NORTHERN TECTORY GEOLOGICAL SLAVEY

ANNUAL REPORT

FOR

E.L. 1855

NORTHERN TERRITORY

(2.10.1978 - 1.10.1979)

#### 1. SUMMARY

The exploration programme on E.L. 1855 consisted of drilling, with seven rotary/mud holes completed, for a total of 1073 metres.

The drilling encountered a thick Tertiary overburden sequence, in excess of 160m. A new stratigraphic unit, informally named the Rib Bone Beds, and consisting of lignitic and carbonaceous clay and sand, with lignite seams, was intersected at the base of the Tertiary section.

Mt. Eclipse Sandstone was intersected in drill holes in the northern half of the E.L., as a thin blanket deposit, with evidence of a very gradual thickening of the section, to the northeast.

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<u>P1</u>	an No	<u>Title</u>	$\underline{\mathtt{Scale}}$
185	55-5	Siddeley Range and Yanduch Bore	1:100,000
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		Mt. Eclipse Sandstone Isopach Map.	

### 2. INTRODUCTION

E.L. 1855 was granted to AGIP on October 2, 1978, for one year. The E.L. area was taken up to allow exploration aimed at determining the nature and extent of the Mt. Eclipse Sandstone in the southern section of the central part of the Ngalia Basin, and to evaluate the potential of the formation for hosting economic uranium deposits. The Mt. Eclipse Sandstone is the only formation within the Ngalia Basin known to contain significant uranium mineralization.

The Mt. Eclipse Sandstone does not crop out within the E.L. area. The only rocks exposed within the E.L. area are those of the Quaternary and Upper Tertiary sedimentary sequences and of the Precambrian Adelaidean Vaughan Springs Quartzite. Thus AGIP's exploration programme has been, and will continue to be, largely comprised of stratigraphic drilling.

# 2.1 Location, Access and Topography

E.L. 1855 (Yanduch Bore) is located approximately 270 km by road northwest of Alice Springs and is reached by travelling 20 km north, along the Stuart Highway, from Alice Springs, then 180 km along the unsealed Yuendumu Beef Road and then from the Mount Wedge turn-off, for a further 70 km, along station tracks.

Access within the E.L. is by means of station tracks and bulldozed and graded access lines. During 1979, 20 km of new access roads were cleared as part of AGIP's exploration programme.

The topography is generally flat to very gently undulating, formed by aeolian and fluvial sand plains, with occasional calcrete ridges and clay pan depressions in the southern part of the E.L. Towards the southeastern corner of the E.L. the topography is dominated by the dip-slopes of outcrops of the Vaughan Springs Quartzite.

### 2.2 Climate, Water Supply and Hydrology

The climate in the E.L. 1855 area is semi-arid continental, with an average annual rainfall of approximately 300mm. Rainfall is irregularly distributed throughout the year but tends mainly to fall in the period November-March.

Temperatures commonly exceed 40°C during the summer months and frosts can be expected from April-August.

Water in the area is obtained from shallow bores sunk on calcrete ridges. The water quality is generally good, and the supply originates from an aquifer of coarse-grained, unconsolidated sands which underlie the calcrete at a depth in the order of 14m.

It is very probable that large supplies of water, of moderate quality, are available from these Tertiary deposits.

#### 2.3 Tenement Status

E.L. 1855 is a new area of exploration for AGIP in the Ngalia Basin, and was granted on October 2, 1978. The E.L. was initially granted for a period of 12 months, over an area of 221.2 sq. km. An application for renewal of the original E.L. area, in full, has been lodged with the Northern Territory Department of Mines and Energy.

### 3. PREVIOUS WORK

The area has been mapped by the BMR at a scale of 1:250,000 and is covered by the Mt. Doreen Sheet (Wells, 1972).

E.L. 454 "Currinya" covered the same area as the present E.L. 1855, and was held by Central Pacific Minerals N.L. for the purpose of investigating uranium mineralization in the Tertiary sequences (Henstridge, 1972 and 1973 a, b).

Within the E.L. 454 area, programmes of shallow trenching, auger drilling (677.2m) and rotary drilling (646m in 3 holes) were completed, on a section just south of the southern boundary of the present E.L. 1855 area. An additional hole, NGRH 41, tested to a depth of 252m, approximately 1 km south of Rib Bone Bore which falls within the present E.L. 1855 area. Central Pacific's work indicated extensive but very low-grade uranium mineralization, in calcrete horizons of the Tertiary section.

In 1978, the samples from Central Pacific's four rotary holes in the area, were re-logged and detailed lithological studies undertaken, by AGIP personnel.

AGIP have previously drill tested areas in close proximity to the eastern boundary of E.L. 1855, on parts of E.L. 1199 which have since been relinquished.

### 4. EXPLORATION ACTIVITIES

### 4.1 Drilling Operations

A total of 1073m was drilled in seven rotary/mud holes on E.L. 1855. The drilling was commenced on August 15 and completed on September 1, and was carried out by contractors Davies Drilling, of Kalgoorlie, using a Schramm KT43 rig.

The rig was plagued by mechanical problems in the early stages of the programme, although the only major delay experienced was with hole YB1R which was begun on August 15 and not completed until August 22. Excluding this hole, an acceptable rate of progress of 125m per day was maintained.

# 4.2 Geophysical Logging

A total of 813.4m was logged for natural gamma, and 747.7m for self-potential and resistivity responses. Geoex logged hole YB1R to a depth of 99.4m, under contract, using a Gearhart-Owen Model 3200 logging instrument. The remainder of the logging operations were carried out by AGIP personnel using the company's S.I.E. T450 instrument. Copies of analogs from the logging operations are contained in Appendix III.

### 4.3 Palynology

Six samples of lignitic material, from rotary drilling samples in holes YB4R, YB6R and YB7R, were sent to Dr. P.R. Evans, of the University of N.S.W., for examination of microfloral assemblages. The samples were mostly from the newly defined "Rib Bone Beds" and the palynological studies indicated a non-specific Cainozoic age for the unit. Results of the studies are contained in Appendix IV.

#### 5. GEOLOGY

## 5.1 Regional Geology

E.L. 1855 is located in the central part of the Ngalia Basin, towards its southern margin. The Ngalia Basin was an east-west elongated, intracratonic depression that developed on the Lower-Middle Proterozoic Arunta Complex. Sedimentation in the Basin began with the deposition of the Vaughan Springs Quartzite during the Upper Proterozoic.

Marine and continental sedimentation continued into the Middle Palaeozoic, with the Mt. Eclipse Sandstone having been deposited in Upper Devonian-Lower Carboniferous times.

The Mt. Eclipse Sandstone consists of a synorogenic sequence, up to 4500m in thickness, of non-marine sandstone with some interbedded shale, deposited in piedmont and sub-aerial deltaic environments. The sandstone is arkosic, micaceous and petrologically immature, with a low degree of sorting apparent, and sub-angular to sub-rounded grains being dominant.

Two major orogenic events have affected sediments within the Basin. The first occurred after the deposition of the Ordovician Djagamara Formation, and uplifted the northern margin of the basin. This event resulted in a change from a restricted basin with a marine-type environment, to one with a continental environment of deposition, in which the Kerridy Sandstone and the Mt. Eclipse Sandstone accummulated.

The second major orogenic event in the Basin probably occurred during and after the deposition of the Mt. Eclipse Sandstone and was responsible for major folding, thrusting and faulting of the sequence.

Uplifts of crystalline basement occurred to the north of the Basin. These uplifted rocks appear to have been the main source of the sediments of the Mt. Eclipse Sandstone, which is the only unit in the Basin known to host significant uranium mineralization.

# 5.2 Geology of the E.L. Area

### 5.2.1 Stratigraphy and Structure

The stratigraphic units encountered by drilling within the E.L. 1855 area include a Cainozoic sequence in excess of 160m in thickness, underlain by the Upper Devonian-Lower Carboniferous Mt. Eclipse Sandstone, which in turn is unconformably underlain by the Proterozoic Mt. Doreen Formation and the Vaughan Springs Quartzite.

#### Cainozoic

The Cainozoic sequences have been divided into the following rock units:-

Qr Red-brown and limey sandy soils.

Tc/Tg Calcrete and massive gypsum.

Tgsc Plastic clay; green-grey, sandy, frequently

gypsiferous with a trace of charcoal. Usually

interbedded with Tch.

Tch Yellow to olive-grey and light brown, coarse to

pebbly feldspathic sand.

Tbcs Olive-grey and light brown to red, sandy clay to

clayey sand.

Tlss Deep red-brown lateritic sandstone.

Tga/Tcl Massive crystalline gypsum; usually associated

with grey clay (Tcl), often carbonaceous.

Trib Pyritic, fine to medium-grained, lignitic brown

to black sand; olive, dusky green and grey clay;

lignitic clay and seams of lignite.

With the exception of the newly defined "Rib Bone Beds", the above nomenclature is well established from previous investigations of the Cainozoic sequences in the Ngalia Basin, by AGIP. The 1979 drilling programme on E.L. 1855 has indicated a basal sequence of the Tertiary section consisting of interbedded, pyritic, fine to medium-grained, lignitic, brown to black sand with olive, dusky green and grey clay, lignitic clay, and seams of lignite.

This unit has been tentatively and informally termed the "Rib Bone Beds" (shown in the abbreviated form "Trib" in the lithological logs). The unit was intersected in all holes drilled in the E.L. area during the year, with the exception of hole YB2R, and is best developed in the area of hole YB4R, where it exceeds 51m in thickness.

Palynological testing of spore and pollen material from lignitic samples of the "Rib Bone Beds" has indicated only a non-specific Cainozoic age (Ref. Appendix IV). During the course of this testing it became apparent that the lignitic seams of the "Rib Bone Beds" consist largely of clayey material to which amorphous humic matter is fixed.

The maximum depth to which the "Rib Bone Beds" have been tested, is 212m, in hole NGRH43 (Central Pacific hole, sited in E.L. 454). The sediments attain a thickness of approximately 112m in the area of this hole.

#### Palaeozoic

The only Palaeozoic unit encountered in the drill holes was represented by relatively thin sequences of the Mt. Eclipse Sandstone, which is classified on the basis of geochemical facies, as follows:-

- Cs Silcrete.
- Pzp Pallid zone Mt. Eclipse Sandstone, underlying Cs. Heavily kaolinised, with rare limonite.
- Pro Red facies (oxidised). With limonite, haematite and kaolinite.
- Prf Red facies (fresh). With haematite and feldspar.
- Pto Transitional red to white facies (oxidised). With haematite, limonite, chlorite and kaolinite.

  Intercalated red (or red mottled) and reduzate facies.
- Ptf Fresh transitional facies. With chlorite, haematite, pyrite, carbonaceous matter and feldspar.
- Pwo White facies (oxidised). With kaolinite and limonite.
- Pwf White reduzate facies (fresh). With pyrite, carbon and minor chlorite, and fresh feldspar.

The maximum thickness of Mt. Eclipse Sandstone drilled to date was 32m, in hole YB2R. The depth to the base of the unit in the four holes (YB2R, YB3R, YB5R and YB6R) in which it was intersected, ranged from 128 - 145.5m.

### Proterozoic

The following formations, of probable Adelaidean age, have been intersected by drilling within E.L. 1855. The rocks either directly underlie the Tertiary sequences, or underlie the Mt. Eclipse Sandstone:-

- Puq Mt. Doreen Formation. Represented in the E.L. area by black pyritic shale.
- Puv' Treuer Member of the Vaughan Springs Quartzite.

  Represented by finely laminated mudstone, generally siliceous to highly cherty, with some interbedded chert. Pyritic in parts.

Puv Vaughan Springs Quartzite; very hard, grey quartzite.

Drill hole summaries and detailed logs are contained in Appendices I and II.

# 6. EXPENDITURE

A statement of expenditure on exploration activities in E.L. 1855 for the period October 1978 to September 1979, inclusive, is as follows:-

Personnel (Salaries & Wages)	\$	4,509
Purchases		436
Drilling and Logging		535
Road-building, Bulldozing		2,240
Miscellaneous		935
Alice Springs Office Costs (pro rata)	)	693
TOTAL	\$	9,348

#### 7. REFERENCES

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APPENDIX I
DRILL HOLE SUMMARIES

#### DRILL HOLE SUMMARIES

More complete descriptive information is contained in the lithological logs (Ref. Appendix II).

Hole No.	YB1	R
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Co-ordinates 4500N 92300E

Commenced15.8.79Completed22.8.79Total Depth155mProbed Depth99.4m

Summary Log

0-89 Tertiary calcrete, clay and sand.
89-97 Clay; kaolinitic, limonitic, cream to olivegreen.

97-119 Sand; fine - medium-grained, limonitic,

olive-grey. Rib Bone Beds, Trib.

119-155 Sand; fine - medium-grained, carbonaceous,

lignitic, pyritic in parts; brown-grey.

Rib Bone Beds, Trib.

### Mineralization

None detected.

#### Hole No. YB2R

Co-ordinates 7950N 98500E

Commenced23.8.79Completed24.8.79Total Depth169mProbed Depth149m

Treuer Member.

Summary Log

135-169

O-97 Tertiary calcrete, clay and sand.
97-103 Kaolinitic clay. Pzp.
103-113 Sand; fine - medium, grey. Pwo-Pwf.
113-135 Sandstone; medium-grained, arkosic, micaceous, pyritic, with interbedded pale yellow-brown siltstone. Pto-Ptf.

Puv'

### Mineralization

Background (cps)	Peak (cps)	From - To (m)
35	96	8 - 9
30	94	106.5 - 107.5
30	90	118.5 - 119.0
40	97	138.5 - 139.0

Hole No. YB3R

Co-ordinates 8400N 77800E

 Commenced
 28.8.79
 Completed
 28.8.79

 Total Depth
 146m
 Probed Depth
 143.5m

Summary Log

Surface-119 Tertiary calcrete, clay and sand. 119-133 Clay; grey olive - dusky green. Rib Bone Beds, Trib. Black coaly clay to coal, pyritic. 133-135 Bone Beds, Trib. 135-144 Pzp-Pwo. Sandstone; fine-grained, light grey, 144-145.5 Pwf. pyritic. Vaughan Springs Quartzite. Puv. 145.5-146

Mineralization

3 x background at 8.5m.

Hole No. YB4R

Co-ordinates 3600N 89500E

 Commenced
 29.8.79
 Completed
 29.8.79

 Total Depth
 161m
 Probed Depth
 62.6m

Summary Log

Surface-110 Tertiary calcrete, clay and sand.

110-125 Clay; olive-grey. Rib Bone Beds, Trib.

125-134 Sand; medium, olive-brown. Rib Bone
Beds, Trib.

134-149

Sand; clayey, with abundant coaly material.

Rib Bone Beds, Trib.

149-161

Clay; silty, lignitic, with coaly seams.

Rib Bone Beds, Trib.

<u>Mineralization</u>

None detected.

Hole No. YB5R

Co-ordinates 9200N 91200E

131m

Commenced 30.8.79

Completed 30.8.79

Probed Depth 128.3m

Total Depth Summary Log

Surface-104

Tertiary

104-121

Sandstone; fine - medium, limonitic,

with silcrete and kaolinitic bands,

pebbly. Pwo-Cs-Pzp.

121-128

Sandstone; fine - medium, greyish-red,

with some interbedded siltstone. Prf.

128-131

Treuer Member. Puv'

Mineralization

None detected.

Hole No. YB6R

Co-ordinates 6000N 95700E

Commenced 31.8.79

Completed 31.8.79

Total Depth 142m

Probed Depth 99.4m

Summary Log

Surface-94

Tertiary

94-99

Black lignitic clay to clayey lignite.

Rib Bone Beds, Trib.

99-121

Clay; brownish-grey. Rib Bone Beds,

Trib.

121-132

Sandstone; medium, greyish-pink. Pro.

132-142

Treuer Member. Puv'

### Mineralization

None detected.

Hole No. YB7R

Co-ordinates 5600N 101150E

169m

Commenced 31.8.79

Completed 1.9.79

131.2m

Probed Depth

Summary Log

Total Depth

Surface-103

Tertiary

103-120

Sand; fine - medium, dusky brown to

black. Lignitic, pyritic. Rib Bone Beds,

Trib.

120-169

Mt. Doreen Formation. Pug

Mineralization

Background (cps)	Peak (cps)	Depth (m)
40	115	4
30	80	69
20	60	104

Hole No. NGRH41

Co-ordinates 5000N 85400E

Commenced 24.8.73

Completed 28.8.73

Total Depth 252m

Probed Depth 252m

Summary Log

Surface-101

Tertiary calcrete, clay and sand.

101-119

Clay; olive-grey, very carbonaceous,

minor black and reddish-brown shale. Rib

Bone Beds, Trib.

119-252

Mt. Doreen Formation. Puq.

Hole No. NGRH42 47600N 77400E (Map SF52-12)Co-ordinates Commenced 29.8.73 Completed 1.9.73 Total Depth 221m Probed Depth 178m Summary Log Surface-112Tertiary calcrete, clay and sand. 112-150 Clay; olive-green; calcite, minor carbon, trace lignite. Rib Bone Beds, Trib. 150-188 Shale; "multicoloured", minor lignite, pyrite. Rib Bone Beds, Trib.

Treuer Member.

188-221

212-227

#### Hole No. NGRH43 Co-ordinates 47600N 77700E (Map SF52-12)Commenced 2.9.73 Completed 5.9.73 227m Total Depth Probed Depth 227m Summary Log Surface-101 Tertiary calcrete, clay and sand. 101-148 Clay; light red, pale olive and olivegrey; rare carbon. Rib Bone Beds, Trib. 148-190 Shale; "multicoloured" and siltstone; sandy, lignitic in parts. Rib Bone Beds, Trib. 190-212 Sandstone; greyish, abundant coaly layers. Rib Bone Beds, Trib.

Treuer Member. Puv'

Hole No. NGRH44

Co-ordinates 47700N 78250E (Map SF52-12)

Commenced 6.9.73 Completed 8.9.73

Total Depth 198m Probed Depth 197m

Summary Log

Surface-86 Tertiary clay and sand.

86-107 Clay; yellow-green to greyish-green, with

common carbonaceous clasts. Rib Bone

Beds, Trib.

107-124 Clay; olive-black to greenish-grey; some

carbon. Rib Bone Beds, Trib.

124-154 Sandstone; pyritic, lignitic. Rib Bone

Beds, Trib.

154-198 Mt. Doreen Formation. Puq.

APPENDIX II
LITHOLOGICAL LOGS

	RALIA							No. YBIR TYPE Rotary Page:
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	==				<u> </u>			65-77 Clay plastic
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70	==						ţ	69-77 large gypsom frag
	=						-	7 271 7
$H \mid$	=						ŀ	
	-=-							
H	311		1				-	
$H \mid$	=						t	
H	11 13						-	
75	83						+	
口丁	=						ļ	
HI	-		,				}	
$H \mid$	1116						ţ	
						٠	F	
$H \mid$	===	1bes					-	77-81 Clau
								light alive-brown
80							1	very minor soft white fragments

			LTD.		ŲΟN	KENO	' <b></b> '	No. YBIR TYPE Page: 5
Regi	on				Соп	nmen	ced_	Machine
.Proj	ect			<u></u>	Con	nplet	ed	Driller
Co-d	ord				Tota	al De	pth_	Probed by
Azin	nuth_	<del></del>			Logg	ged b	у	Operator
Incli	nation			<del></del> -	Sam	pled	by	Probed depth
Elev	ation_				Con	tract	or _	Scale
Casing Scale Depth	Run Graphic	Radiom	Sample No.		SSAY	S	Metres	DESCRIPTION
ა ∾ ≘.	를 <u>급</u>			Uppm	Тһррт	Vppm	=	
			<u> </u> 				t	
	1	-					Ę.	
	70-						}	01-97-61
	1					;	<b> </b>	81-87 Clay
	=	Tel			į	ļ		limonitie, kaolinitie streat
-	<u>۔۔</u> ن	Ha	i			1	<b>F</b> :	85-87 minor silcrete.
85			i ·	, ,	ŀ	ţ		
			·					
4	5						-	
-	-	-					ŀ	
	86		:	*-			L	
	515	Take					-	87-89 Clay gypsum cream to light brown
	113		! "				<b>,</b>	Gream to light brown
-	1						t	limenitic, Radinitic, Very m ferricrete,
90	17	5			•		F	
	K-						F	89-97 Clay
		5						highly Kaolinitic, limonis
	5	-						streaks.
+							-	Cream to light olive-grey.
	<del> </del>		!				t	73-97 Olive-green day.
	-5		÷				F	
75		-					-	
/2	-						<b>†</b>	
		<u>'</u>						
H	K:	:		,			}	97-155 Rib Bone Bads
H		;	`	1			t	97-99 Sand, fine, clayey
							F	Olive-green to wellow.
Н	) <u>   </u>	Trib					-	limonitic, harmatitic stream
$\dashv$	<u>  2  </u>	•					}	99-101 5-1 5:
100	10		,			1	1	99-101 Sand fine clean. white to olive-grey.

AGIP AUSTRALIA PTY. LTD.	BORE	HOLE No	o. YB IR TYPEPage:
Region	Comm	nenced	Machine
-			Driller
Co-ord	Total	Depth	Probed by
Azimuth	Logge	d Ьу	Operator
			Probed depth
Elevation	Contr	actor	Scale
Casing Part of the	ASSAYS Uppm Thppm V	Vppm =	DESCRIPTION
IDS			limonitic streaks, red-brown fragments (clasts). Olive-green clasts.  101-103 "As above", clasts more Common Olive-grey to olive-yellow.  103-III Sand, fine Clean, vniform. Minor limonitic streaks. Minor olive-green and red- brown clay fragments (clasts).  III-II9 Sand, medium-fine to Fine, Light grey. Ilmonitic streaks.

				LTD.				No. YBIR TYPE Page:
								d Machine
								Driller
								h Probed by
								Operator
								Probed depth
ΕI	evati	on_				Con		Scale
Casing	E Ger	raphic Log	Radiom	Sample No.	Д Иррті	SSAY:		DESCRIPTION
Ť	-121				ф	тпррп	трриг	
]		<u>ښ</u>						119-123 Sand medium
┨								Dark grey carbonaceous st
┪	}							Dark grey carbonaceous st
							1	
4								
$\dashv$		٧.	į					
١,	25				, .			·
I								
$\dashv$		4.						123-135 Sand, medium-fir
1		-			'		ŀ	pyrite, minor limonitics
1		•						slightly feldspathic.
4		υ··						slightly feldspathic.  125-127 yellow-grey. sli  more limonitic.
+			ŧ	·		1		more limonitic.
1		٥	Trib		1 .			,
4	30		11.12					
┥		٠٠,						
1		1.		·				
]								
+	-	Δ					į	PA
┪								
]	1	-	ļ					
۲,	-				}			
Ť	35		1	. :			:	1
]		بنبز		·		:	1 :	
4		300	}					135-139 Sand, medium
$\dashv$		1						coal streaks. Mica (muse
T	7		1	,				135-137 grey - brown
7			].				1	
4			}				ļ	
۲.		<b> </b> ֥.		ŀ			•	

Regio	n				Con	nmend	ed_	Machine
								Driller
								Probed by
1								Operator
								Probed depth
ł								Scale
Casing Scale Depth	Run Graphic Log	Radiom	Sample No.	-	SSAY	S Vppm	Metres	DESCRIPTION
							-	139-141 Sand, medium-fin Dark brown, lignitic. muscovite. 141-149 Sand, medium-fin
145	m							brown - grey  Muscovite, slightly feldspa  Cream shale streaks.  minor coaly streaks.
	1.4.4.	Fib						
	*: 5							149-155 Sand, medium-fir light grey, uniform  Coal fragments comm  151-153 limonitic and das  green fragments  153-155 Chloritic fragment  slightly more clay (shale)  fragments.
								End of hole at 155 m.

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AL	JIP JSTR	ALIA	PTY.	LTD.		BOR	.EHO	LE N	No. YBZR TYPE Rotary Page: 1
Reg	ion_	!	NGA	LIA		Con	men	ced_	23/8/79 Machine Schramm KT4
									24rd August Driller R. Irvine
Co-	-ord	<u>Z</u> ,	9501	N : 98 ;	600 E	Tota	al De <sub>l</sub>	pth_	169 m. Probed by S.I.E.
Azi	mut	h				Log	ged b	у	P.G.S. Operator B. McGlynn.
Inc	linat	ion _	Ver	rtical	•	Sam	pled	by	8. MG. Probed depth 149.0. m.
Ele	vati	on				Con	tracto	or	DAVIES. Scale 1:100
<b>E</b> 3		ap ap	Radiom	Sample No.		SSAY		etres	DESCRIPTION
300	<u> </u>	3-	·		Uppm	Thppm	Vppm	*	
H		~	Qr.				٠,٠	Ė	0-1 Red-brown soil.
П		뜐			i			F	
Н		比						}	
丁	7	世						_	
Н		15						F	Calanta
]		단						t	1-11 Calcrete minor calcaréous sand.
∏s	: _			·					light brown to olive-brown.
		1	-					}	
Н		<u> </u>	7c					t	
		片	}	·				[	· · · · · · · · · · · · · · · · · · ·
+	-	下	1		,			┝	
	-   .	許	; -	•				t	
		过							
Hie		臣			_			}	
	1	뜮						Ľ	
П		15						Ę.	
H		-			1			ŀ	11-13 Sand kaolinitic,
			L.					L	clayey Cream
Н		K	Tch					-	minor colcrete.
H		K.						-	13-15 Sand, (medium) Kaolinitic
									clayey
1:	1					;	,	<b> </b>	light olive-green.
H'	1	1		:				<u> </u>	
		学							
H		· à.	Tasc					-	15-19 Clay sandy, friable.  Olive-green  Slightly feldspathic-kaolin.  charcoal streaks.
	7	1							Slightly feldspathic-kaolin.
П		7							charcoal streaks.
H		<b>!=</b>						-	
<sub>2</sub>	٥	1						t	
REI	MAR	KS		•				. ,	

AG	IP STRALIA	PTY.	LTD.		BOR	REHOI	LE N	No. YB 2R TYPE Page: _2
Regio	on				Con	nmend	ced_	Machine
								Driller
			_					Probed by
								Operator
								Probed depth
								Scale
Casing 'Scale IDepth	Run Graphic Log	Radiom	Sample No.	A Uppm	SSAY	S Vppm	Hetres	DESCRIPTION
35	· 14 . K. 1	Tch						19-35 Sand, Clayey, feldspathic medium-coarse  light olive-green.  21-33 Kaolinitic, light olive-green to olive-brown  27-29 coarse  29-33 medium-coarse  33-35 very coarse
40 REM	ARKS	Tocs					- - - -	

AGI aus	P IRALIA	PTY.	LTD.		BOR	.EHO	LE N	No. YB2R TYPE Page:
Regio	n		· · · · · · · · · · · · · · · · · · ·		Con	nmen	ced_	Machine
Proje	ct				Con	plet	ed	Driller
Co-0	.q				Tota	al De	pth_	Probed by
Azim	uth				Log	ged b	у	Operator
Inclin	ation _	·			Sam	pled	by	Probed depth
Eleva	tion				Con	tract	ог	Scale
Casing Scale Depth	Run Graphic Log	Radiom	Sample No.	A Uppm	SSAY:	S Vppm	Metres	DESCRIPTION
55 REMA	भारिकारिकारी हैं अपने हैं अपने के लिए हैं से कि का कि का कि का कि का कि कि	Tbes						35-57 Sandy clay to clayey sand coarse slight misa (mussouite) Olive-brown be coming light brown 41-43 medium 43-47 brown, coarse to very coarse slightly feldspathic. 47-51 medium-fine olive-brown to light brown 51-53 coarse 53-57 medium-fine.
	RKS			<u> </u>	<u> </u>	<u>.                                    </u>	1_	

				PTY.						No. YB2R TYPE Page: 4
	Region									
	ì									Driller
	l.									Probed by
	Aziı	nut	h				Log	ged b	у	Operator
	Incl	inat	ion_		·		Sam	pled l	Ьу	Probed depth
	Elev	ati	on			<del></del>	Con	tracto	or_	Scale
	Casing Scale Denth	Rec	Graphic Log	Radiom	Sample No.		SSAY:	S Vppm	Metres	DESCRIPTION
			• •						-	
			141.4	Tbes					-	57-67 Sand, coarse, clayer slightly feldepathic Mica (muscovite)
, <u> </u>							. :			light brown to slight red-brow
ا ر	П		==						-	65-67 medium.
`	65		*			٠,			-	
			:: -				;		F	
	Н		*						}	
			4						ţ	
	Д.		• .						F	
	H								-	67-71 Sand, coarse
			5	Cs		,	:		<b> </b>	Cream silcrete (carbonate).
	70	1	* <u>;</u>		ř				- 1	
									ļ	-
	H		SHV	Cs					ŀ	71-73 Silcrete, carbonate.
(	$\vdash$	$\left\{ \right.$	T.	رع					-	
	Ц·									
	H			Tch	,				}	73-75 Sand, fine, Kaolinitic
	75								L	Clay cream.
	Н		K :	ونسا		;			-	=======================================
	Н		. K	Teh					}	75-77 Sand, medium to coarse Kaolinitic.
			K.				ŀ		-	
	╟	1	m.						-	77-79 6-1 1' (
	H			Thes					t	17-79 Sand, medium - fine light brown, muscovite.
	Ц		<u></u>				, ·		-	
	$H_{-}$		=					]	F	

11	IP Str	ALIA	PTY. 1	LYD.		BOR	REHO	LEN	No. YB2R TYPE Page: _5
Reg	ion_		<del></del>			Соп	nmen	ced_	Machine
Pro								ed	Driller
Co-	ord					Tota	al De	pth_	Probed by
									Operator
						•			Probed depth
1									Scale
E 2 5	5	<u>.</u>				SSAY		Metres	
335	뙬	Grap So	Radiom	Sample No.	Uppm	·Thppm	Vppm	1	DESCRIPTION
H		<del>-</del> :						-	19-81 Clay sandy light olive-brown. Olive-green shale, Red sandy
H		==						+	Olive - brown.
Ħ		K -							(micaeous) fragments.
		15.							
$\mathbf{H}$		_ <u>_</u>						}	81-85 Clay light olive-green, kaolinit
Н		===					į	<b>†</b>	haematitic streaks.
1								<b>†</b>	83-85 carbonaceous streak
25		<u> </u>	,	·					
H		==		N I				-	
Н		75						+	95-91 Sh la Slive even
H		=			·	,		-	85-91 Shale, Olive-green Sand, fine, red,
且								L	haematitic streaks.
Ц		=_	Thes						89-91 fine red sand.
H			nes	-				-	
H. :	,	-					1 :	+ 1	The state of the s
90		1			,	;	:	L	
Ц			!						
Н	١.							-	5.00
H		<u> </u>						}	91-93 Sand, fine, kaoliniti
]		K						<b>†</b>	clay cream
		į.					İ		
Н		Gy						-	<u> </u>
Н		Gy						+	97 97 4
H95	;		Tga					<b> </b>	93-97 Massive gypsum.
	]	<sub>ح</sub> ک							
Н	Ì	رجا	·					-	
H		اًے						+	
H		<del></del>			1			t	
	1	三							97-103 Clay-grey.
$\prod_{i=1}^{n}$		=						F	97-103 Clay-grey. Crean clay (shale)
H			Tel/					-	<b>U</b>
H		==	1 124					-	
	1AR	κ c F==	·i		<u> </u>				

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AUST								No. <u>YB2R</u> TYPEPage: <u>6</u>
i -								Machine
1								Driller
Co-or	d				Tota	al De	pth_	Probed by
Azimu	th				Log	ged b	у	Operator
Inclina	tion_				Sam	pled	Ьу	Probed depth
Elevat	ion				Con	tract	or	Scale
Casing Scale Depth	Kun iraphic Log	Radiom	Sample No.	A	SSAY:	S Vppm	Metres	DESCRIPTION
	11 6			Оррін	търы	thhu	+	
		,						
$H \mid$							-	
$H \mid$							ŀ	
			·					
$A \perp$					į		-	103-105 Sand fine-medium
Ч	υ :	Pur					}	slight limerite, kaolin.
105				-				Slight Imenite, Raelin.
	::						F	
	سننو ا				•		-	<del></del>
$H \mid$	ich:						ŀ	
				4 .			L	105-115 Sand, clay, media
	·~·							pyrite
$H \perp$	. 0					,	+	- otive-green clay fragments (c
$H \perp$		Pof	) V				<b> </b>	105-109 Quartzite fragmer
110	-	·						
H	سو:						-	
41	\ \mathref{v}_{\mathref{v}_{\mathred{v}}}						+	
HI						ļ		
	_							
$H \mid$	ċμ.	i					-	
HI							}	· · · · · · · · · · · · · · · · · · ·
	<b></b> .	}						
115				Ì			[	
$H \perp$							-	
$H \perp$							ŀ	
HI			!				Ĺ	
H					1		-	
$H \mid$							}	
$H \perp$					-		<u> </u>	
1/20			1	I	1	1	Γ	· · · · · · · · · · · · · · · · · · ·

AGIF	RALIA	PTY.	LTD.		BOR	.EHO	E No. <u>Y82 R</u>	TYPE Rotary , m	udPage:
Region	NG	ALIA	BASIN	<u>J</u>	Com	nm en	ed 23 rd Augus	t Machine	Schram
							d 24 th Augus		
Co-or	d				Tota	al De	oth 169.0 m.	Probed by	
							, G.Sparke		
Inclina	tion \	lartie	al	<u></u> .	Sam	pled	y B. McGlynn	Probed de	pth 149.0
							r Davies		
Casing Scale IDepth Rec	Run Graphic Log	Radiom	Sample No.		SSAY: Thppm	Vppm	Metres	DESCRIPTIO	N
110									
$H \perp$									
H									
H	1				,				
	♥.								Sandstone, Mediun
$H_{ns}$							grained o	arkosic with c	ream - coloured ules. Matrix is
112	٠.						<u>kaolinized</u>	<u>Contains me</u>	iscovite mica fre
	U						pyrite, and	d minor limoni artz grains o	tic staining.
H	· ·	Pło-					<u>Que</u>	<u>contains</u> son	re Sub-well
	k ·								brown (104R 6/2
	臺	PEF					ih colour	and minor	amounts of
$H \parallel$							greyish	green shale Tacies "oxio	clasts (10 G 4/2)
	m			.				, <u>, , , , , , , , , , , , , , , , , , </u>	1120 70 1729L.
120									
$H \mid$							-		
	E								
H	[~·]								41-
<u> </u>	-2.								
							:		
$H \mid$							<del></del>		
125	' .								
H	0.							125-135 (	Occasional quartz
$H \mid$	. 4						<u> </u>	<i>f</i>	ebbles
<u> </u>	<u>14.</u>							,	
$H \mid$	<b>k</b> .						<u> </u>		
	==								
	. 0								×
130	l'. RKS	t		<u> </u>		<u> </u>			

AUSTI	RALIA	PTY.	LTD.		BOR	EHO	LE I	No. <u>YB 2 R</u> TYPEPage:
Region					Com	men	ced.	Machine
Project	t			••	Con	nplete	ed _	Driller
								Probed by
							•	Operator
								Probed depth
								Scale
age age	Kun Graphic Log	Radiom	Sample No.	A	SSAY	S Vppm	‡es	DESCRIPTION
Sasing Scale	Gray	Kauluin	Sample No.	Uppm	Thppm	Vppm	]=	DESCRIPTION
"	\\ \nabla						F	
]	k ·	Pto-		l I				
_	ν·	PŁF		!			-	
							<b>†</b>	
							F	
$\dashv$ $\mid$					ļ		-	
135	₩.						r	
				-			F	135-169. Traver Member Mudstone
H	-						-	varying from siliceous to highly che Contains some interpedded there. Fin
				•			Ĺ	banded in parts Colour varies from
	-						F	light brownish grey (54R 6/1) to a
							-	medium dark gray (N4). Pyrific fro
	-						F	
1240	- #					}	F	
	-						ţ	
		Pur					-	
$H \parallel$	-						+	
							-	
$H \mid$	-						+	
145		İ					ļ	
$H \perp$	-				1		-	
$H \mid$							+	
	-							
							-	
$H \mid$	_						+	
		1-						
	1 -						L	

Region	Commenced	Machine				
_		Driller				
		Probed by				
		Operator				
		Probed depth				
		Scale				
Radiom Sample No.	ASSAYS 25 25 25 25 25 25 25 25 25 25 25 25 25	DESCRIPTION				
1    -						
4	-					
<del>                                      </del>						
-		-				
uss						
<b> </b>   -						
		The second secon				
†     <u>.</u>  ,						
1   -						
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]   _   Pui						
]						
160   -						
<u> </u>						
-     -						
-						
-     <u>-</u>						
<b>-</b>     .   _						
165						
-		165-167. Abundant pyrite.				
-     🛊						
+-	-					
-						
<u> </u>	<u>En</u>	d of hole at 169 m.				

	AGI aus		ILIA	PTY.	LTO.		BORE	HOI	LE N	10. <u>YB 3R</u> TYPE	Rotary Mud	Page:
	Regio	วก	NG	ALIA	BASIN		Comr	nend	ed 4	28th August 1979	Machine	Schramm KT240
										8th August		
										146 m.		
	Azim			km w -	. of Rib I	Sona Bonz	Logge	d by	<i>/</i>	G. Sparke	Operator	B.McGlynn
	Incli	natio	on 🕽	Vertic	al					B. Mc Glynn		
	Eleva									Davies		
İ	Casing Scale IDepth	Run	Graphic Log	Radiom	Sample No.	A Uppm	SSAYS Thppm	Vppm	Metres	C	ESCRIPTION	· · · · · · · · · · · · · · · · · · ·
	0			Qr					-	0-1. Soil, me (10 R 4/6), sai	derate redd ndy.	ish brown
}	-							:	-	1-11- (-1-1-	<u>, , , , , , , , , , , , , , , , , , , </u>	male as II'd
	1								_	1-14. Calcrete : brown (10 R 5/4	) at the top	pale readish o to light brown se . Contains
(	4								<b>-</b>	(5 YR 5/6) and	white at ba	ee bontains
Ì	]								Ľ	sand and	clay len	natrix and some
	4 .								-	<del></del>	<i>d</i> .	
-	5								┝			
	-			Tc					<u> </u>			
	-					-			}			
	_								-			
	-					, ,			┝		i	
	10								<u> </u>		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
ا ر									Ļ			
( ,	-4							-	-			
									<u> </u>			
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	Н								ŀ			
									ţ			
									-	14-35 Clay	mottled fro	m pale dive (1046/2)
	15							×.	-	to a dark very sandy	<u>vellowish orai</u>	age (10 YR 6/6);
	╛										was garage	Market City
	∐ · ∣								-			
	$\vdash$			Tasc					-		,	
									Γ			
	H						.		-		14 co P.Iti	, _ , 1
	H								-		19-22.126610	and sand lens
	20									w		
	REM	ARI	KS_	Ļ	tole n	ot ca	sed					

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Region Commenced Machine Project Completed Driller  Co-ord Total Depth Probed by  Azimuth Logged by Operator Inclination Sampled by Probed depth Elevation Contractor Scale  ASSAYS 20 20  DESCRIPTION  1986		GIP USTRALIA	ì PTY.	LTD.		BOF	₹EHC	)LE N	lo. <u>Ув Зг</u> түре	Page: <u>2</u>		
Total Depth	Reg	gion			· · · · · · · · · · · · · · · · · · ·	_ Con	nmer	rced_	Mac	Machine		
Total Depth										•		
Azimuth Logged by Operator Inclination Sampled by Probed depth Elevation Contractor Scale  ASSAYS  ASS												
Inclination Sample by Probed depth  Elevation Contractor Scale  ASSAYS Depth No. ASSAYS Uppm Thorm Vppm 2 DESCRIPTION  20  1955  195	1										l.	
Elevation Contractor Scale  ASSAYS Uppm Thopm Vppm DESCRIPTION  20  1956 36 57 Radiom Sample No. Uppm Thopm Vppm Thopm Vppm Thopm Vppm Thopm Vppm Thopm Thopm Vppm Thopm												
25	- [											
25 25 1 <sub>95c</sub>	Casing	Beptn Run Graphic Log	Radiom	Sample No.	1	_	S I Voom	Metres	DESC	RIPTION		
25 1 <sub>9</sub> sc			<b> </b>	<del>                                     </del>	Оррии	Inppin	4 pp	1				
25 - 1 <sub>9</sub> x.	П							ļ.				
25 - 1 <sub>9</sub> sc	Н							}	Star V			
1 <sub>gsc</sub>	Д	]						L				
25   Tgsc								}			***	
- 1 <sub>gsc</sub> - 3 <sub>o</sub>	H							<b>†</b>				
- Tgsc - 30	П							ļ				
- Tgsc	25	5						-			·····	
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31-33. Pebble and sand lens	31	<u> </u>	1					-				
31-33. Pebble and sand lens	,H							-				
	4							t	31-33 <u>.</u> f	ebble and sand lens		
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	Н							}				
35 [	$H_3$	s						<u> </u>		,		
35 - 66 Sand medium - coarse grained		1		1				F			.d_	
abundant pebbles generally a dark yellowish orange (10 YR 6/6) to light	H							+	abundant pebbles	generally a dark		
Tch brown (5 YR 6/4).	Н		Th					ţ	brown (5YR 6/4).	(10 1K 6/0) 10 11/g-	ш	
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REMARKS			1	<u> </u>		1			· · · · · · · · · · · · · · · · · · ·			

	AG AUS		ALIA	PTY.	LTD.		BOR	.EHO	LE N	<u>YB3R</u> TYPEPage: 3
ŀ	Regio	on_				<del></del>	Com	nmen	ced_	Machine
ı										Driller
	Co-d	ord				···	Tota	al De	pth_	Probed by
							Logg	ged b	y	Operator
	Incli	nati	on_			<u>-</u>	Sam	pled	Ьу	Probed depth
	Elev	atic	n				Con	tracto	or	Scale
	Scale	Run	raphic Log	Radiom	Sample No.		SSAYS Thppm	Vppm	letres	DESCRIPTION
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į	REM		KS -			<u></u>		<b>.</b>		

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11 7	IGIP PUSTR	ALIA	PTY.	LTD.	,	BOI	REHO	)LE I	No. YB 3R TYPE Page:	
Re	egion_				, 	. Cor	nmen	ced.	Machine	
- 1									Driller	_
									Probed by	
									Operator	
									Probed depth	
									Scale	_
Casing	Cepth Run Run	raphic Log	Radiom	Sample No.	Д Оррт	SSAY		Metres	DESCRIPTION	7
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H	65							-		_
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П				'				F		
H								+	96-102. Clay, light brown (54R. 5/6), minor pake olivie (104 6/2) mottling.	_
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Ц			Tbsc					_		_
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AGI		ALIA	PTY.	LTO.		BOR	EHO	LE N	o. <u>YB 3R</u> TYPE Page: <u>5</u>
Regio	n_					Con	nmen	ced_	Machine
roje	ect.	_				Con	nplete	ed	Driller
20-0	rd					Tot	al De	pth_	Probed by
Azim	utl	n				Log	ged b	у	Operator
				Sam	pled	bу <u>.      </u>	Probed depth		
Eleva	atic	n				Con	tracto	or	Scale
Scale	蓬	aphic og	Radiom	Sample No.		SSAY	S Vppm	etres	DESCRIPTION
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85									
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1					,			<u> </u>	87-93. Sandy clay.
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90								F	
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egion				<del></del>	Con	ımen	ced_	Machine
rojeci	t				Con	nplet	ed	Driller
o-ord	d	···			Tota	al De	pth_	Probed by
zimu	th				Logg	ged b	у	Operator
								Probed depth
levati	ion_				Con			Scale
Scale tDepth Rec	Graphic	Radiom	Sample No.	A Uppm	SSAY: Thppm	S Vppm	Metres	DESCRIPTION
100	ļ	Tbsc						
		,	:				<u>-</u> -	102-106. Sand with abundant gypsum pale yellowish orange (10 YR 8/6)
		Tch			!		-	•
105				-			<u> -</u>  -	106-135 Rib Bone Beds
							<u>-</u>	106-119. Clay moduin grey (N.5) to a light olive (104 5/4). Minior limonitic staining, and white clayey granules.
			·		- The state of the		-	
по		1					-  -  -	
		Trib					-	
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<b>115</b>			- :		-		- - - -	
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120		Tyse						

AGIP AUST		PTY.	LTD.		BOR	EHO	LE N	No. <u>YB 3 R</u> TYPE Page: _7
Region	١	· ••			Com	men	ced_	Machine
.Proj <b>e</b> c	t		·		Con	plete	ed	Driller
Co-or	d		· · · · · · · · · · · · · · · · · · ·		Tota	al De	pth_	Probed by
Azimu	th				Logg	ged b	у	Operator
Inclina	ation_				Sam	pled l	bу <u>.  </u>	Probed depth
Elevat	ion				Con	tracto	or	Scale
Casing Scale Thepth	Run aphic .og	Radiom	Sample No.		SSAY	S Vppm	letres	DESCRIPTION
ා <sub>ව</sub> කි	5 -			Uppm	Thppm	Vppm	>	
						÷		119-135. Clay dusky green (56 3/2), partially consolidated, soapy lustre Contains some interbedded very fine grained sandstone.
125								
130		Trib						
135	k	Pz-						133-135. Black coaly clay to coal, pyritie.  135-145.5 Mt Eclipse Sandstone.  135-144.0 Pallid zone tachnitic with fine grained quartz in matrix. Light clive grey (sy 6/1). Minor silcrete band

	•		PTY.						<u>183 R</u> TYPE Page: Page:
Region Commen  Project Complet									
Co-c	ord					Tota	al Dej	pth_	Probed by
									Operator
									Probed depth
Elev	atio	on							Scale
Casing Scale Depth	Run.	Graphic Log	Radiom	Sample No.	Uppm	SSAY:	Vppm	Metres	DESCRIPTION
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4			Pz –					-	
		: : ·	Pwo						
1-1		د د						-	
]		<u>::</u>						Ļ	144-0-145-5. Sandstone, fine grained
145			Puf		,			}	Night gray (N.7). Quartzose hard, siliceous Minor pyrite. Fairly mature sandstone
		<u>:::</u>						F	5.5-146 Vayohan Springs Quartzife a
4		<u> </u>	Puv					╀	ind of Hole at 146 m.
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Project <u>Yar</u> Co-ord <u>360</u> (2 km Azimuth <u></u>	ALIA ndneh ON: L.N. i	BASIN Bore E 89500 E of Nappa	.L. 1855 Yarki)	Commo Comple Total E Logged Sample	enced_ eted Depth_ by d by	29th August 1979 29th August 161 m G. Sparke B. McGlynn	Machine	B.M. Glynn  pth 62.6 m
J 1151 I	Radiom	Sample No.	A:		Metres		DESCRIPTIO	
5	Qr Tga, Tcl.		Uppm	Thppm Vp	m =	0-1. Soil mod sandy.  1-3. "Gypcrete" and evay Greyish of 3-13. Clay san dark yell pale oli	Finely porite la poronge p  noty motion oran	dish brown (DR 4/6),  Crystalline gypsum yer; pandy clayey. Dink (5 YR 7/2).  tled dominantly ye (10 YR 6/6) to  Sandy with ye gypsum.
20	Tgsc			į.		with' mottli		denate brown (5 YR 4/4). Is the base.

USTRI	HLIA	PTY. I	.10.		BOR	EHO	LE N	<u>YB 4 R TYPE Page: 2</u>	
gion_			MINISTER STEEL		Com	men	ced_	Machine	
oject .					Com	plete	ed	Driller	
-ord					Tota	d De	pth_	Probed by	
Azimuth						ged b	у	Operator	
liņati	on_				Sam	pled	by	Probed depth	
					Con	tracte	or	Scale	
IDepth Rec Run	Graphic Log	Radiom	Sample No.	A Uppm	SSAYS	Vppm	Metres	DESCRIPTION	
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	AG AUS		ILIA	PTY. I	TD.		BOR	EHO	LE N	10. <u><b>YB 4 R</b></u> TYPE		Page: _ <b>3</b>
١	Regio	on_					Com	men	ced_		Machine	
	Proj	ect_					Con	plete	ed	<u>.</u>	Driller	
	Co-c	ord_					Tota	ıl De	pth_		Probed by	
		zimuth										
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15		-121					SSAYS		Hetres	···		
3	Scale	ge ,	irap Log	Radiom	Sample No.	Uppm	Thppm	Vppm	<b>₹</b>		ESCRIPTION	
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		GIP USTR	ALIA	PTY.	LTD.		BOR	EHO	LE N	o. <b>YB4R</b> TYPE Page: _4
	Re	gion					Com	men	ced	Machine
- 1										Driller
										Probed by
										Operator
										Probed depth
										Scale
ł		TE			<u> </u>		SSAY			
		Per Sept	Graphic Log	Radiom	Sample No.	Uppm	Thppm	Vppm	¥er -	DESCRIPTION
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-	4								-	(n (m (l) 1 1 1) (C)
Į		$\dashv$								63-65 Abundant white finely crystalline to powdery
( 	1						]		[	gypsum.
ł	$\dashv$					 			-	
	7	55		Tgsc						
	4								F	
ł	$\dashv$		i						F	
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Ì	$\dashv$					:			}	
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	$\Box_{a}$								-	
(		70							-  -  -  -  -	70-93 (lay light brown (5 yr 5/6) and motified pale of vie clay at top of unit, with interbeolded white calcrete.
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	Н								ŀ	
	Н		ĺ	The					t	· · · · · · · · · · · · · · · · · · ·
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	Ц								t	78-80. Abundant white calcrete
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		STRALIF	PTY.	LTD.		BOR	EHO	LE 1	No. <u>YB 4 R</u> TYPE Page: <u>5</u>
	Regi	on	· ", · · · "			. Con	nmen	ced.	Machine
									Driller
									Probed by
									Operator
Ì									Probed depth
•									Scale.
	Casing Scale Depth	Run aphic	Radiom	Sample No.		SSAY		Metres	DESCRIPTION
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	90							<b>-</b>	
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•	Ц							F	
	H							}	
								F	93-110. Clay dusky yellowish green (10 GY 3/2). Sample consists of
	Н							<b>†</b>	(10 Gy 3/2). Sample consists of lumps 10-15 cm. diameter
	95								
	H					1	`	-	
	Н							<b>†</b>	
			Tasc.					-	
	H-							-	
	Н								<u> </u>
	$H_{aa}$							-	·
	REM	ARKS	I	L.	1	1	1		
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Project  To-ord  Azimuth  Inclination  Elevation				Comp Total Logge Samp	Depth Depth d by led by	Machine Driller Probed by Operator Probed depth Scale
Ines Ines Ines Ines Ines Ines Ines Ines	Trib	Sample No.	Uppm		Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut Abbut	-161. Rib Bone Beds  -165. Clay, olive gray (54 4/1) with abundant white calcrete. Gradito very fine granied sandstone in parts.  117-125. Contains some dusky blue green (586 3/2 clay.

ни	31h	HLIH	PTY.	110.		вок	KEHO	LE F	o. YB 4R TYPE Page: 7
Reg	ion_				<del></del>	Con	nmen	ced_	Machine
	-								Driller
Co-	ord					. Tota	al De	pth_	Probed by
Azir	nut	h				Log	ged b	у	Operator
Incl	inati	ion_				. Sam	pled	by	Probed depth
Elev	/atic	חכ				Con	tract	or	Scale
Scale	in in	Graphic Log	Radiom	Sample No.	Uppm	SSAY:	S Vppm	Metres	DESCRIPTION
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]							Ì		125-134 Sand, medium grained, light brown (54 5/6). Sub-angul
-								}	well-sorted.
丄	]							L	W211 ~ 501724.
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-			7.		:	:		<b>†</b> :	
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130	2		:					-	
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	]							F	
-	ł							}	
		-	†						134-161. Interpedded fine granied san
139	1						1	+	clay, and some lightic sea Colour is a distinctive bla
								t	brownish black
								-	
-	5							+	134-149. Sand clayey with abundant coaly mate
	<b>וֹ</b>							F	in matrix.
Н			1					-	
$\vdash$								<b> </b>	

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	AGI AUS	-	LIA	PTY.	LTD.	,	BOF	KEHO	LE N	o. <b>Y84</b> R. TYPE Page: _ <b>8</b>
R	egio	n								Machine
	_									Driller
										Probed by
										Operator
1										Probed depth
										Scale Scale
	· · · · · ·	161					SSAYS			
į	Scale Dept	g 39	100	Radiom	Sample No.	Uppm	Thppm	S Vppm	Ē	DESCRIPTION
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	150			Trib						149-161. Clay silty with lignitic
									1 1 1 1	151-155. Abundant lignitic materia
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Н	160	ARK					<u> </u>	<u> </u>	<u> </u>	End of hole at 161 m er to the 'Rock - Color Chart', published

	AD									2/0	0 1
				PTY.							Rotary, mud Page: 1
	Regi	on_	NG	ALIA	BASIN		Con	nmen	ced	30th August 19	79 Machine Schramm K7 240.
					•					•	Driller I. Car son
											Probed by SIE.
											Operator B.McGlynn Probed depth 128.3 m
											Probed depth   128.3
-		<u> </u>					SSAY:				Scale
	Casing Scale IDepth	-	Graphi Log	Radiom	Sample No.	Uppm	Thppm		Metres		DESCRIPTION
	0	40		Qr						(lo.R.	moderate roddish brown 4/6), sandy.
(				:		.,:			-	2-12. Calcribrow	ing clay and sand lete, varies from light raddin n (54R 6/4) at top, to pale (10 R 6/2). Hand. Angular quartz s in matrix. Several clayey
	5		.:						-	grain Jense	s in matrix. Soveral clayey
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		1		Tc.					_		
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	10		'								
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					4				1 1 1	mo2	y pale olive (10 x 6/2) unti- Le light brown (5 x 8 64). Mmor ed and white keolimitic streaks.
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	目			Tgsc.							
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AGIP austr	ALIA	PTY. I	LTD.		BOR	EHO	LE N	o. <b>YB5R</b> TYPE	Page: <b>2</b>
Region_					Com	nmen	ced_	Machine	
Project					Con	nplete	ed	Driller	
Co-ord					Tota	al De	pth_	Probed by	
Azimut	h				Logg	ged b	у	Operator	
								Probed depth	
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Scale tDepth Rec	aphic Log	Radiom	Sample No.		SSAY	S Vppm	etres	DESCRIPTION	
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	AU:	STR	ALIA	PTY.	LTD.		BOR	EHO	LE N	Io. <u>YB5R</u> TYPE Page: <u>3</u>	
	Regio	on_					Com	men	ced_	Machine	
- 1						•				Driller	
-										Probed by	
ı											
										Operator	
1										Probed depth	
	Elev	atic	·п				Con	tracto	or	Scale	<del></del>
	Scale Depth	Run	raphic Log	Radiom	Sample No.		SSAYS	Vppm	Metres	DESCRIPTION	
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AUSTE	IALIA	PTY.	LTD.		BOR	EHO	LE N	<u>BSR</u> TYPE Page: <u>4</u>
Region.			· ** · · · · · · · · · · · · · · · · ·		Com	men	ced	Machine
roject					Соп	plete	ed	Driller
Co-ord	·				Tota	d De	pth	Probed by
Azimuı	:h				Logg	ged b	y	Operator
nclina	ion _				Sam	pled	ьу	Probed depth
Elevati	on				Con	tracto	or	Scale
Scale 1Depth Rec	iraphic Log	Radiom	Sample No.	Д Оррт	SSAYS	Vppm	Metres	DESCRIPTION
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AGIP AUSTRALIA PTY. LTD.	BOREHOLE No VBSR TYPE	Page: _5
	_ Commenced	
	_ Completed	
	_ Total Depth	
l l	Logged by	
i	_ Sampled by	
I Her I	Contractor	Scale
a at 30 Cl service Sample No. Uppm	ASSAYS STAPPEN VPPPM SE	DESCRIPTION
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1950		
$H \mid I \mid I \mid I$	<u> </u>	
$H \mid I \mid I \mid I \mid I$		
$H \mid I \mid I \mid I \mid I$	89-98 Clay	moderate reddish brown:
	(IOR	moderate reddish brown:
90	-	* **
,버	91-94	Abundant clear gypsum white
`H		clayery bands; calcoreous.
$H \mid I \mid I \mid I \mid I$		clayey bands; calcoreous.
The		· · · · · · · · · · · · · · · · · · ·
$H \mid I \mid I \mid I \mid I$		
95	95-97	
$H \mid \cdot \mid \cdot \mid \cdot \mid$	-	partially lateritic sandstone.
$H \mid I \mid I \mid I$	-	
	98-104 Rib E	Benz Bads
$H \mid I \mid I \mid I \mid I \mid I \mid I \mid I \mid I \mid I \mid $	98-100. Clay	dark gray (N.3)
100 Trib		
REMARKS	······································	,

AGIP AUSTRALIA	PTY. LTD.	BORI	HOLE N	No. <u>YB5R</u> TYPE Page: <u>6</u>
Region		Com	menced_	Machine
				Driller
-				Probed by
				Operator
·				Probed depth
Elevation		Cont	ractor	Scale
Casing Scele 1Depth Rec Run Graphic	Radiom Sample No.	ASSAYS Uppm Thppm	Vppm Si	DESCRIPTION
105 K	Pro- Sc- Pap	Uppm Thppm	Vppm =	100-104 Sandy (very fine) clay to clayey sound (very fine). Mottled from moderate yellow (547/6) to dark greenish yellow (1046/6).  104-128, Mt. Eclipsa Sandstone.  104-121 Sandstone fine-madicin grained limonitic, with bands of silerate and kae/initis bands of the pallid zone.  The sandstone is quartzose relatively mature with a baolinized matrix and very light gray, (N.8).  104-117 Abundant rounded Vaugham Springs Quartzite pobbles.  117-121 Dominantly oxidized white facies.
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امم	O.P.			_					YB SR TYPE Page: 7
									Machine
									Driller
									Probed by
									Operator
									Probed depth
Elev	atio TET	n							Scale
Scale Depth	Rec R	Graphic	Radiom	Sample No.	Uppm	SSAYS Thppm		Metres	DESCRIPTION
120		<b>*</b> :	Pwo					-	
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1		<b>.</b>						-	21-128. Sandstone siliceous quartonse
			!	,				-	21-128. Sandstone, siliceous quartzose, fine-medium grained, grayish
1		k 🚉						-	red (10 R 4/2) with some interbedded moderate reddish brown
1								t	(10R 4/6) sittstone, Publy with some
]			Prf				,	_	pale office quartite publics, (10 y 6/2).
125		~.	117					ļ_	Dominantly fresh red facies mnor
1								<b> </b>	kaolinization
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-								F	28 121 Travas Marihan M. dalin
١.								<b>-</b> .	28-131. Traver Member. Mudstone laminated finish banded Greyish
]		-							red purple (5RP4/2) and light
أمما	-		7		,	,	i	<b>[</b>	bluish grey (587/1).
130		 	Puv'					-	
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-								<u> </u>	End of hole at 131 m.
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1									er to the 'Rock-Color Chart'

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Region! Project Co-ord_ <b>£</b> Azimuth	Yanduch 2000.N	BASIN Bore E.	L1855. E.	Com Com Tota Logg	nmence npleted al Dept ged by <sub>-</sub>	No. YBGR TYPE Rotary mud Page: 1  31st August 1970 Machine Schramm k7249  31st August . Driller I. Car son.  142 m Probed by S.I.E.  G. Sparke Operator B. McGlym
					-	B. McGlynn Probed depth 99.4 m
d	중 Radiom		<del>,</del>	SSAYS	5 §	Davies . Scale 1:100  DESCRIPTION
0	Qr		:		-	0-2. Soil moderate to deep reddish brown, sandy.
	,		•		-	2-121. Tertiary clay and sand.  2-11. Calcrete, white to light brown (548614)  clear in parts. Clear angular quartz  grains are incorporated in the matrix.  Contains several clayey bands.
5	Tc.				-	
	16.	;				
10	3	·			-	11-78. Clay mainly pale olive (loy 6/2), sondy in parts with occasional
					-	Jumps of charcoal.
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									Machine Driller
									Probed by
									Operator
									Probed depth
									Scale.
						ASSAYS			
Depth day	25	Graph Log	Radiom	Sample No.	Uppm	Thppm		Metres	DESCRIPTION
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4				'		'		-	35-41. Light brown (548.5/6) de
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AGIP AUSTR	ALIA	PTY.	LTO.		BOR	EHO	LE N	YBGR TYPE Page: 3			
Region_					Com	men	ced_	Machine			
								Driller			
								Probed by			
								Operator			
								Probed depth			
								Scale			
Casing Scale YDepth Rec	Graphic Log	Radiom	Sample No.	A Uppm	SSAYS	Vppm	Metres	DESCRIPTION			
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<i>55</i>	<b> </b>	1 3 A	1			:	-	55-56 Sand dens granular,			
		Tch.	]					orange (10 YR 6/6)			
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REMAR	KS				•						

AG AU		ALIA	PTY.	LTD.		BOR	EHO	LE N	. <u>YB GR</u> TYPE		Page: <u></u>
egi	on_					Com	men	ced_	***************************************	Machine	
roj	ect					Com	plet	ed		Driller	
o-	ord.					Tota	l De	pth		Probed by	
zir	nuth	د				Logg	ed b	у		Operator	
ncli	inati	on_			<b>8</b> 1 117	. Sam	oled	by		Probed depth	
lev	atic	n				Con	tract	or		Scale	
흥등	Fg.	phic 36	Radiom	Sample No.	A	SSAYS		Metres	Г	DESCRIPTION	
જ ટ્રે	Rec	Gra L	Kaukuii	Sample No.	Uppm	Thppm	Vppm	¥		DESCRIPTION	
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	AGI AUS	•	A PTY.	LTD.		BOR	EHO	LE N	Io. YBGR TYPE Page: 5
	Regio	n				Com	men	ced_	Machine
-	Proje	ct				Con	plete	ed	Driller
	Co-o	rd				Tota	l De	pth_	Probed by
	Azim	uth				Logg	ged b	у	Operator
	inclin	ation .				Sam	pled	by	Probed depth
	Eleva	tion_				Con	tract	or	Scale
ļ	Scale Depth	Run	Radiom	Sample No.		SSAYS	Vppm	etres	DESCRIPTION
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ŀ	4	-	ļ	-				-	88-89. Clay, greenish grey, (56 6/1).
ŀ	-		Tgc 3		t	:	   ;	<b> </b>	
		3		•		] ;	1	F	60 01 87111
	90	2						<b> </b>	1944 Silcrete varying from clear to -
(	վ	6	Cs					ļ	interbedded white - pinkish grey
`	-	١						-	(5 YR 8/1) clay.
		\$							
	-	S			}			}	94-121 Rib Bone Bods
		3	3						
į		~						-	94-99. Black lignitie clay to clayey lignite
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AGIP AUSTRALIA PTY. LTD.	BOREHOLE No. YBGRTYPE	Page: <u>6</u>
Region	Commenced	Machine
.Project	_ Completed	Driller
Co-ord	_ Total Depth	Probed by
	_ Logged by	
	Sampled by	
	_ Contractor	-
	ASSAYS §	DESCRIPTION
100   105	[07-12]	Clay is partially consolidated with a soapy Justre with some moderate yellow (54 7/6) to pale green (56 7/2) mothing.  Sontains some yellowish grey (54 8/6) partially industed claystone.

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	AGIP austr	ALIA	PTY.	LTD.		BOR	EHO.	LE N	Io. <u>YB 6R</u> TYPE Page: _7
	Region_					Com	men	ced_	Machine
ļ	Project					Con	plet	ed	Driller
Ì	Co-ord					Tota	ai De	pth_	Probed by
	Azimut	h				Log	ged b	у	Operator
	Inclinat	ion _				Sam	pled	bу	Probed depth
	Elevation	on				Con	tract	or	Scale
	Casing Scale 1Depth Rec	Graphic Log	Radiom	Sample No.	A Uppm	SSAY:	S Уррт	Metres	DESCRIPTION
	120							-	
	130	K	Pro						121-132 Mt. Eclipse Sandstone ( 'oxidized' red facies Medium grained greyish- pink (5R 8/2). Kae/initie. Contains minor grey green. (50 5/2) clay. Rellets No silcuste at top of unit. No rock chips observed in sample.
	135 140	8. 1919 1919 1919 1919 1919 18	Puv'	2.20	in lo	9	) lne	~ · · · · · · · · · · · · · · · · · · ·	132-142 Trever Mamber, greyish green (10 GY 5/2) to yellowish grey \$Y 7/2)  Shale finely laminated. Soft  weathered to (41 m, with abundant  contamination of sample. Fresh  rock from 141-142
	REMAR	K\$	Colo	ours i	in lo	g Ho	zenei Ge	rally nl.	refer to the "Rock-Color Chart" Soc. Am

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	AGIP			AE		D O D	EUOI		No. <u>YB7R</u> _TYPE	Rotary m	id Page: 1	
	<u> </u>									, ,	Schramm K1 240.	
ľ	Region.	•	Yandu	L Roya	E 1 10cc	Com	nlend	.eu_	Let September	Driller	T Car son	
Ì	Canad		<u>/ WINGS</u>	in our	.E.t1823	Taka	Completed 1st September, Driller I. Car son.  Total Depth 169 m. Probed by S.I.E.  Logged by G. Sparke. Operator B.McGlynn  Sampled by B. McGlynn. Probed depth 131.2 m.					
Ì	. Co-oru	(Bri	illed at	Yanda	h Bone)	Jora	ıı Del	) LII_	G Samka	Onester	B McGlynn	
	Azimut	h —	=	0		Logg	ed by	y	A MCGI	Operator	131.2 m	
	Inclinat	ion _	<u>værti</u>	<u>jaut.</u>		Sam	pied i	ру	Davies.	rrobea aept	1:100	
	Elevation	on								Scale		
	Casing Scale Depth Rec	Graphic Log	Radiom	Sample No.	A. Uppm	SSAYS Thppm	Vppm	Metres	· · · · · · · · · · · · · · · · · · ·	DESCRIPTION		
	°							-	0-0.2. Soil,	deep reddi	sh brown, somdy	
	5 15 15 15 15 15 15 15 15 15 15 15 15 15		Tc.						7-53. Clay with base	rate, light top of un evate oran white Crand will some light ling, while of unit or amounts	pale Olive (104 6/2)  prown (5 YR 6/4).  It varying to  ge pink (5 YR 8/4)  ystalline in pants  th several clay  prown (5 YR 5/6),  ch increases towards  Somely medium  pramed contains  of charcoal and	
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	H							+				
	20				<u>.</u> .		<u>L</u> .					
	REMAI	RKS	Hol	e cas	ed w	,jl	loo	Mw	.Pvc to 30	m,		
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AGIP NUCLEARE AUSTRALIA PTY. LTD.	BOREHOLE No. YB7 R	<u> TYPE Page: Z</u>		
.egion	Commenced	Machine		
		Driller		
		Probed by		
		Operator		
		Probed depth		
		Scale		
a trade of the second s	ASSAYS Sppm Thppm Vppm	DESCRIPTION		
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				CLEA PTV.			BOR	EHO	LE N	D. <u>YB 7 R</u> TYPE Page: <u>3</u>
	Regi	on_					Con	nmen	ced_	Machine
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- 1										Probed by
- 1										Operator
- 1										Probed depth
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ŀ	Scale Depth	ΙĒ		Radiom		· · · · · · · · · · · · · · · · · · ·	SSAY			DESCRIPTION
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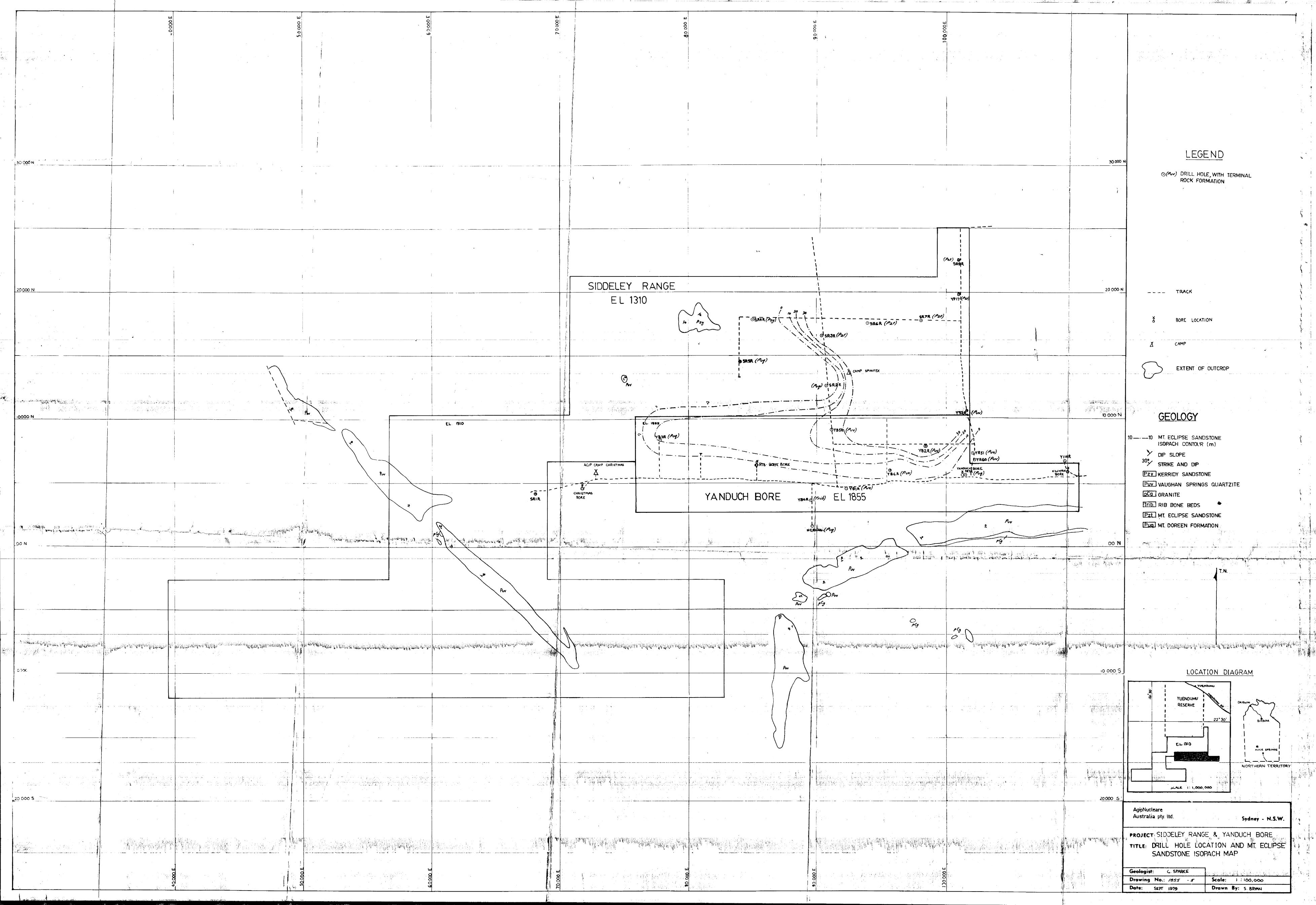
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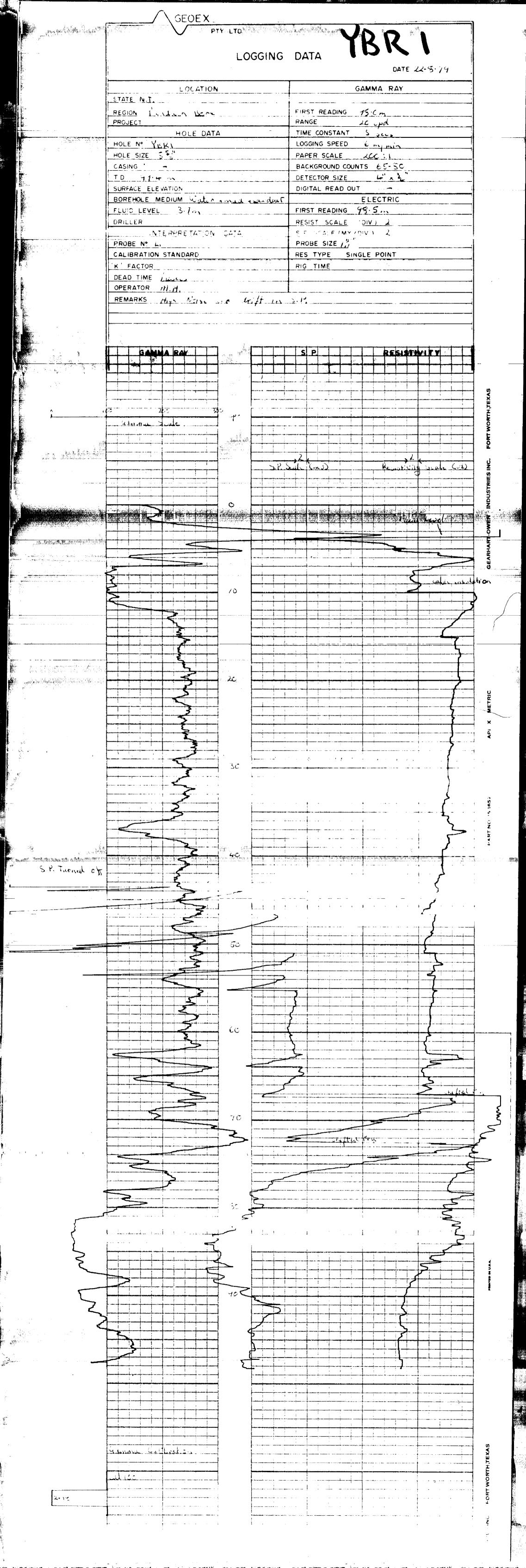
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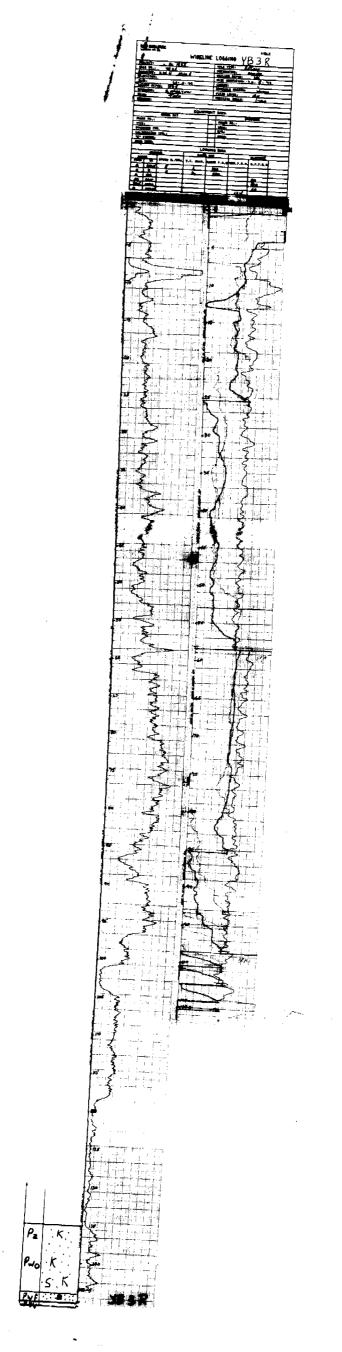
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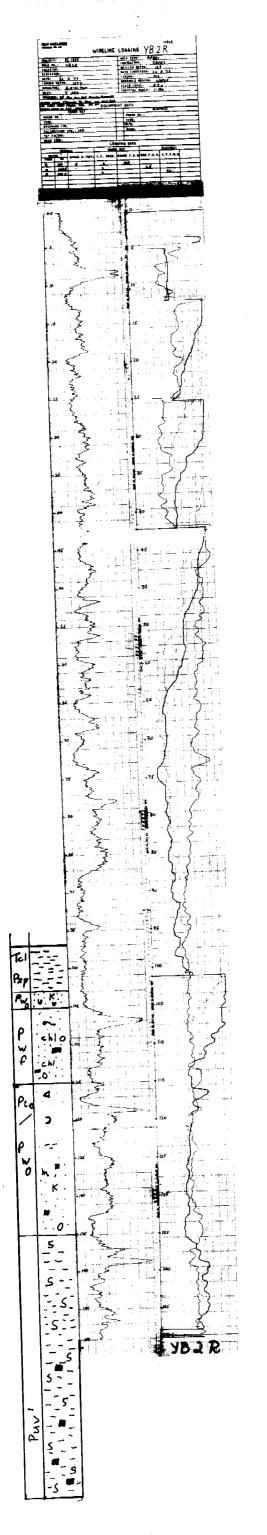
APPENDIX III

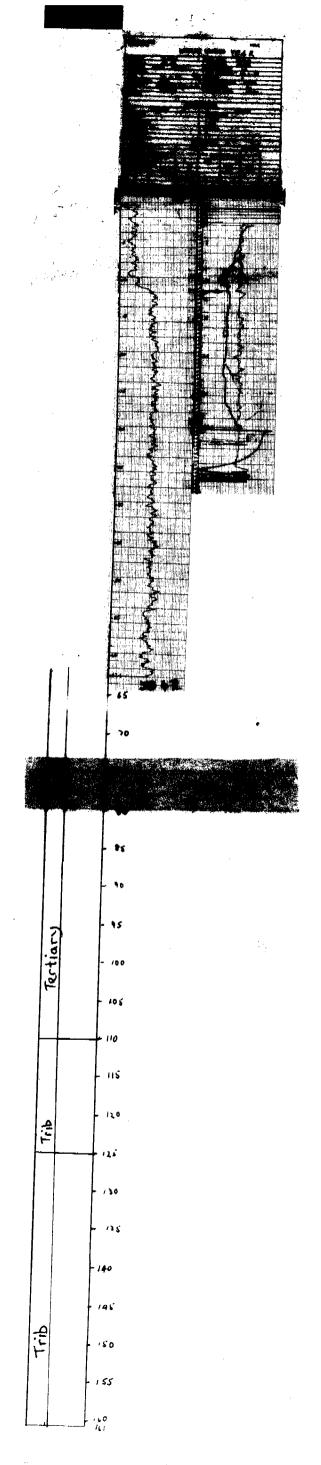
DOWNHOLE GEOPHYSICAL LOGS

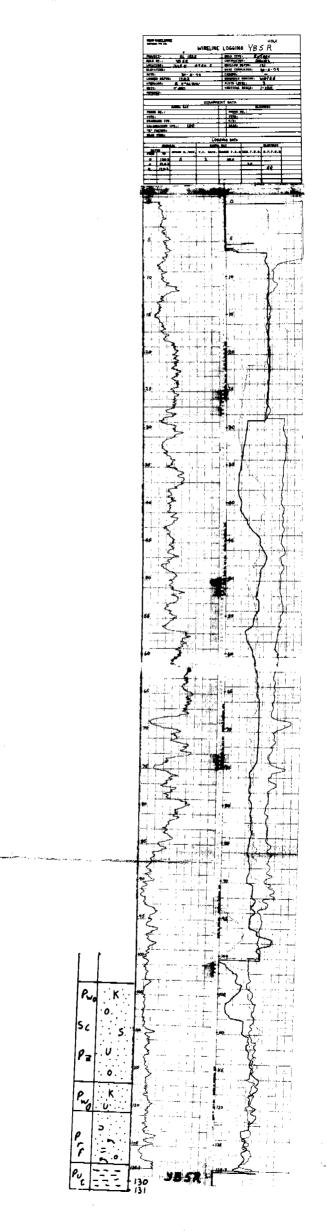


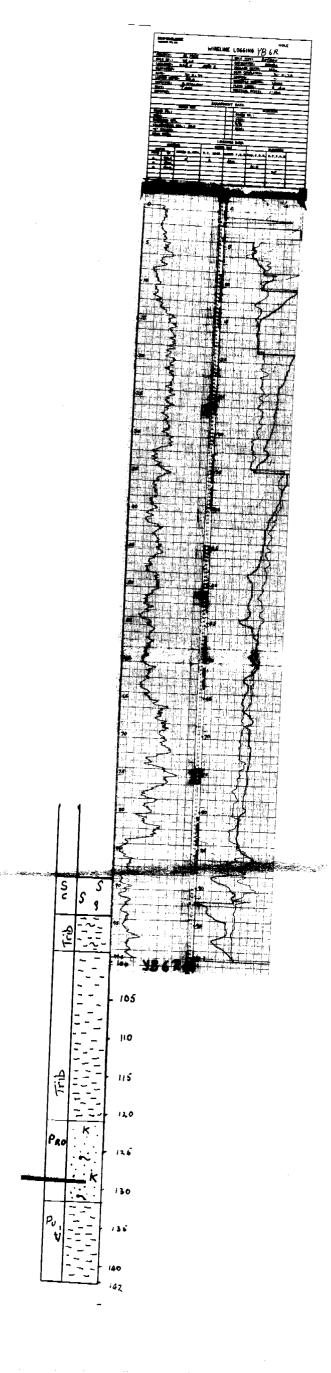












APPENDIX IV
PALYNOLOGY

The following palynological results were reported by Dr. P.R. Evans of the University of N.S.W.

## Hole YB4R

Sample Depths: 151-153m, 153-155m.

Both samples yielded rare pollen that indicated a Cainozoic age. No characteristics of a particular age zone of the Cainozoic were isolated.

## Hole YB6R

Sample Depths: 95-97m, 97-99m.

No palynomorphs; but the organic matter present proved readily oxidisable and alkali soluble; i.e. chemically immature and certainly post-Carboniferous (?) Cainozoic age.

## Hole YB7R

Sample Depth: 115-117m.

As for YB4R.

Sample Depth: 159-161m.

No fossils, but the organic matter appeared to be very mature, comparable with sample 7609 from Y174RD on E.L. 1199, in which residual organic matter after HF and Schultz digestion was opaque and very mature. The results do not discount the possibility that the sample represents sediments of Proterozoic age. Logged as Mt. Doreen Formation.

## General

Although all samples looked very promising in hand specimen, being rich in organic matter and fine-grained, they proved to be largely comprised of clayey material in which (?) humic amorphous matter was fixed. The samples could be construed as representing products of soils in which concentrates of humus have been preserved and then partly lithified.

The few pollen recovered from the samples from YB4R and YB7R are distinctive but insufficient to allow accurate dating. The apparent complete lack of Nothofagus-type pollen might suggest that the sediments are post-Miocene, but this conclusion must be regarded as highly speculative.