

AQUITAINE AUSTRALIA MINERALS PTY. LTD.

NORTHERN TERRITORY GEOLOGICAL SURVEY
E.L. 1708, MILLIGANS LAGOON,

ANNUAL REPORT

FOR THE YEAR ENDING 7TH FEBRUARY, 1980

Distribution:-

S.N.E.A.(P.)
Manager/Archives
Minerals (2)
Kununurra

Mimets
Mines & Energy Depart.

Compiled by: R.J. Lee

Date: March, 1980

MG: 1043

C O N T E N T S

1. SUMMARY
2. INTRODUCTION
3. GEOLOGY
4. EXPLORATION DRILLING
5. CONCLUSIONS AND RECOMMENDATIONS
6. REFERENCES
7. EXPENDITURE

A P P E N D I X

DRILL LOG AND ASSAY RESULTS NBS 5002

FIGURES

DWG. NO.

FIGURE 1 Bonaparte Gulf Basin,
Northern Territory Tenements

17536

PLATES

DWG. NO.

PLATE 1 Milligans Lagoon, E.L. 1708,
Location and Regional Geology

16552

COMPOSITE LOG

Hole NBS 5002

1. SUMMARY

Mineral Exploration in E.L. 1708, "Milligans Lagoon", is being undertaken in conjunction with extensive regional exploration throughout the Bonaparte Gulf Basin. Programmes directed to both detailed evaluation and stratigraphic orientation, are being pursued in search for carbonate hosted lead - zinc mineralisation.

Exploration in E.L. 1708, in the first stage, is being extended to establish the stratigraphy, in order to link the well known geology on the eastern flank of the Pincombe Range, with that in the Northern Territory.

During 1979, one hole, NBS 5002, was deepened from 50 to 150 metres by core drilling. Further deepening of this stratigraphic hole is proposed in 1980, to fully evaluate the prospective succession to a depth of 300 metres.

Expenditure in the area for the period November - December totals \$739.01. An expenditure account for January is unavailable as yet, and will be submitted with the next quarterly report.

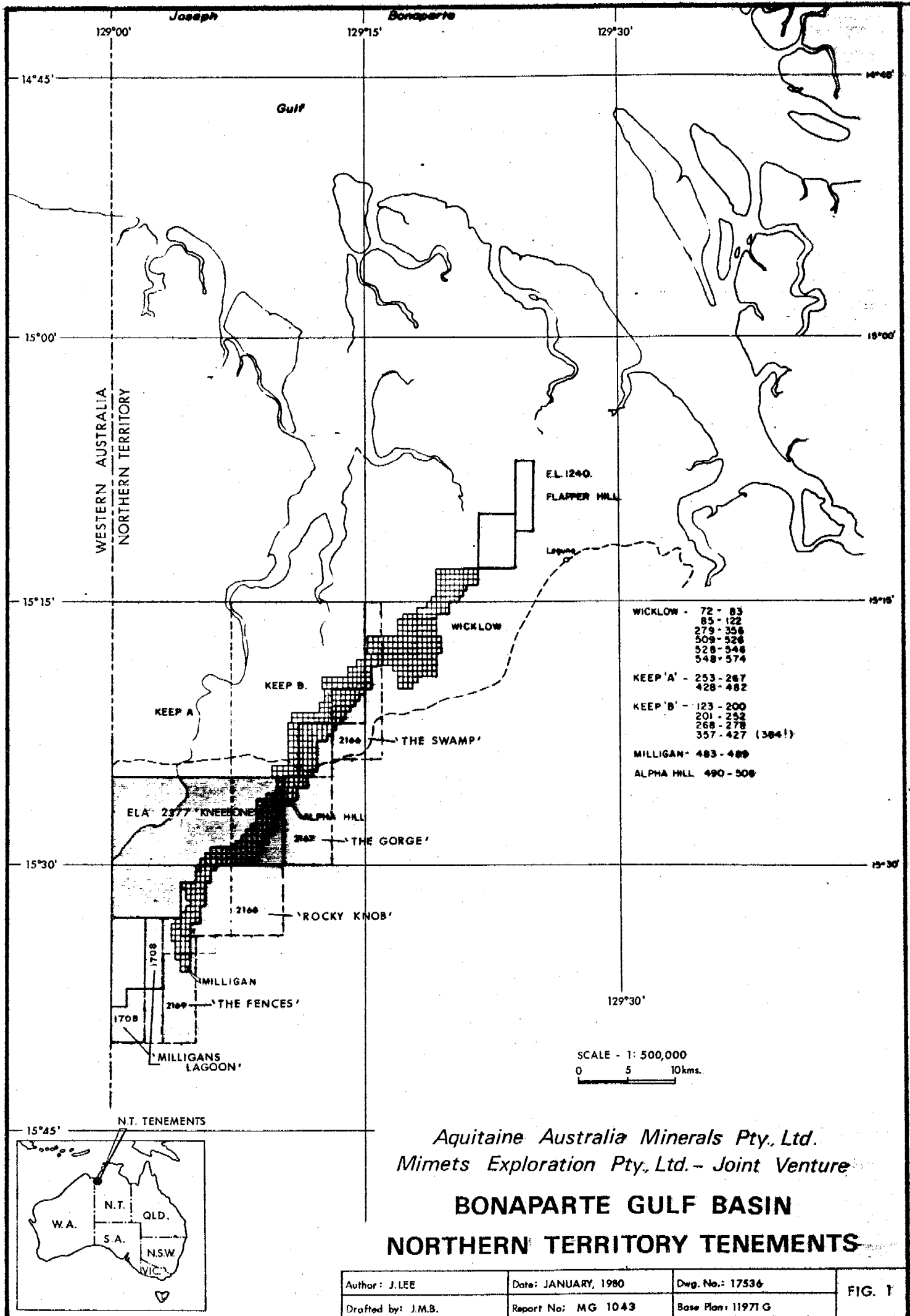
2. INTRODUCTION

Exploration Licence 1708 was originally granted on 8th February, 1978, and has subsequently been reduced by 50% in area following renewal of the licence in February 1980. The area, now consisting of two residual north-south trending blocks, containing nine one minute sub-blocks, is held in joint-venture with Mimets Exploration Pty. Ltd. As shown in Figure 1, the licence covers an area of approximately 30 km².

The licence area lies in the southern axial portion of the Bonaparte Gulf Basin abutting the W.A. - N.T. border, approximately 20 km south-east of the Sorby Hills base camp. Access is by track to Milligans Lagoon along the border fence, or by track from Kununurra via Martin Gap.

The area of the licence is largely covered by black soil and thick overburden with poor outcrop.

Exploration in this strategic area of the basin is being pursued to establish a stratigraphic link between the host formations of lead - zinc mineralisation at Sorby Hills, and prospective sequences with well established lead - zinc occurrences in the Northern Territory sector of the basin.



3. GEOLOGY

The regional geology and stratigraphy of the licence area has been described at length in previous reports, particularly by P. d'Auvergne, 1979. Annual reports for the Sorby Hills claims (W.A.) and Northern Territory claim groups may be referred to for more detailed accounts of regional geology and structural setting of the licence area.

Plate 1, enclosed, shows the regional outcrop geology of the area (modified from Veevers and Roberts).

4. EXPLORATION DRILLING

Field exploration in the area was limited to the deepening of one drill hole (NBS 5002) located at national grid coordinates 8268335N - 0500005E.

The hole was originally rotary percussion pre-collared and cased to 50 metres depth by Davies Drilling during 1978, and subsequently deepened during 1979 to 150 metres by Intairdril in BQ core using a Foxmobile rig.

Hole NBS 5002 passed through overburden and Weaber Group sandstones to a depth of 22 metres, then dark grey siltstones and black shales ("Black Shale" and Milligans Beds) to a depth of 96.6 metres. Below this depth, to the final depth at 150 metres, an interbedded limestone and sandstone sequence (Upper Formation Equivalent of Sorby Beds) was encountered. No significant base metal showings were encountered. A drill log with assays are appended, and a composite gamma-ray log is enclosed.

5. CONCLUSIONS AND RECOMMENDATIONS

Hole NBS 5002 is recommended for continued deepening to a depth of 300 metres, to establish a stratigraphic reference for the area. Further exploration in the area will be dependent upon the definition of suitable host formations.

6. REFERENCES

D'AUVERGNE, P., (1976) : "E.L. 246, 'Spirit Hill', Annual Report for the Year Ending 29/6/76."

Aquitaine Australia Minerals Pty. Ltd.
MG Report No. 709.

D'AUVERGNE, P., (1979) : "E.L. 1708, 'Milligans Lagoon', Annual Report for the Year Ending 7/2/79."

Aquitaine Australia Minerals Pty. Ltd.
MG Report No. 984.

HEUILLON, B., & LEE, R.J., (1980) : "1979 Mineral Exploration in the Northern Territory Tenements, Bonaparte Gulf Basin.

Aquitaine Australia Minerals Pty. Ltd.
MG Report No. 1042.

VEEVERS, J.J., & ROBERTS, J., (1968) : Upper Palaeozoic Rocks, Bonaparte Gulf Basin of North-western Australia.

B.M.R. Bulletin No. 97.

7. EXPENDITURE

Expenditure for E.L. 1708, Milligans Lagoon, was as follows:-

Transport and Freight	\$ 33.48
Assays	44.97
Minerals Salaries	377.46
Administration Costs	283.10
	<hr/>
	\$739.01
	<hr/> <hr/>

APPENDIX

DRILL LOG AND ASSAY RESULTS NBS 5002



hole no. NBS 5002	location 0400005E - 8268335N	drillers DAVIES - KT 1
permit E.L. 1708	azimuth -	duration 2/10 - 6/10/78.
state N.T.	declination VERTICAL	logged by D. BAY / P. D'AUVERGNE

depth	description	Pb %	Zn %	Ag gr/T
	0 - 18m. drilled with drag bit. 18 - 50m. hammer.	No samples collected for analysis.		
0 - 4	ALLUVIUM			
	0 - 4 m: Brown soils.			
4 - 22	WEABER GROUP ?			
	4 - 6 m: Brown sand-soil, possibly after a disaggregated friable sandy carbonate lithology.			
	6 - 8 m: Bleached grey-white soil with calcrete.			
	8 - 10 m: Yellow-white coarse grained sand.			
	10 - 22 m: Fine yellow sand with calcrete. Abundant water.			
22 - 50	DARK GREY SILTSTONE (BLACK SHALE EQUIVALENT)			
	22 - 36 m: Fine yellow sand with calcrete and abundant water. Although no grey dolomitic siltstone was noted until approx. 37 m., gamma logging once hole had been cased off, shows the upper contact of the siltstone unit is at approx. 22m.			
	36 - 38 m: As above. Occasional chips of dark grey slightly carbonaceous weakly dolomitic siltstone.			
	38 - 50 m: Dark grey carbonaceous dolomitic siltstone as above. Extreme contamination by sand and calcrete.			
	Hole cased to 25 m. in 5½" P.V.C. Hole cased to 49 m. in 5" steel.			
	Steel casing has successfully cased off water and sand, and hole is now clean and able to be deepened either by reverse circulation or coring.			



hole no.	NBS 5002	location	0500005E - 8268335N	drillers	INTAIRDRIL
permit	E.L. 1708	azimuth	-	duration	16/8/78 - 19/8/78
state	N.T.	declination	VERTICAL	logged by	P. ROSENGREN

depth	description
0 - 52.55	Hole previously percussion drilled to 52.55 m. 52.20 - 52.55 m : minor black shale fragments and quartzite pebbles contaminating hole (see attached log). 52.55 - 150 m BQ Core
52.55 - 96.60	<u>MILLIGANS BEDS</u> Grey-black - black shale, siltstone, mudstone. Slightly calcareous matrix with plant debris. 52.55 - 62.90 m: Fissile grey to black limey shales, fissile, with calcareous cement. 62.90 - 63.80 m: Sandstone, coarse intrasparite with minor siltstone clasts up to 20 mm across (very distinct on gamma log). 63.80 - 64.20 m: As for 52.55 - 62.90 m. 64.20 - 64.30 m: Lime mud - dolomicrite. 64.30 - 69.00 m: As for 52.55 - 62.90 m. Shale laminae oriented 5 - 25° to core axis. 69.00 - 90.50 m: Grey limey mudstone, siltstone - massive.
96.00 - 150.00	<u>UPPER FORMATION EQUIVALENT</u> 96.60 - 115.00 m: Sandstone (calcareous), sandy limestone with minor siltstone. Gravity slumping in silty sections. Sandstone and sandy limestone show development of vugs 1 - 6 mm across. 96.60 m immediately below contact with impervious black shales there is a 2 cm thick band of pyrite, 1 - 2% pyrite. Disseminated through sandstone and sandy limestone. Interval predominantly consists of sandstone and limestone with (minor) siltstone sometimes up to 20 to 40 cm thick, but mostly <1 - 2 cm. Sandstone (calcareous) = 60% quartz with spar cement. = mostly towards top of interval. Sandy limestone (increases towards base of interval) = 30 - 40% quartz with up to ~ 30% fossil fragments (locally recrystallised) and calc spar cement). biota = crinoids + brachiopods.

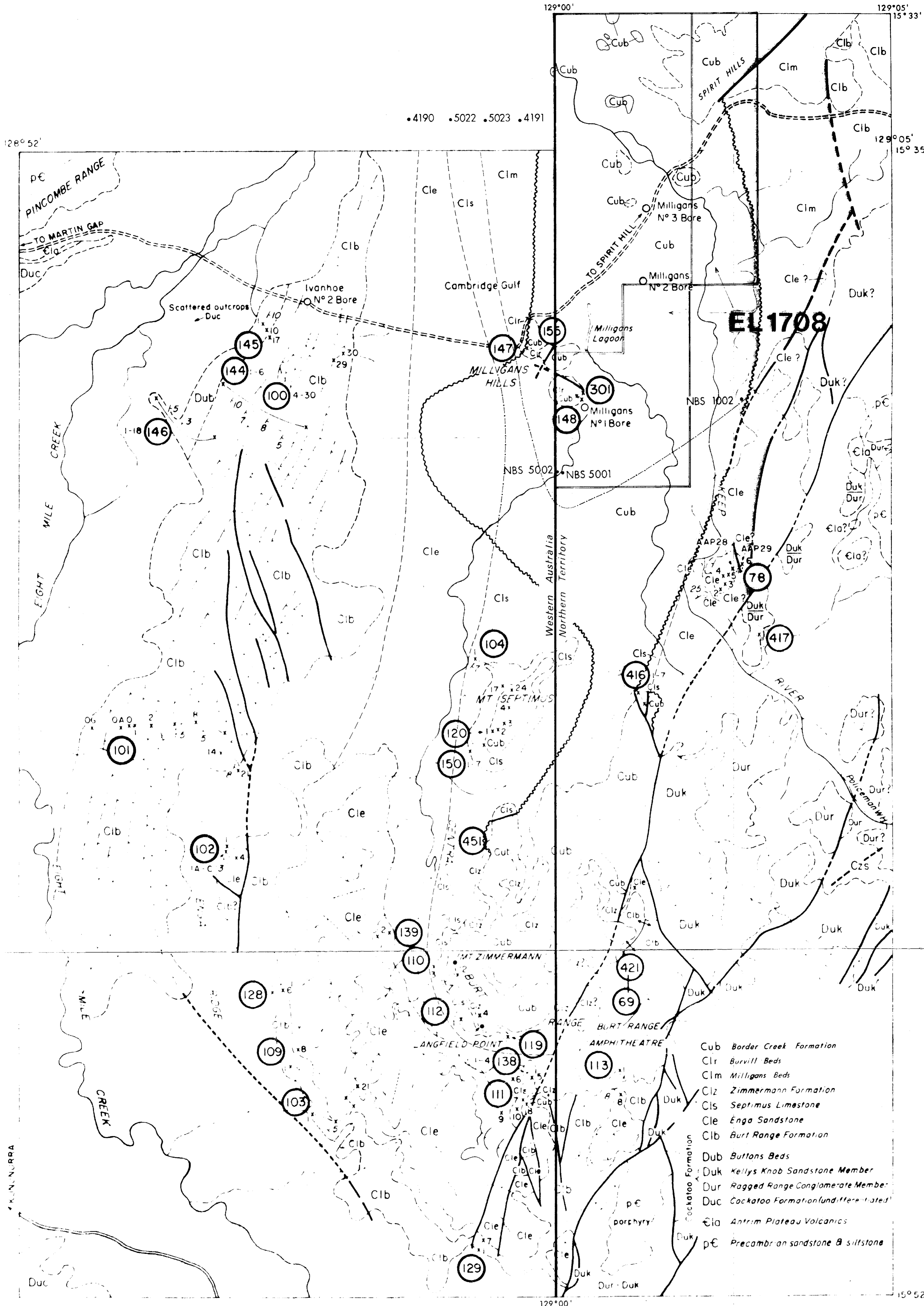


hole no.	NBS 5002	location	drillers
permit		azimuth	duration
state		declination	logged by

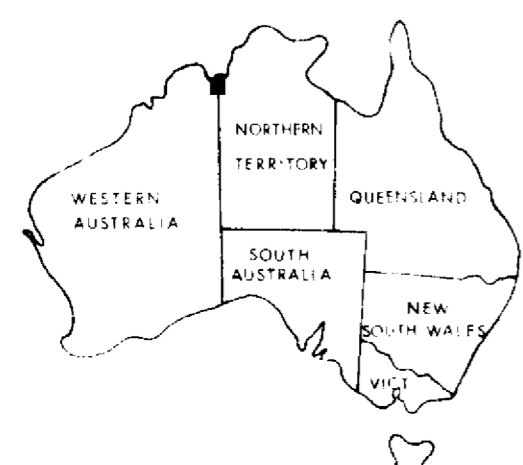
depth	description
	<p>115.00 - 150.00 m: Limestone, siltstone, fine sandstone, sandy limestone and intervals of interbedded sandstone, siltstone, limestone - cyclic deposition more regular towards base (10 - 15 cm cycles).</p> <p>115.00 - 117.00 m, sandstone (calcareous) and grey-black fossiliferous shale. Biota = crinoids. Sandstone = 50 - 60% quartz.</p> <p>117.00 - 150.00 m, sandy limestone = 30 - 50% quartz. Coarse to medium grained. Increasing content of calcareous material towards base of interval along with recrystallisation.</p> <p>Vugs in sandy limestone common.</p> <p>Siltstone = grey to black - limey fossil fragments sparsely distributed</p> <ul style="list-style-type: none"> - laminae up to 15° to core axis - slumping between 143 - 145 m <p>Mineralisation - sandstones contain minor pyrite (< 0.5%).</p> <p style="text-align: center;"><u>END OF HOLE AT 150.00 m</u></p>

NBS 5002 - ASSAYS

<u>Depth (m)</u>	<u>Pb (ppm)</u>	<u>Zn (ppm)</u>	<u>Ag (ppm)</u>	<u>Cu (ppm)</u>
95 - 96	31	44	< 1	31
96 - 97	21	26	< 1	22
97 - 98	9	13	< 1	13
98 - 99	24	21	< 1	15
99 - 100	21	20	< 1	16
100 - 101	22	16	< 1	10
101 - 102	20	25	< 1	26
102 - 103	21	19	< 1	13
103 - 104	15	12	< 1	9
104 - 105	23	12	< 1	9
105 - 106	24	18	< 1	14
106 - 107	23	14	< 1	13
107 - 108	30	14	< 1	12
108 - 109	28	13	< 1	9
109 - 110	31	18	< 1	10
110 - 111	32	18	< 1	12
111 - 112	34	18	< 1	13
112 - 113	37	14	< 1	10
113 - 114	57	17	< 1	16
114 - 115	130	37	< 1	18



Cub	Border Creek Formation
Clr	Burvill Beds
Clm	Milligans Beds
Clz	Zimmermann Formation
Cls	Septimus Limestone
Cle	Enga Sandstone
Cib	Burt Range Formation
Dub	Buttons Beds
Duk	Kellys Knob Sandstone Member
Dur	Ragged Range Conglomerate Member
Duc	Cockatoo Formation (undifferentiated)
Eia	Antrim Plateau Volcanics
pE	Precambrian sandstone & siltstone



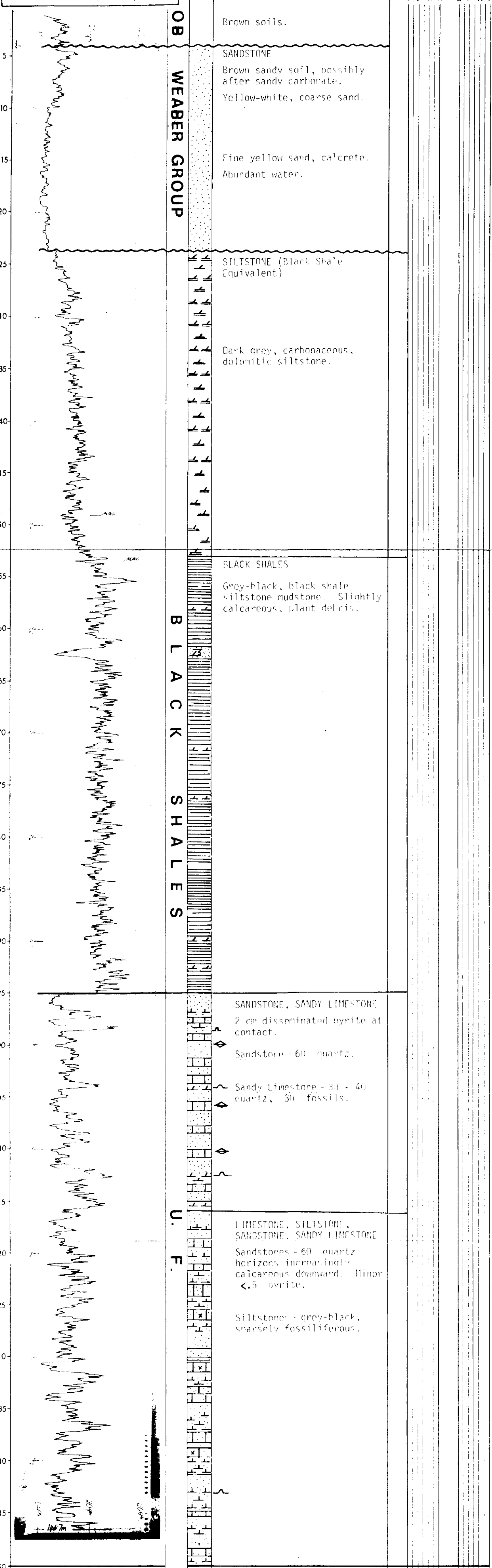
- SUBOUTCROPPING CONTACT (INFERRED)
- ~~~~~ SUBOUTCROPPING UNCONFORMITY AT BASE OF BORDER CREEK FORMATION (INFERRED)
- .-.- CONTACT BENEATH UNCONFORMITY (INFERRED)
- NBS 5001 • DRILL HOLE

Aquitaine Australia Minerals Pty Ltd
MILLIGANS LAGOON - E.L. 1708
LOCATION & REGIONAL GEOLOGY

MODIFIED FROM VEEVERS & ROBERTS (1968) p 68

SCALE: APPROX. 1:50,000
 (slight distortion due to photographic enlargement)

PORACO GAMMA RAY LOG 1100
 AAM SEREM AUSTRALIA MIMETS
BONAPARTE GULF BASIN W.A
SORBY HILLS
NBS 5002
 National Grid: DD 690455 Agulhas Grid
 #268335 # 080005 #
 Core depth: 150 m
 Laboratory standard: 80 Mc
 Count rate: 20000
 Live time: 0.5
 Range: 0-60 cps
 Energy: 2000
 Background: 100
 P



End of Hole 150.00m