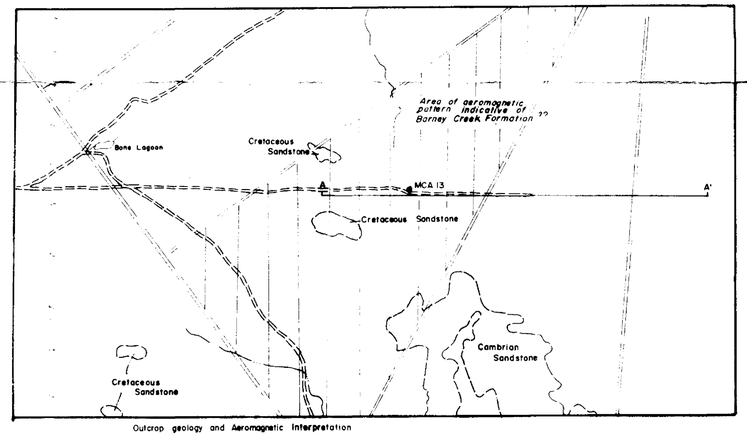


INTERPRETED SECTION AFTER DRILLING



Scale 1 50,000

V : 2
H : 1



Outcrop geology and Aeromagnetic Interpretation

Scale 1:50,000

NORTHERN TERRITORY GEOLOGICAL SURVEY

CR86/219A

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

EL 3061, BONE LAGOON, N.T.
GEOLOGICAL, GEOCHEMICAL AND GEOPHYSICAL DRILL HOLE LOG MCA13

Drawn: D Carville	Date: 3.2.84	Centre: Darwin
Traced: Hilary	Project No:	Drawing No: A1-103
Checked:		

Revisions:

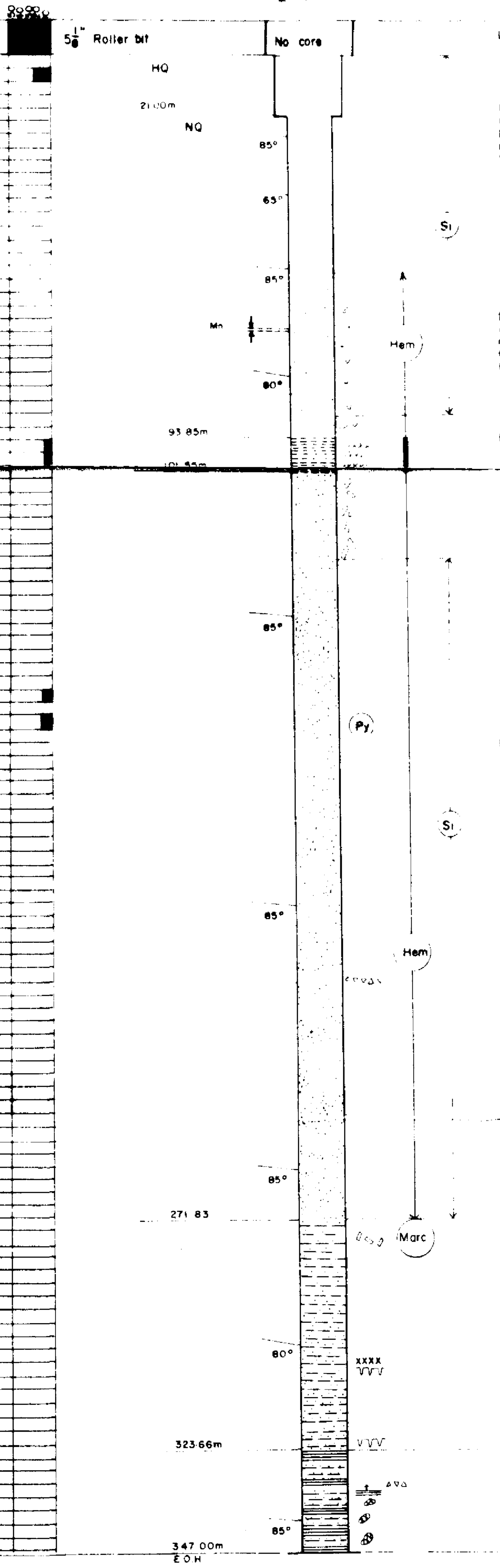
SUMMARY LOG MCA 14

Vertical Scale 1:1,000

Assays ppm

From	To	Cu	Pb	Zn
7	10	80	5	85
	13	55	x	55
	16	85	10	85
	19	80	5	80
	22	125	10	115
	25	80	x	70
	28	75	x	70
	31	75	10	75
	34	70	5	65
	37	105	10	130
	40	40	x	30
	43	70	5	65
	46	70	x	65
	49	65	x	55
	52	55	x	45
	55	85	x	65
	58	40	x	45
	61	80	5	75
	64	60	x	55
	67	75	x	70
	70	70	x	60
	73	65	15	80
	76	40	5	40
	79	20	10	20
	82	50	5	45
	85	25	x	20
	88	20	5	20
	91	30	10	35
	94	15	10	25
	97	5	25	20
	100	5	25	20
	103	15	15	30
	106	35	10	45
	109	55	5	60
	112	40	10	40
	115	50	10	55
	118	15	10	25
	121	40	5	45
	124	85	5	85
	127	45	5	45
	130	40	x	40
	133	55	5	60
	136	60	x	55
	139	40	5	40
	142	25	5	25
	145	15	x	15
	148	40	10	45
	151	40	5	35
	154	70	10	60
	157	70	5	70
	160	55	15	55
	163	50	x	50
	166	30	x	25
	169	50	10	55
	172	65	x	60
	175	65	x	60
	178	70	x	65
	181	25	5	20
	184	75	x	65
	187	80	x	75
	190	80	x	70
	193	60	x	60
	196	45	5	40
	199	75	x	70
	202	55	x	50
	205	30	x	25
	208	50	15	15
	211	55	10	50
	214	25	15	25
	217	40	35	20
	220	30	10	25
	223	20	x	20
	226	50	10	50
	229	25	5	25
	232	95	10	90
	235	35	5	30
	238	46	x	40
	241	85	5	80
	244	125	5	115
	247	135	10	125
	250	115	x	100
	253	110	5	105
	256	100	x	90
	259	135	5	125
	262	160	5	140
	265	180	10	160
	268	160	x	155
	271	140	5	130
	274	105	5	100
	277	105	15	100
	280	25	20	45
	283	30	20	60
	286	30	10	65
	289	20	25	55
	292	15	25	60
	295	10	30	60
	298	5	20	70
	301	25	15	65
	304	15	20	60
	307	5	25	60
	310	10	25	65
	313	25	15	65
	316	75	25	70
	319	40	20	70
	322	20	25	55
	325	30	25	60
	328	25	15	40
	331	15	15	35
	334	20	10	35
	337	15	20	40
	340	25	15	25
	343	10	35	15
	346	20	5	30
	347	10	5	35

x = element concentration below detection level.



Unconsolidated silty sands

Pink medium grained thick bedded to massive sub rounded mature, well sorted quartz sandstone. Less than 1% wacke fragments. Grained supported minor clay matrix. Very small 2-3mm, red shale flakes. Sandstone partially silicified, joints about 2 per metre, open and with minor clay.

Dusty red hematite in matrix making sandstone darker in colour. Red hematitic shale flakes more common up to 5% by volume. Amount of hematite in matrix increases towards shale interval.

Red hematitic thin contorted slumped ?? shales with remnants of green reduced shales that have not been oxidised.

Sandstone, porus, unsilicified.

Sandstone as above except medium red-brown in colour due to hematite in matrix. Often pale green clay on joints.
Sandstone partially silicified.

Localized pyrite on joints.

Occassionly more hematite rich beds.

Jointing increases to 3 to 5 per metre.

Last several metres has white irregular shaped blotches of core, hematite poor and intensely silicified.

Localized marcasite on joints.

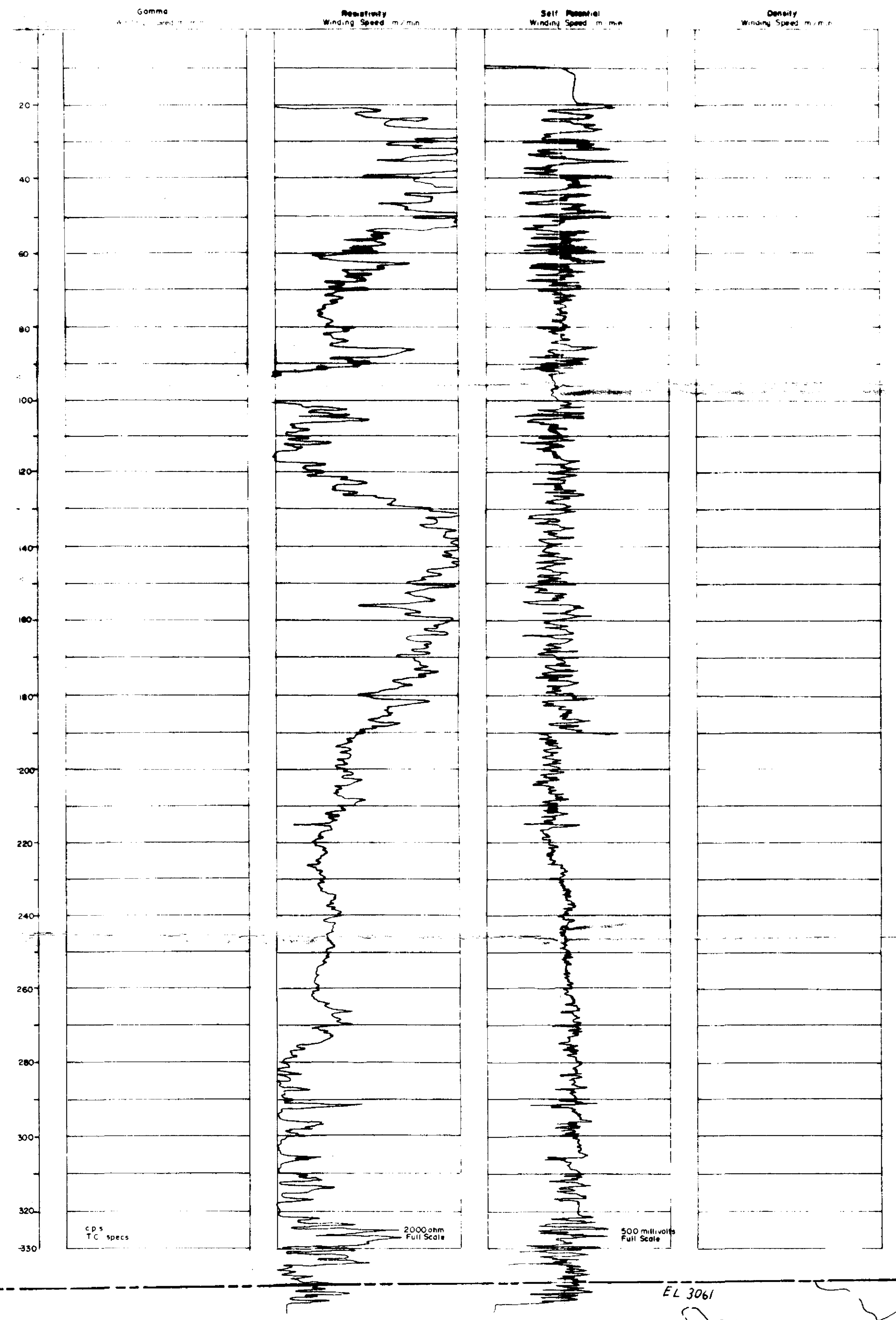
Alternating hematitic micaceous, thin bedded shales and fine grained sub-angular well sorted quartz sandstone with 10 to 15% clay matrix. Sandstones reddish brown but become pale green below 283m.

Minor small scale 1 to 2cm cross bedding.

Remnants of green, unoxidized shales more common below 319m.

Interbedded pink massive dololutite, fissile red to purple hematite shales and reddish brown fine grained sandstone. Red opaline chert grains and white silica blebs in red shales are common in last 10m of core. These are "after evaporites"? Sand beds cease at 341m and dololutites become silty.

Interpreted Stratigraphy: WOLLOGORANG FORMATION — TAWALLAH GROUP



Drilling Details

Company	Action Core Drillers, Adelaide, Rig Longyear 44, Driller: P. Vietnichs. Hole commenced, 7-11-83. Hole completed 16-11-83.
Hole Details	Declination, vertical. Final Depth 347.00m. Co-ordinates Lat 15° 45' 45", Long 136° 14' 39". AMG 8257100m N, 633100m E, AHD 20m.
Casing left in hole	7m 4" steel, 21m HQ rods, 347m 50mm PVC.
Logged	P.M. Rush 12-11-83, 4-12-83.
Samples	Continous 3m edge ground
Analysis	Analabs, Darwin. Method 101, AAS, Cu, Pb, Zn.

Sandstone

Shales

Alternating shales and sandstones

Interbedded dololutites, shales and sandstones

Shale flakes

Intra formational breccia

Tectonic breccia

Contorted bedding - slumping?

Cross-bedding

Mudcracks

Graded bedded fining up.

Opaline chert and silica

Si — Silicification pervasive

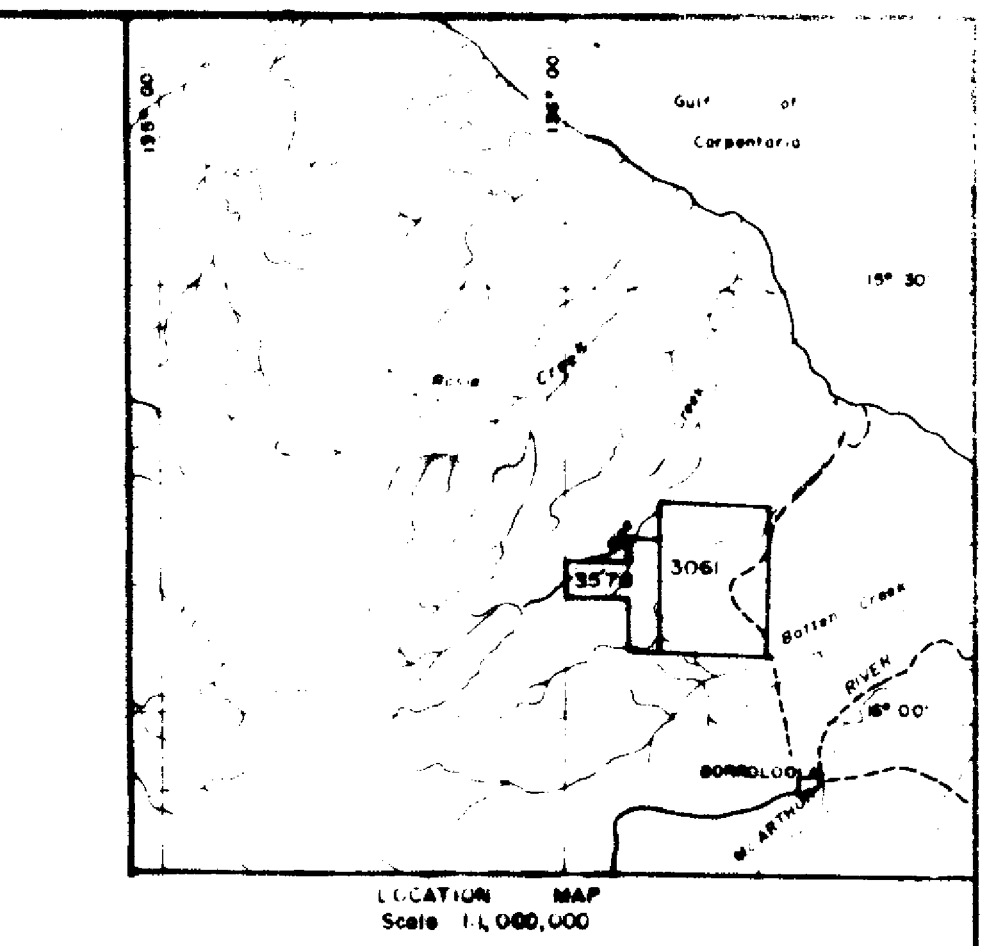
Hem — Hematite cement

Mn — Localized manganese cement.

Py — Localized pyrite on joints

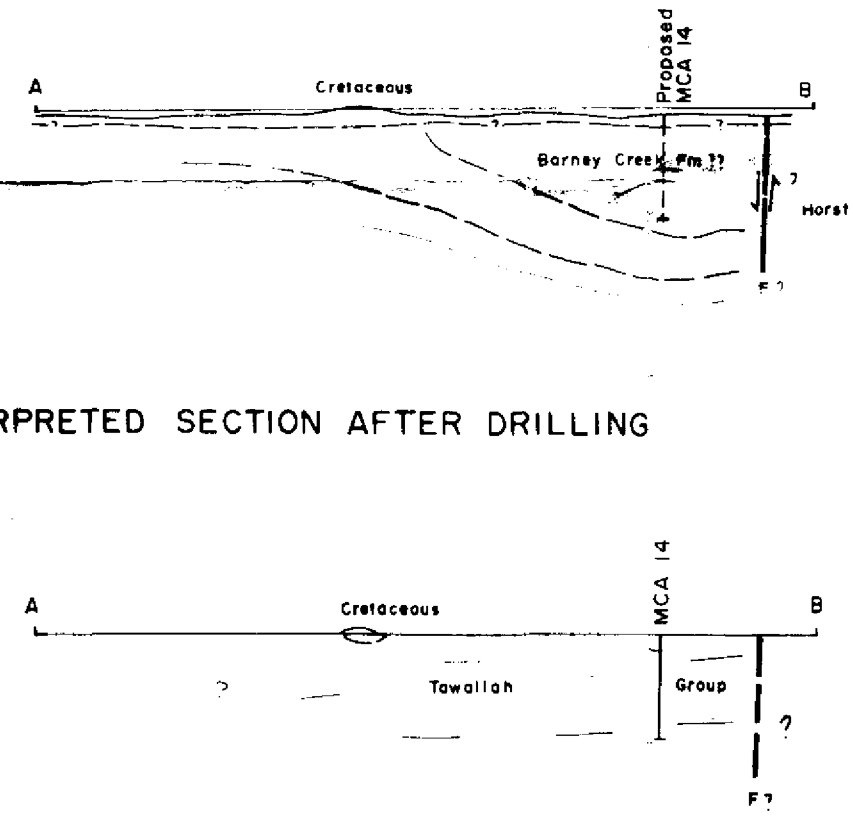
Marc — Localized marcasite on joints

85° — Core to bedding angle.



LOCATION MAP
Scale 1:1,000,000

SECTION BEFORE DRILLING (Looking North)

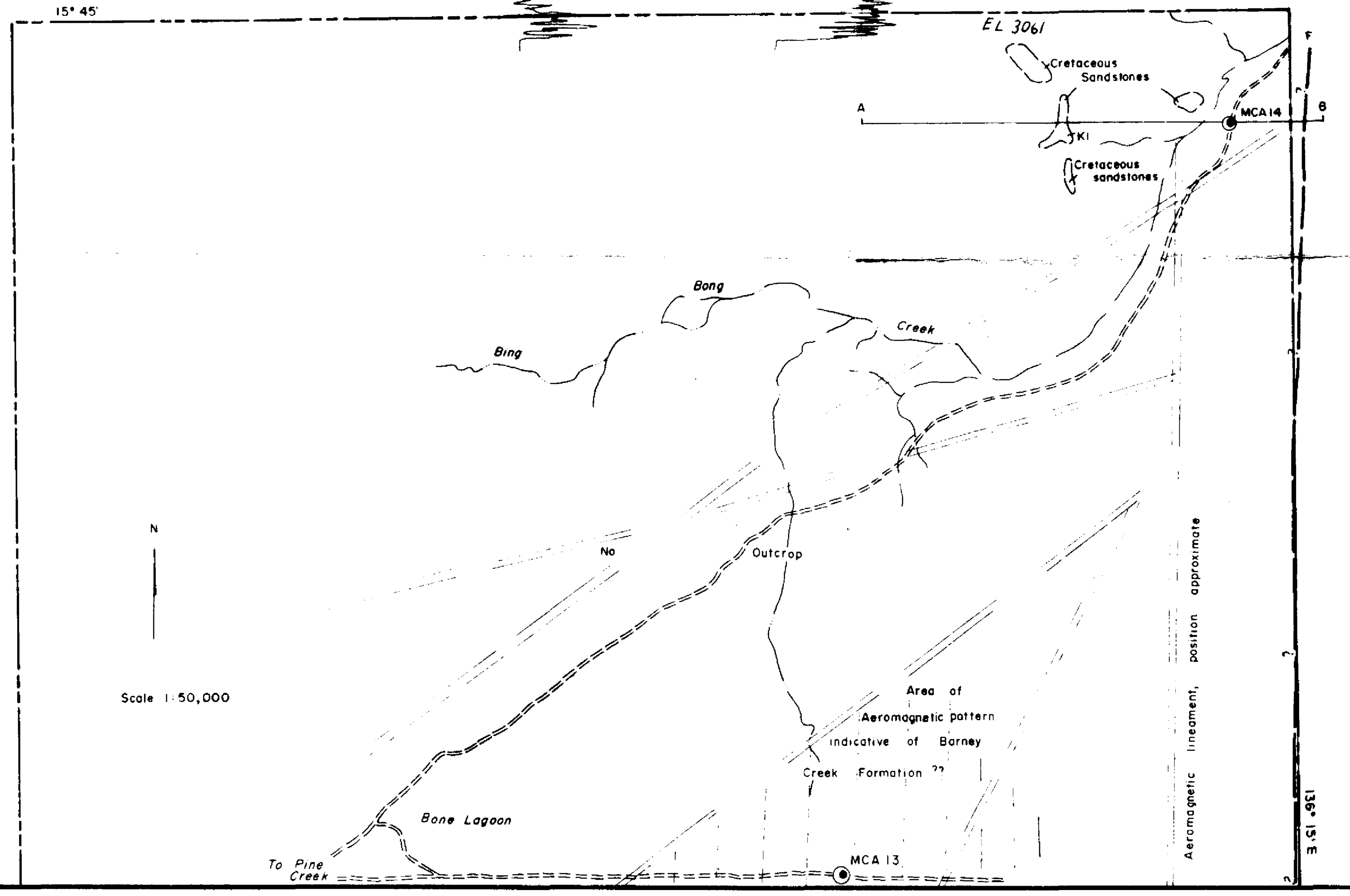


INTERPRETED SECTION AFTER DRILLING

Scale 1:50,000

0 1 2 3 4

$\frac{V}{H} = \frac{2}{1}$



Scale 1:50,000

NORTHERN TERRITORY GEOLOGICAL SURVEY

CR86/219A

THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT		
EL 3061 BONE LAGOON N.T.		
MCA 14 GEOLOGICAL, GEOCHEMICAL AND GEOPHYSICAL LOGS.		
Drawn: PMR	Date: 13.1.84	Centre: Darwin
Traced: Hilary	Project No: B39	Drawing No: A1-101
Checked:		

Revisions: