Open File Envelope No. 1924

SML 676

MOUNT MCKINLAY

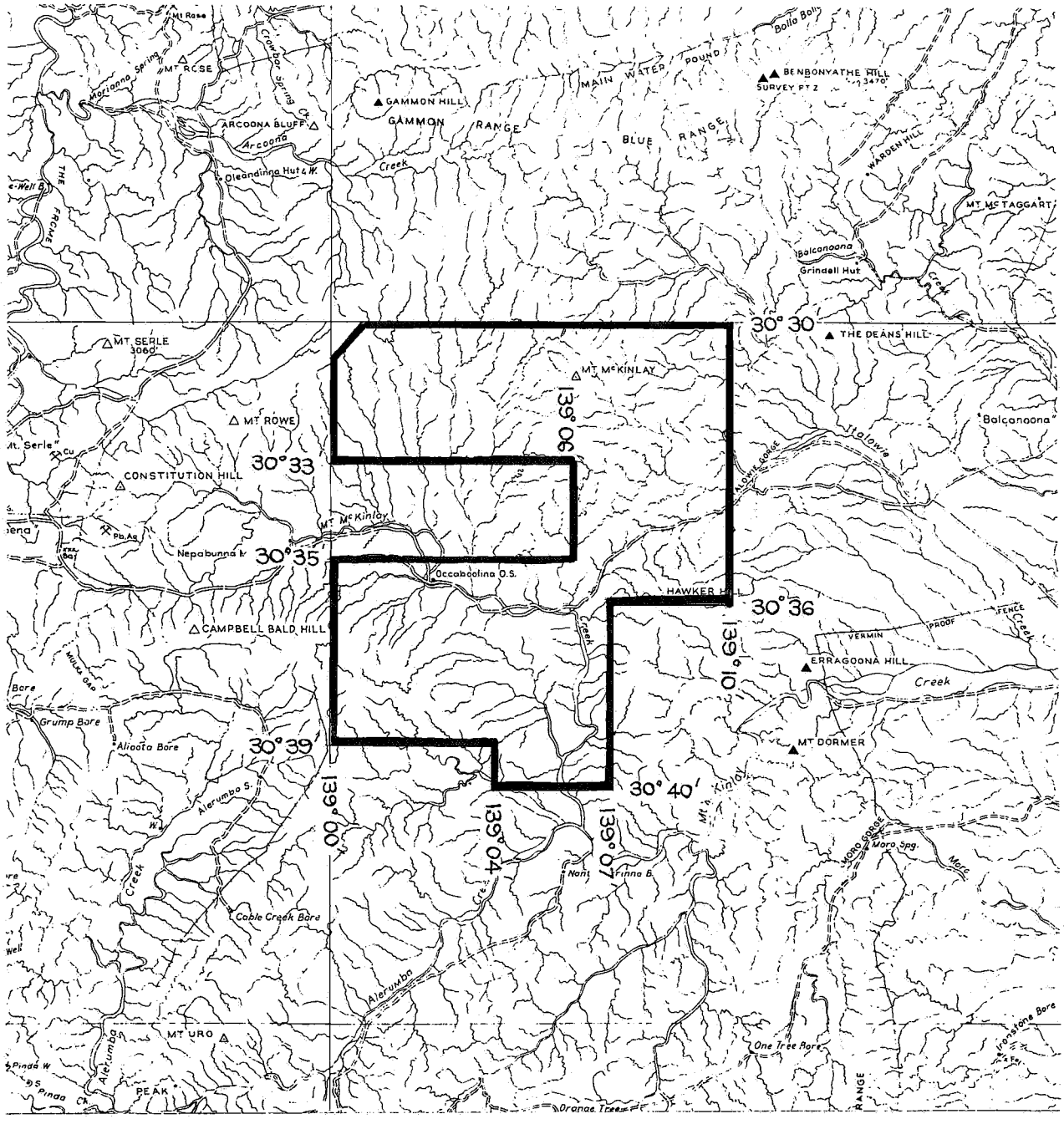
PROGRESS AND FINAL REPORTS TO LICENCE EXPIRY FOR THE PERIOD 24/2/1972 TO 23/2/1973

Submitted by
Australian Aquitaine Petroleum Pty Ltd
1973

Enquiries: Customer Services Branch
Minerals and Energy Resources
7th Floor
101 Grenfell Street, Adelaide 5000

Telephone: (08) 8463 3000
Facsimile: (08) 8204 1880

Government of South Australia
Primary Industries and Resources SA



SCALE 1:250,000

AUSTRALIAN AQUITAINE PETROLEUM PTY. LTD.

DOCKET DM 169/72 AREA 82 SQ MILES

1:250000 PLANS COPLEY

LOCALITY

PERMIT No. 676 EXPIRY DATE 23·2·73.

~~765~~
~~804~~

1924

CONTENTS ENVELOPE 1924

TENEMENT: S.M.L. 676 - Mt. McKinlay.

TENEMENT HOLDER: Australian Aquitaine Petroleum Pty. Ltd.

Open File Envelope No. 1924

SML 676

MOUNT MCKINLAY

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Primary Industries and Resources SA

Australian Aquitaine Petroleum Pty. Ltd.

00 3

QUARTERLY REPORT

SML 676 - SOUTH AUSTRALIA

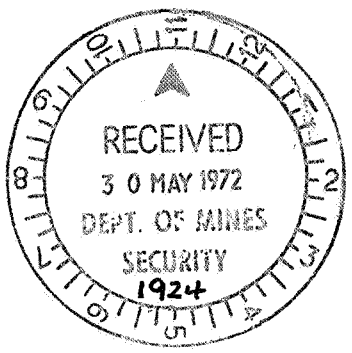
FOR THE PERIOD ENDED 24/5/72

Climatic conditions are difficult in this part of the North Flinders area at this time. The latter part of summer was spent in studying exploration problems, the first of which concerns exploration for Mercury in connection with the positive results obtained in SML 422.

There was no field work performed during this period and exploration will commence in mid-June.

B. BLANGY.

c.c. S. Ognar



Australian Aquitaine Petroleum Pty. Ltd.

3A

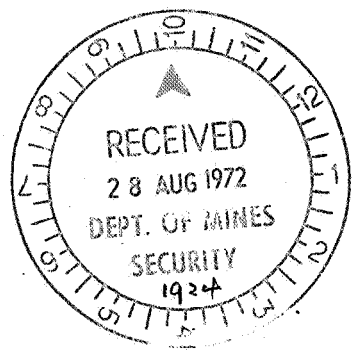
QUARTERLY REPORT ON

SPECIAL MINING LEASE 676

(Period Covered 24/5/72 - 23/8/72)

Distribution:

S.A. Dept. of Mines ✓
AAP - Manager/Archive
AAP - Minerals
AAP - S. Ognar



By: P. Elliott

MG 190

QUARTERLY REPORT ON SML 676

C O N T E N T S

INTRODUCTION

The two main targets for exploration in SML 676 were the possibility of mercury deposits being associated with the Mt John Fault and the possibility of stratiform base metal deposits in the Parachilna Formation, south-west of Italowie Gorge.

MERCURY PROJECT

Following the work that the South Australian Mines Department carried out around the mercury occurrence at Moro Mine, it was decided to prospect the Mt John Fault zone with the view of locating mercury anomalies.

In addition to the Mt John Fault zone, the two diapirs to the east and north respectively, of Mt McKinlay, were also investigated for mercury.

Two stream sediment fractions were taken. The - 120 fraction was analysed for copper, lead, silver, gold and zinc, the first four elements being commonly associated with mercury in other occurrences and zinc being often associated with hydrothermal quartz veins in this area.

The Mt John Fault zone north of Italowie Gorge and its associated diapir, east of Mt McKinlay, and the diapir to the south of Mt McKinlay were covered by stream samples and in addition, several chip samples were taken along the fault zone and from rocks of the Callana Beds exposed in the diapirs.

3D

Results

For the majority of the samples taken in the three areas, no mercury was present. However, for four samples taken from the Mt John Fault zone, anomalous* mercury values were recorded. One stream sample from each diapir sampled also gave anomalous values. In addition, a chip sample from the Callanna Beds in the diapir south of Mt McKinlay showed 3 ppm of mercury. (See accompanying map for sample locations).

No antimony or gold was detected and the values for copper, lead and zinc were at normal background levels for diapirs in this region (see DTM report 72/100, 30th May 1972 by N.R. Langsford).

One day was spent at, and in the vicinity of, the Moro Mine, where mercury was first found in this region, in order to determine and examine the type of environment.

* As only eight out of a total of ninety-two samples had any recorded mercury content, the background was taken as zero, therefore any value above zero can be considered as anomalous. With the analysis used, the detection limit is 0.15 ppm, and the lowest value recorded is 1 ppm, so that even this is anomalous.

.../3

3E

PARACHILNA FORMATION

The ferruginous beds of the Upper Parachilna Formation were first examined early last year and several chip sample sections were taken covering this horizon (Sections A, B and C). Several anomalies were noted in the results, especially for zinc, and so it was decided to investigate the problem further. The zinc values from the analyses of Sections A, B and C ranged from 30 to over 4,000 ppm with a background of approx. 5-600 ppm. Petrographic studies indicated that the ferruginous horizon was a siltstone.

The unit was originally considered to be a Tertiary laterite (by the DTM Geological Survey) but it was immediately obvious in the field that it was a stratiform occurrence and therefore of Lower Cambrian age.

Six chip sampling sections were taken across the ferruginous outcrop and also covering the host rock where possible. The samples were analysed for copper, lead, zinc, antimony and gold.

The sections were taken over an area extending from Mt McKinlay Creek to Italowie Gorge along the strike of the Parachilna Formation. This area was also mapped on a scale of 1:24,000 from Lands Department photographs of a 1;49,500 scale.

Several petrographic samples of representative lithologies in the sequence were also taken.

.../4

3F

Results

Several notably high values for zinc were noted in the results obtained from the chip sampling sections taken from the Parachilna Formation and the Wilkawillinna Limestone. The values for lead and zinc were normal background in general. No gold or antimony was detected, the latter indicating that the Parachilna Formation did not serve as a feeder horizon for the mercury recorded along the adjacent Mt John Fault zone.

The highest zinc value of 10,000 ppm was recorded from a sample taken from the base of the Wilkawillinna Limestone at the western end of Section 5, shown on the map.

CONCLUSIONS AND RECOMMENDATIONS

Mercury Project

Further work must be done to determine more accurately the source of the mercury anomalies, especially those found in streams draining the Mount John Fault.

Therefore, it is proposed to sample the anomalous streams at 30m intervals upstream from the original sample points and also to take at least one sample from each side stream. The sampling should extend about 100m into the Pound Quartzite, which forms one wall of the fault, in case the mercury originates from small veins in fractures parallel to the main fault.

It is also proposed to similarly sample the creek upstream from the anomalous sample in the diapir east of Mt McKinlay, which can be used as an indication of the importance of the anomaly in the diapir to the south of Mt McKinlay, in an area of very difficult access.

Parachilna Formation

Although the formation generally shows high zinc anomalies, and these obviously have a stratiform relationship, no high concentrations of remobilised zinc minerals were found as would be expected if the formation contained significant zinc mineralisation. For this reason, it is unlikely that the formation has any economic potential.

P. Elliott.

8969

MG 190

AUSTRALIAN AQUITAINE PETROLEUM PTY LTD

ANNEX I

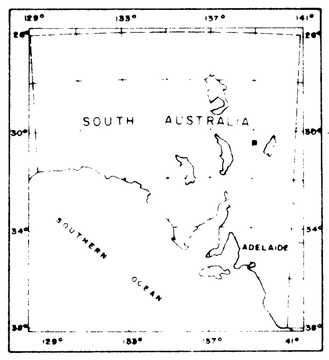
QUARTERLY REPORT SML 676

LOCATION DIAGRAM
of
stream samples, chip samples and sections
and
GEOLOGICAL MAP
of
ENVIRONS S-W of ITALOWIE GORGE

SCALE 1" = 2000 ft

ft 2000 0 2000 4000 6000 8000 ft

LOCALITY



MINERAL GEOLOGY (P ELLIOT)

August ,1972

LEGEND

RECENT	CREEK ALLUVIUM AND FLOODPLAIN DEPOSITS	
PLEISTOCENE	TELFORD GRAVEL	Piedmont conglomerate derived from Pound Quartzite.
LOWER CAMBRIAN	WILKAWILLINNA LIMESTONE	Generally brown-buff limestone with silty beds common. Some possible sedimentary breccias. Pseudomorphs from pyrite near base.
Upper Mbr. / Lower Mbr.	PARACHILNA FORMATION	Siltstone with terruginous and sandy horizons - has transgressive boundary with Wilkawillinna Limestone. Lower unit more arenaceous.
UPPER PROTEROZOIC — Marinoan	POUND QUARTZITE	Massive and well bedded quartzite and arkose.
Marinoan	WONOKA FORMATION	Calcareous shales and siltstones with interbedded blue limestone.
Sturtian	BALCANOONA FORMATION	Brown weathering, buff to grey dolomite, limestone & silty limestone. Locally has 'chapeau de fer' development. Intertongues with Tapley Hill Formation.
Sturtian	TAPLEY HILL FORMATION	Thinly bedded grey-green weathering dark blue-grey siltstone.
Sturtian	BOLLA BALLANA FORMATION	Massive purple-brown to grey-green boulder tillite.
Willouran	CALLANNA BEDS	Dolomites, sandy dolomites, dolomitic marbles, dolomitic sandstones (hornfelsed) in diapiric structures.
	FAULT BRECCIA	

Geological Boundary - observed
- approximate

Fault (approximate)

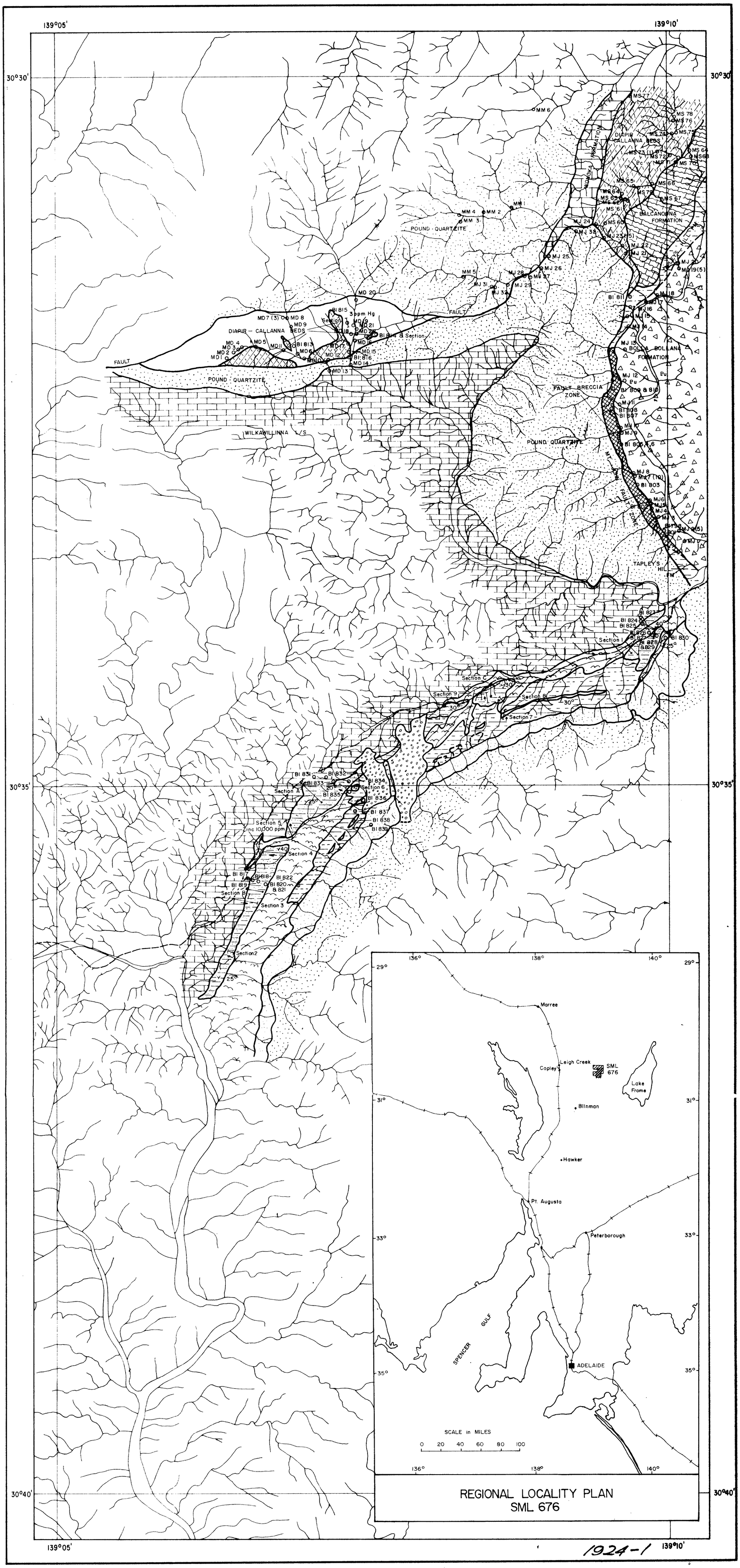
30° Bedding

MD 12 (5) MJ 15(1) MS 65 Stream Sample [with mercury content (ppm) in brackets]

BI 815 Petrological or Chip Sample

Section 6 Chip Sample Section - 1972

Section B Chip Sample Section - 1971 (approximate)



REGIONAL LOCALITY PLAN
SML 676

1924-1

00 5 TPL 676

amdel
The Australian Mineral Development Laboratories

Flemington Street, Frewville, South Australia 5063
Phone 79 1662, telex AA82520

Please address all correspondence to the Director
In reply quote: # AN3/422/0 - 357/73

2 August 1972

Dr S. Ognar
Australian Aquitaine Petroleum Pty Limited
18 Turners Avenue
COROMANDEL VALLEY SA 5051

REPORT AN357/73

YOUR REFERENCE:	Application dated 19/7/72 Reference: 312-400
MATERIAL:	Rock, soil and stream samples
IDENTIFICATION:	As listed
DATE RECEIVED:	21/7/72

Enquiries quoting AN357/73 to Officer in Charge please.

Analysis by: R.R. Robinson

Officer in Charge, Analytical Section: A.B. Timms

for F.R. Hartley
Director

pkm

c.c. Mr B. Blangy
Australian Aquitaine Petroleum Pty Ltd
GPO Box 142
BRISBANE Q. 4001

Mr P. Elliott
Australian Aquitaine Petroleum Pty Ltd
PO Box 71
LEIGH CREEK SA 5731

RECEIVED
16 OCT 1972
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SECURITY
1924

Mgr..... Act.....
Sec..... Lands.....
Tr..... Draft.....
Min..... Pers.....
4 AUG 1972
Pet..... Purch.....
Geop..... Doc.....
Oper..... File.....

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES
x = not detected at the limits quoted
REPORT AN 357[73

91 Results in ppm unless otherwise stated. Detection limits in brackets.

mple No #1/10#	Cu (0.5)	Zn (20)	Pb (1)	Ag (0.1)	Au (3)	SAMPLE No.	Cu (0.5)	Zn (20)	Pb (1)	Ag (0.1)	Au (3)
J 1	30	x	10	0.1	x	MT 25	10	40	10	0.1	x
(LAB)	40	x	8	0.1	x	26	10	20	3	0.1	x
	20	x	15	0.1	x	27	10	20	5	0.1	x
(LAB)	15	x	5	0.1	x	28	10	20	8	0.1	x
(LAB)	10	20	5	0.1	x	29	20	40	8	0.1	x
	10	x	1	0.1	x	30	10	x	8	0.1	x
	10	20	5	0.1	x	31	20	x	15	0.1	x
1	10	x	10	0.1	x	32*	30	x	5	0.1	x
3	10	x	8	0.1	x	MS 60	15	20	5	0.1	x
1	15	x	10	0.1	x	1	15	60	5	0.1	x
2	30	50	40	0.1	x	2	10	40	5	0.1	x
	10	x	10	0.1	x	3	10	x	3	0.1	x
	10	x	10	0.1	x	4	15	20	10	0.1	x
	10	x	10	0.1	x	5	10	x	3	0.1	x
	10	x	5	0.1	x	6	15	40	10	0.1	x
5	10	x	3	0.1	x	7	15	x	10	0.1	x
	15	x	8	0.1	x	8	15	40	8	0.1	x
	10	20	8	0.1	x	70	10	x	5	0.1	x
2	30	20	10	0.1	x	71	15	20	8	0.1	x
	15	x	8	0.1	x	2	15	30	8	0.1	x
3	20	60	10	0.1	x	3	10	x	3	0.1	x
	10	x	3	0.1	x	4	20	60	15	0.1	x
	10	x	3	0.1	x	5	15	40	10	0.1	x
5	10	x	3	0.1	x	6	15	20	5	0.1	x
7	20	40	10	0.1	x	7	10	x	3	0.1	x

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique.

Sample -20 #1 -40# MS 60 not received.

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES
x = not detected at the limits quoted
REPORT AN 357/73

91 Results in ppm unless otherwise stated. Detection limits in brackets.

mple No x# 440#	Cu (0.5)	Zn (20)	Pb (1)	Ag (0.1)	Au (3)	Sample No.	Cu (0.5)	Zn (20)	Pb (1)	Ag (0.1)	Au (3)
S 18	10	60	10	0.1	x	MD82	5	x	30	0.1	x
9	15	100	20	0.1	x	83	5	x	10	0.1	x
MD 81	5	x	5	0.1	x	84	5	x	5	0.1	x
2	5	x	5	0.1	x	85	5	x	3	0.1	x
3	5	x	5	0.1	x	86	3	x	5	x	x
4	5	x	3	0.1	x	87	5	x	3	x	x
5	5	x	3	0.1	x	88	5	x	5	x	x
6	5	x	5	0.1	x	89	3	x	3	x	x
7	5	x	5	0.1	x	90	5	x	5	0.1	x
8	5	x	3	0.1	x	91	3	x	5	x	x
9	5	x	5	0.1	x	92	3	x	5	0.1	x
10	5	x	5	0.1	x	93	5	x	5	0.1	x
11	10	x	5	0.1	x	94	20	x	8	0.1	x
12	5	x	5	0.1	x	95A	15	x	5	0.1	x
13	5	x	3	0.1	x	95B	15	x	5	0.1	x
14	5	x	10	0.1	x	96	15	x	3	0.1	x
15	5	x	5	0.1	x						
16	5	x	10	0.1	x	Note: Two samples					
17	5	x	5	0.1	x	received marked					
18	5	x	5	0.1	x	MD 95					
19	5	x	5	0.1	x						
20	5	x	3	0.1	x						
21	5	x	5	0.1	x						
22	5	x	5	0.1	x						
MD 81	3	x	3	0.1	x						

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique.

* = Received not listed

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES
x = not detected at the limits quoted
REPORT AN 357/72

91 Results in ppm unless otherwise stated. Detection limits in brackets.

Sample #	Hg (0.15)		Sample No	Hg (0.15)		Sample No	Hg (0.15)		Sample No.	Hg (0.15)
1	x		25	x		MS77	x		Rock chip. MD 81	x
2	5		26	x		78	x		82	x
3	x		27	x		79	x		83	x
4	x		28	x		MD 1	x		84	x
5	x		29	x		2	x		85	x
6	1		30	x		3	x		86	x
(LAB)	10		31	x		4	x		87	x
(AAP)	10		32 *	x		5	x		88	x
3	x		MS 60	x		6	x		89	3
1	x		61	x		7	3		90	x
0	x		62	x		8	x		91	x
1	1		63	x		9	x		92	x
2	x		64	x		10	x		93	x
3	x		65	x		11	x		94	x
4	x		66	x		12	x		95A	x
5	x		67	x		13	x		95B	x
16	x		68	x		14	x		96	x
17	x		69	x		15	x		Geo Az+Az	
18	x		70	x		16	x		(91 x 5) =	455
19	5		71	x		17	x		(92x1) =	42
20	x		72	x		18	x			54
21	x		73	1		19	x			
22	x		74	x		20	x			
23	5		75	x		21	x			
24	x		76	x		22	x			

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique.

* = Received not listed.

GMLo 646

amdel
The Australian Mineral Development Laboratories
Flemington Street, Frewville, South Australia 5063
Phone 79 1662, telex AA82520

Please address all correspondence to the Director
In reply quote: AN3/422/0 357/73

NATA CERTIFICATE

14 September 1972

Dr S. Ognar
Australian Aquitane Petroleum Pty Limited
18 Turners Avenue
COROMANDEL VALLEY SA 5051

AMENDED REPORT AN357/73

YOUR REFERENCE:	Application dated 19/7/72 Reference: 312-400
MATERIAL:	Rock, soil and stream samples
IDENTIFICATION:	As listed
DATE RECEIVED:	21/7/72

Enquiries quoting AN357/73 to Officer in Charge please

Analysis by: R.R. Robinson

Officer in Charge, Analytical Section: A.B. Timms

for F.R. Hartley
Director.

sl

c.c. Mr B. Blangy
Australian Aquitane Petroleum Pty Ltd
GPO Box 142
BRISBANE Qld. 4001

Mr P. Elliott
Australian Aquitane Petroleum Pty Ltd
PO Box 71
LEIGH CREEK SA 5731

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16 OCT 1972
DEPT. OF MINES
SECURITY
1924

Mgr.....Act.....
Soc.....Lands.....
Tr.....Draft.....
Min.....Pers.....
18 SEP 1972
Pet.....Purch.....
Geop.....Doc.....
Oper.....File.....

Semi-Quantitative Spectrographic Analysis

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

x = not detected at the limits quoted

REPORT AN 357/73

00 9

AMENDED REPORT.

91

Results in ppm unless otherwise stated. Detection limits in brackets.

ıple lo	Hg (0.15)
L MJ	0.3
T LAB	0.5
T AAP	0.3
MJ 11	x
MJ 19 1	0.3
MJ23 3	x

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique.

0010

REPEAT ANALYSIS

NO CHANGE

Semi-Quantitative Spectrographic Analysis

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

x = not detected at the limits quoted

REPORT AN 961/73

91

Results in ppm unless otherwise stated. Detection limits in brackets.

ıple lo	Hg (0.15)									
- 151	x									
- 143	x									
- 132	x									
- 121	x									
3-111	x									

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique.

0011

SMK 676.

amdel
The Australian Mineral Development Laboratories
Flemington Street, Frewville, South Australia 5063
Phone 79 1662, telex AA82520

Please address all correspondence to the Director
In reply quote: AN3/422/0 - 420/73

2 August 1972

Dr S. Ognar
Australian Aquitaine Petroleum Pty Ltd
18 Turners Avenue
COROMANDEL VALLEY SA 5051

REPORT AN420/73

YOUR REFERENCE:	Application dated 24/7/72 Ref: 312-400
MATERIAL:	Chip samples
IDENTIFICATION:	As listed
DATE RECEIVED:	26/7/72

Enquiries quoting AN420/73 to Officer in Charge please.

Analysis by: R.R. Robinson

Officer in Charge, Analytical Section: A.B. Timms

for F.R. Hartley
Director

pkm

c.c. Mr B. Blangy
Australian Aquitaine Petroleum Pty Limited
GPO Box 142
BRISBANE Q. 4001

Mr P. Elliott
Australian Aquitaine Petroleum Pty Ltd
PO Box 71
LEIGH CREEK SA 5731

RECEIVED
16 OCT 1972
DEPT. OF MINES
SECURITY
1924

JOB .4291.14

Form 23

Semi-Quantitative Spectrographic Analysis Scheme A2

Results in ppm unless otherwise stated. Detection limits in brackets.

	Sample No.	Cu (0.5)	Pb (1)	Zn (20)	Sn (1)	Cd (3)	Bi (1)	Ag (0.1)	Au (3)	Ga (1)	Ge (1)	As (50)	Sb (30)
1	PF 50	30	80	2,000					x				x
2	51	40	50	1,800					x				x
3	52	30	50	1,000					x				x
4	53	20	8	3,000					x				x
5	54	5	1	x					x				x
6	55	40	5	100					x				x
7	56	30	20	20					x				x
8	57	20	15	250					x				x
9	58	10	5	60					x				x
10	59	80	1,000	500					x				x
11	60	10	3	150					x				x
12	61	40	20	100					x				x
13	62	30	10	120					x				x
14	63	20	8	200					x				x
15	64	30	8	100					x				x
16	65	20	8	60					x				x
17	66	15	10	500					x				x
18	67	10	10	1,500					x				x
19	68	30	15	150					x				x
20	PF 69	5	8	20					x				x

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

JOB 4249/78..

Form 23

Semi-Quantitative Spectrographic Analysis Scheme A2

Results in ppm unless otherwise stated. Detection limits in brackets.

BATCH .....

0013

	Sample No.	Cu (0.5)	Pb (1)	Zn (20)	Sn (1)	Cd (3)	Bi (1)	Ag (0.1)	Au (3)	Ga (1)	Ge (1)	As (50)	Sb (30)
1	PF 70	10	8	20					X				X
2	71	10	10	X					X				X
3	72	10	5	X					X				X
4	73	20	3	500					X				X
5	74	20	5	300					X				X
6	75	10	3	400					X				X
7	76	15	30	600					X				X
8	77	10	5	400					X				X
9	78	20	15	300					X				X
10	79	15	20	800					X				X
11	80	10	5	500					X				X
12	81	30	30	80					X				X
13	82	20	20	150					X				X
14	83	20	20	300					X				X
15	84	20	15	1,200					X				X
16	85	5	8	200					X				X
17	86	5	5	20					X				X
18	87	10	5	150					X				X
19	88	10	8	30					X				X
20	PF 89	15	8	20					X				X

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

JOB .....

Form 23

Semi-Quantitative Spectrographic Analysis Scheme A2

BATCH .....5.....

Results in ppm unless otherwise stated. Detection limits in brackets.

0014

	Sample No.	Cu (0.5)	Pb (1)	Zn (20)	Sn (1)	Cd (3)	Bi (1)	Ag (0.1)	Au (3)	Ga (1)	Ge (1)	As (50)	Sb (30)
1	PF 90	20	8	2,000					x				x
2	91	10	15	500					x				x
3	92	100	30	500					x				x
4	93	10	15	30					x				x
5	94	20	15	60					x				x
6	95	20	15	20					x				x
7	96	20	5	30					x				x
8	97	20	20	20					x				x
9	98	5	5	x					x				x
10	99	10	8	x					x				x
11	100	10	50	1,000					x				x
12	101	10	30	20					x				x
13	102	10	8	20					x				x
14	103	10	8	20					x				x
15	104	15	10	800					x				x
16	105	10	10	500					x				x
17	106	5	x	x					x				x
18	107	10	40	300					x				x
19	108	20	10	800					x				x
20	PF 109	20	8	300					x				x

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

Form 23

Semi-Quantitative Spectrographic Analysis Scheme A2

BATCH .....?.....

Results in ppm unless otherwise stated. Detection limits in brackets.

0015

	Sample No.	Cu (0.5)	Pb (1)	Zn (20)	Sn (1)	Cd (3)	Bi (1)	Ag (0.1)	Au (3)	Ga (1)	Ge (1)	As (50)	Sb (30)
1	PF 110	5	5	80					x				x
2	111	10	8	150					x				x
3	112	20	10	60					x				x
4	113	10	15	800					x				x
5	114	50	40	100					x				x
6	115	30	1	4000					x				x
7	116	15	10	500					x				x
8	117	20	5	150					x				x
9	118	20	3	350					x				x
10	119	20	5	250					x				x
11	120	20	5	1500					x				x
12	121	20	50	800					x				x
13	122	20	3	1200					x				x
14	123	15	8	1,500					x				x
15	124	10	10	2,000					x				x
16	125	20	1	2,000					x				x
17	126	10	3	800					x				x
18	127	10	15	10,000					x				x
19	128	10	8	3,000					x				x
20	PF 129	30	10	20					x				x

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

Semi-Quantitative Spectrographic Analysis Scheme A2

Form 23 Results in ppm unless otherwise stated. Detection limits in brackets.

	Sample No.	Cu (0.5)	Pb (1)	Zn (20)	Sn (1)	Cd (3)	Bi (1)	Ag (0.1)	Au (3)	Ga (1)	Ge (1)	As (50)	Sb (30)
1	PF 130	50	5	2,500					X				X
2	131	50	15	1,000					X				X
3	132	50	10	200					X				X
4	133	50	20	400					X				X
5	134	40	20	80					X				X
6	135		Sample listed but not received										
7	136	50	20	1,500					X				X
8	137	50	20	1,500					X				X
9	138	50	20	2,000					X				X
10	139	80	20	800					X				X
11	140	150	20	1,500					X				X
12	141	50	10	250					X				X
13	142	80	20	800					X				X
14	PF 143	30	80	500					X				X
15													
16													
17													
18													
19													
20													

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

JOB 420/73..

Form 23

Semi-Quantitative Spectrographic Analysis Scheme A2

Results in ppm unless otherwise stated. Detection limits in brackets.

BATCH .....

0012

	Sample No.	Cu (0.5)	Pb (1)	Zn (20)	Sn (1)	Cd (3)	Bi (1)	Ag (0.1)	Au (3)	Ga (1)	Ge (1)	As (50)	Sb (30)
1	PF 30	10	5	200					x				x
2	1	20	50	1,200					x				x
3	2	15	3	1,000					x				x
4	3	80	80	60					x				x
5	4	15	50	150					x				x
6	5	15	3	500					x				x
7	6	15	5	800					x				x
8	7	15	20	200					x				x
9	8	15	15	500					x				x
10	9	15	10	400					x				x
11	40	15	10	800					x				x
12	1	15	10	500					x				x
13	2	15	3	30					x				x
14	3	20	15	2,000					x				x
15	4	10	30	150					x				x
16	5	15	30	250					x				x
17	6	15	20	200					x				x
18	7	30	80	1,200					x				x
19	8	30	50	2,000					x				x
20	PF 49	30	80	2000					x				x

Results are semi-quantitative.

Ge: A_2 $113 \times 5 = 565$

Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique. X = Not detected at limit quoted.

SML 676

amdel
The Australian Mineral Development Laboratories
Flemington Street, Frewville, South Australia 5063
Phone 79 1662, telex AA82520

Please address all correspondence to the Director
In reply quote: AN3/422/0 - 512/73

9 August 1972

Dr S. Ognar
Australian Aquitaine Petroleum Pty Ltd
18 Turners Avenue
COROMANDEL VALLEY SA 5051

REPORT AN512/73

YOUR REFERENCE:	Application dated 27/7/72 Order 80.2, Ref. 312400
MATERIAL:	Rock chip
IDENTIFICATION:	As listed
DATE RECEIVED:	31/7/72

Enquiries quoting AN512/73 to Officer in Charge please.

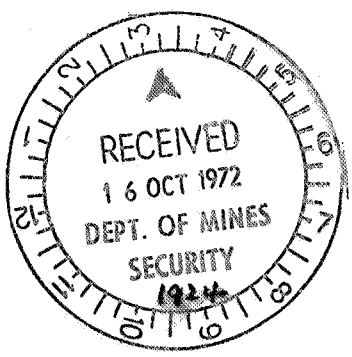
Analysis by: R.R. Robinson

Officer in Charge, Analytical Section: A.B. Timms

for F.R. Hartley
Director

plm

c.c. Mr B. Blangy
Australian Aquitaine Petroleum Pty Ltd
GPO Box 142B
BRISBANE Q. 4001



THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES
x = not detected at the limits quoted
REPORT AN 512/73

Results in ppm unless otherwise stated. Detection limits in brackets.

ple	Mo (3)	W (50)	Cu (0.5)	Pb (1)	Zn (20)	Sn (1)	Bi (1)	Ag (0.1)	Au (3)	As (50)	Hg (0.15)
791	x	x	>10,000	15	400	x	30	3	x	x	30
792	x	x	5,000	300	1,500	x	1	3	x	300	1
794	5	x	>10,000	5	30	x	4,000	30	x	500	4,000
795	x	x	50	5	x	1	1	0.1	x	x	150
797	x	x	80	3	x	1	1	0.1	x	200	300
798	3	x	10	10	x	x	1	0.1	x	50	x
799	x	x	50	10	x	5	3	0.1	x	x	2
800	x	x	10	3	x	3	3	0.1	x	x	x
801	x	x	300	3	x	x	x	0.3	x	x	1
802	x	x	150	5	x	1	1	0.1	x	x	10
803	3	x	20	x	x	x	x	0.1	x	x	1
804	x	x	200	10	100	x	1	0.3	x	x	10
805	x	x	10	10	x	x	x	0.3	x	x	0.3
806	5	x	30	20	x	1	1	1	x	2,000	15
807	x	x	20	20	x	1	x	0.1	x	x	0.3
808	x	x	20	20	x	x	1	5	x	x	0.15
809	x	x	10	20	x	1	x	2	x	x	x
810	3	x	10	20	x	x	3	0.3	x	x	x
811	3	x	20	1	20	x	x	0.1	x	x	0.3
00006	3	x	300	15	x	x	3	0.1	x	x	0.3
00007	3	x	250	15	x	x	3	0.3	x	x	1
				Geo A1, A2, A7		21x11	= 231				

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique.

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amdel
The Australian Mineral Development Laboratories
Flemington Street, Frewville, South Australia 5063
Phone 79 1662, telex AA82520

Please address all correspondence to the Director
In reply quote: AN3/422/0 - 513/73

7 August 1972

Dr S. Ognar
Australian Aquitaine Petroleum Pty Ltd
18 Turners Avenue
CORMONADEL VALLEY SA 5051

REPORT AN513/73

YOUR REFERENCE:	Application dated 1.8.72 Ref: 312-400
MATERIAL:	Rock chip
IDENTIFICATION:	PF 144 to 168
DATE RECEIVED:	1/8/72

Enquiries quoting AN513/73 to Officer in Charge please.

Analysis by: R.R. Robinson

Officer in Charge, Analytical Section: A.B. Timms

for F.R. Hartley
Director

plm

c.c. Mr B. Blangy
Australian Aquitaine Petroleum Pty Ltd
GPO Box 1428
BRISBANE Q. 4001

RECEIVED
16 OCT 1972
DEPT. OF MINES
SECURITY
1924

Sec..... Lands.....
Tr..... Draft.....
Min. 1 Pers. .....
9 AUG 1972
Pet..... Purch.....
Geop..... Doc.....
Oper..... File.....

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES
x = not detected at the limits quoted
REPORT AN 513/73

Results in ppm unless otherwise stated. Detection limits in brackets.

nple No	Co (5)	Ni (5)	Cr (20)	V (10)	W (50)	Mo (3)	Cu (0.5)	Pb (1)	Zn (20)	Au (3)
144	30	30	300	100	x	3	50	50	30	x
5	5	20	300	30	x	3	20	20	20	x
6	80	50	80	150	x	3	80	20	1,000	x
7	150	300	x	20	x	3	30	30	2,000	x
8	5	10	50	10	x	x	10	30	30	x
9	10	15	50	20	x	10	10	80	40	x
150	80	150	20	10	x	3	10	5	600	x
1	50	10	30	10	x	x	20	10	600	x
2	30	10	30	10	x	x	30	20	400	x
3	5	10	30	10	x	x	10	10	80	x
4	x	5	50	x	x	x	5	10	x	x
5	80	200	20	10	x	x	10	5	1,500	x
6	120	250	30	30	x	x	20	10	1,800	x
7	50	100	20	30	x	x	50	5	800	x
8	10	15	100	200	x	3	10	100	20	x
9	10	30	50	80	x	x	10	3	100	x
160	10	50	80	150	x	3	10	3	80	x
1	10	20	80	100	x	3	10	30	20	x
2	100	200	30	100	x	x	50	5	150	x
3	5	10	20	250	x	3	20	250	80	x
4	50	80	30	100	x	3	30	3	500	x
5	200	200	30	80	x	x	10	20	3,000	x
6	150	200	20	30	x	3	5	10	500	x
7	50	50	30	80	x	3	15	15	400	x
168	50	80	20	50	x	x	10	10	800	x

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique.

Geo A_1, A_2 25 x 10 = 250

00SAL 676

amdel
The Australian Mineral Development Laboratories
Flemington Street, Frewville, South Australia 5063
Phone 79 1662, telex AA82520

Please address all correspondence to the Director
In reply quote: AN3/422/0 - 961/73

PART REPORT 1

8 September 1972

Dr S. Ognar
Australian Aquitaine Petroleum Pty Ltd
18 Turners Avenue
COROMANDEL VALLEY SA 5051

REPORT AN961/73

YOUR REFERENCE:	Application dated 24/8/72 Ref. No. 312-400
IDENTIFICATION:	As listed
DATE RECEIVED:	28/8/72

Enquiries quoting AN961/73 to Officer in Charge please.

Analysis by: R.R. Robinson

Officer in Charge, Analytical Section: A.B. Timms

for F.R. Hartley
Director

pkm

c.c. Mr B. Blangy
Australian Aquitaine Petroleum Pty Ltd
GPO Box 142B
BRISBANE Q. 4001

Semi-Quantitative Spectrographic Analysis

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES
x = not detected at the limits quoted
REPORT AN 961/72

Results in ppm unless otherwise stated. Detection limits in brackets.

Sample No	Hg (0.15)		Sample No.	Hg (0.15)		Sample No.	Hg (0.15)			
13-101	x		MJ19-126	x		MJ2-157	x			
2	x		27	x		52	x			
3	x		28	x		53	x			
4	x		29	x		54	x			
5	x		30	x		55	x			
6	x		31	x		56	x			
7	x		32	x		57	x			
8	x		33	x		58	x			
9	x		34	x		59	x			
10	x		35	x		60	x			
- 111	x		36	x		61	x			
12	x		37	x		62	x			
13	x		38	x						
14	x		39	x						
15	x		40	x		C=0 Ag (62×1) = 62				
16	x		MJ11-141	x						
17	x		42	x		Follow up surveys around anomalous Hg samples in report AN 357/73				
18	x		43	x						
19	x		44	x						
20	x		45	x						
-121	x		46	x						
22	x		47	x						
23	x		48	x						
24	x		49	x						
25	x		50	x						

Results are semi-quantitative. Elements apparently present in concentrations of economic

Australian Aquitaine Petroleum Pty.Ltd.

0024

QUARTERLY REPORT ON

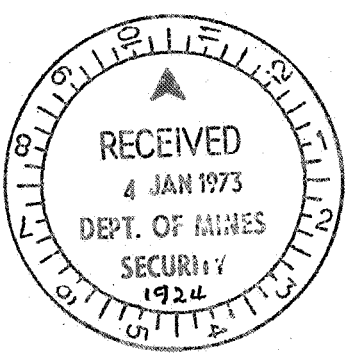
SPECIAL MINING LEASE 676

(Period covered 24.8.72 - 24.11.72)

The work during the period involved only a study of Mercury Problems and Potentials.

Distribution:

Mines Department
AAP Manager/Archive
" Minerals
" S. Ognar
SNPA



BY: P. Elliott
November 1972

MG 206

MERCURY PROBLEMS AND POTENTIAL
QUARTERLY REPORT
SPECIAL MINING LEASE 676

C O N T E N T S

PLATES

INTRODUCTION

Following the results obtained from the previous stream sampling programme (report - MG 190) along the Mt John Fault zone to the north of Italowie Gorge, a second programme was undertaken to check the anomalies reported.

PROCEDURE

The procedure used was to sample, upstream of the recorded anomaly, at intervals of 100 feet taking approximately ten samples in the main creek (i.e. the creek in which the anomaly was recorded) with the side creeks being sampled at the same interval for up to five samples.

RESULTS

The anomalies checked on the basis of the results of the previous programme were :- MJ 2 - 5 ppm, MJ 7 - 10 ppm, MJ 11 - 1 ppm, MJ 19 - 5 ppm, MJ 23 - 5 ppm, MS 73 - 1 ppm. All samples taken on the second programme were assayed at less than 0.15 ppm so these results are inconclusive.

After checking the samples MJ 2-151, MJ 7 -143, MJ 11-132, MJ 19-121, and MJ 23-111 against the corresponding samples from the first survey (MJ 2, 7, 11, 19, 23 respectively), it was found that the first reported anomalies were not correct but were over-estimated by a factor of 15 to 20.

Thus the corrected values should be :- (previous values in brackets).

MJ 2	0.3 ppm	(5 ppm)
MJ 7	0.5 ppm	(10 ppm)
MJ 11	<0.5 ppm	(1 ppm)
MJ 19	0.3 ppm	(5 ppm)
MJ 23	<0.5 ppm	(5 ppm)

Using these new values, only MJ 2, MJ 7 and MJ 19 can be considered anomalous. However, the results of the second survey, covering the five above 'anomalies' and one other, MS 73, were completely negative.

REVIEW OF SAMPLING PROCEDURE AND RECOMMENDATIONS

This does not mean that this area is no longer prospective for mercury, however, as the sampling procedures were necessarily different in the two surveys. In the first survey, the samples for mercury analysis were sieved in the field to - 120 mesh. In the second survey, due to recent rain it was impossible to sieve the samples and so a bulk sample was taken and dried and sieved at the laboratory.

Due to the possibility of mercury loss at elevated temperatures, the samples were dried at 40°C instead of the normal 70°C. This may have resulted in the complete loss of the mercury from the sample, as the clay content would probably have been quite low.

In the light of the above results, it would appear that any wet or moist samples should be air-dried at room temperature. It would be better not to pulverise the - 120 mesh as local overheating of the grains may cause loss of adsorbed mercury.

As regards the sampling procedure, it appears that it is best

.../3

not to take wet samples if it is possible to avoid it, but if the precautions outlined in the above paragraph are taken, little mercury loss should occur. If a mercury dispersion aureole is being sought, then it would be better to take soil samples on a regional basis (i.e. wide spacing) initially, rather than stream samples. If, on the other hand, extensive outcrops of say, hydrothermal quartz veins, are being investigated, then it may be preferable to pass stream sediments for the heavy mineral fraction and have the analyses for mercury carried out on that fraction rather than the clay or fine (- 120) fraction from stream sediments. In this case the analysis would be for cinnabar and, as it is stable within the 0° - 100°C range, the sample preparation procedures would not be so critical as they are for mercury adsorbed in clay particles.

PROSPECTS

In fact, it is not possible to give any definite opinion regarding the possibilities of economic mercury mineralization in this area based on the results of the previous two surveys, however, the previous views still apply and the area still appears prospective.

It may be interesting to extensively chip sample the rock units in the region of the Moro Mine in order to determine whether or not any of the units present could have acted as a source of the mercury at the Moro Mine. If this is so, then the unit (s), if present, could be examined in the Italowie Gorge area as well.

Regarding the size of the Moro Mine occurrence, if at any time (including the present) it had been a significant deposit, then it most probably would have extended vertically upwards from its present extent. It it has any lateral extensions then they would

almost certainly have been detected due to their primary dispersion aureoles by the investigations undertaken by the Department of Mines. Thus it is possible that the occurrence at the Moro Mine is only the remnant 'roots' of a larger deposit. It is possible that the erosion of such a deposit may result in a geochemically significant deposit in a nearby sedimentary basin, resulting in high background levels in the sediments. The Frome Embayment is such a basin and is only a matter of miles away. It has existed as a sedimentary basin since Cambrian times, and as the age of mineralisation at Moro Mine is probably* Mesozoic, it is not inconcievable that some of the sediments in the Lake Frome Embayment have a high mercury background level. If this is so, then it would discourage further investigations in the area of the Moro Mine, but would at least substantiate the possibility of there being significant mercury mineralisation associated with the Mt John Fault zone.

A further possible indication of the relationship of the known showing to the unknown possible extent and position of the main deposit would be obtained from a determination of the temperature of formation of the mineral suite present at the Moro showing. If the temperature is moderately high (perhaps around 200°C) then the showing is probably the remnant roots of a larger deposit and as such would be of little value, whereas if the temperature were in the region of 50 - 100°C then the possibility exists of a downward extension of the known showing into an economic deposit. As the latter possibility is not probable when taking the results of the Mines Department's investigations into consideration, then,

* From a brief study of some of the more significant mercury deposits around the world, it was noted that the age of mineralization of the majority was Mesozoic or Palaeozoic at the earliest. Only 1% of all known deposits are in Pre-Cambrian host rocks. Statistically, this is a factor against the possibility of a significant development of mercury in this area, but as it is known to occur here, there is obviously some possibility, however small.

should the temperature of formation be found to be low, it is most possible that the size of the showing at Moro may give an indication of the extent of the mineralisation; i.e. small. Temperature of formation or determination on the hydrothermal quartz veins in the Italowie Gorge area could also indicate whether their conditions of formation were condusive to the depsotion of cinnabar, although the cinnabar may have been deposited later.

CONCLUSIONS

It is difficult, if not impossible, to draw any conclusions as regards the extent of the mercury mineralisation in this area. Investigations along the lines outlined above may be of assistance in determining whether or not it is worth investigation the area more intensively.

EXPENDITURE

See attached Exploration Expenditure sheet.

P. Elliott.

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.../7

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9413 MG 206

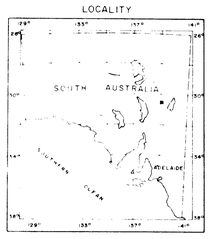
AUSTRALIAN AQUITAINE PETROLEUM PTY LTD. **Annex. II**

SML 676

GEOLOGICAL MAP
ALSO
LOCATION OF STREAM & CHIP SAMPLES

ft 2000 0 4000 6000 8000 ft

LOCALITY



MINERAL GEOLOGY DATE JULY 1972

LEGEND

CAMBRIAN

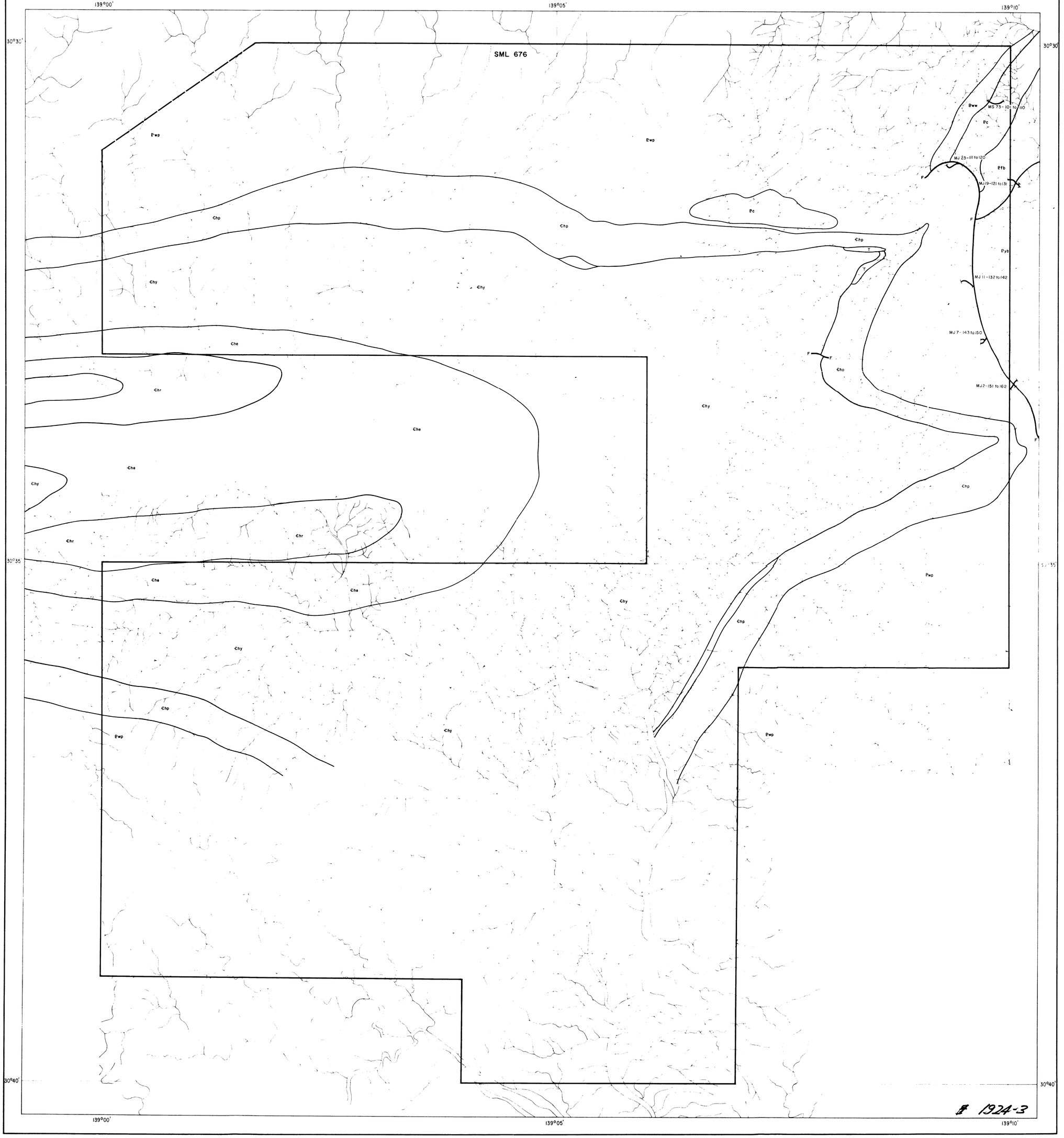
- Che — Nepabunna Siltstone
- Chr — Parara Limestone
- Chy — Ajax Limestone
- Chp — Parachilna Formation

PROTEROZOIC

- Pwp — Pound Quartzite
- Pww — Wonoka Formation
- Pyb — Bolla Bollana Formation
- Pfb — Balcanoona Formation
- Pc — Diapiric Breccias

Gammon Wilderness National Park Boundary

MJ 11 – 132 to 142 — Sample Section & Number



9194

MG 206

AUSTRALIAN AQUITAINE PETROLEUM PTY. LTD.

Annex. I.

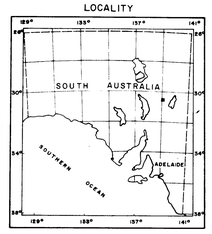
SML 676

LOCATION OF SAMPLE SECTIONS

SCALE 1"=2000 ft.

ft. 2000 0 2000 4000 6000 8000 ft.

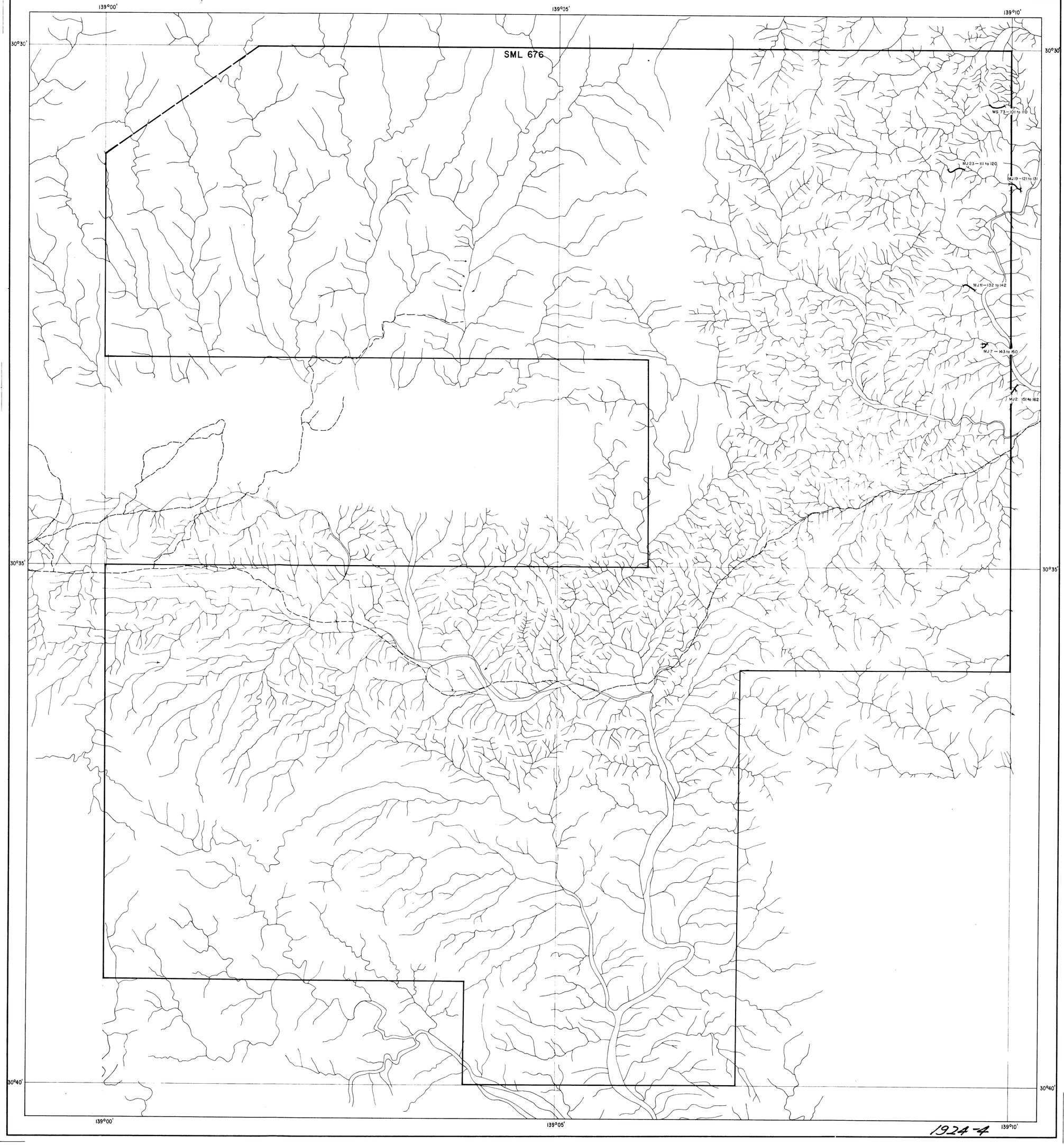
LOCALITY



MINERAL GEOLOGY

LEGEND

Sample Section & Number — MJ 11 – 132 to 142



1924-4

Australian Aquitaine Petroleum Pty.Ltd.

0033

FINAL REPORT

SPECIAL MINING LEASE 676

(Period February '72 - February '73)

Distribution:

Dept. of Mines

SNPA - DCGM

AAM - Manager/Archive

AAM - file

S. Ognar

By: S.Ognar

March 1973

MG 235

C O N T E N T S

FINAL REPORT SML 676

INTRODUCTION

The two main targets for exploration in SML 676 were the possibility of mercury deposits being associated with the Mt John Fault and the possibility of interbedded base metal deposits in the contact between the Parachilna Formation and Wilkawillina Limestone, south-west of Italowie Gorge. (Report MG 190).

This first part of our exploration programme confirmed some high concentrations of remobilised zinc near the Parachilna Formation, Wilkawillina Limestone and without economic potential.

.../2

1 FIELD OPERATION AND STATISTICS

1.1 Personnel

The exploration programme was carried out in the field and in the office, and the following is the total days spent.

	July	Aug.	Sept.	Nov.	Dec.
Geologist (field)	31	4	8		
Field Assistant(field)	30	4	8		
Geologist (office)		10	9	10	2

1.2 Vehicles and Accommodation

For the field mission we used a Landrover and a caravan.

1.3 Sampling

Chip rock samples - 183 were taken for assays.
Rock samples - 8 were taken for petrographical description
Stream & Soil samples- 158 were taken for assays.

Chip rock samples were taken along 9 sections crossing the contact of Parachilna formation/Wilkawillina Limestone over an area extending from Mt McKinlay Creek to Italowie Gorge. This area was also mapped on a scale of 1:24,000 from Lands Department photographs of a 1:49,500 scale.

2 MERCURY SURVEY

Following the work that the South Australian Mines Department carried out around the mercury occurrence at Moro Mine, it was decided to prospect the Mt John Fault zone and the two diapirs to the east and north respectively, of Mt McKinlay.

2.1 Results

Results were not very encouraging but 5 of them were considered as anomalous.

After checking, it was found that the first reported anomalies were not correct but were over estimated by a factor of 15 to 20. After correction of the figures, the results were still anomalous for four samples however, the results of the second survey covering the above 'anomalies' were completely negative.

3 PARACHILNA FORMATION/WILKAWILLINA LIMESTONE CONTACT

The ferruginous beds of the Upper Parachilna Formation were surveyed by a series of chip sampling sections.

3.1 Results

The values for lead and zinc were normal background in general, except for several notably high values for zinc. The highest zinc value (10,000 ppm) was recorded from a sample taken from the base of Wilkawillina Limestone.

4 CONCLUSIONS

4.1 Basemetal

Results from the Lower Cambrian were not sufficiently encouraging to propose an additional exploration programme.

4.2 Mercury Survey

Following the resultant disparity of the returned assays we had to conclude that the method of approach on either the field level or

the laboratory level was not adequate for this type of survey and it is difficult, if not impossible, to draw any conclusions as regards the extent of the mercury mineralisation in the Mt John Fault Area.

The complexity of this problem and the negative base metal results lead us to stop all exploration on the SML 676 which will be relinquished.

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MG 235

AUSTRALIAN AQUITAINE PETROLEUM PTY. LTD

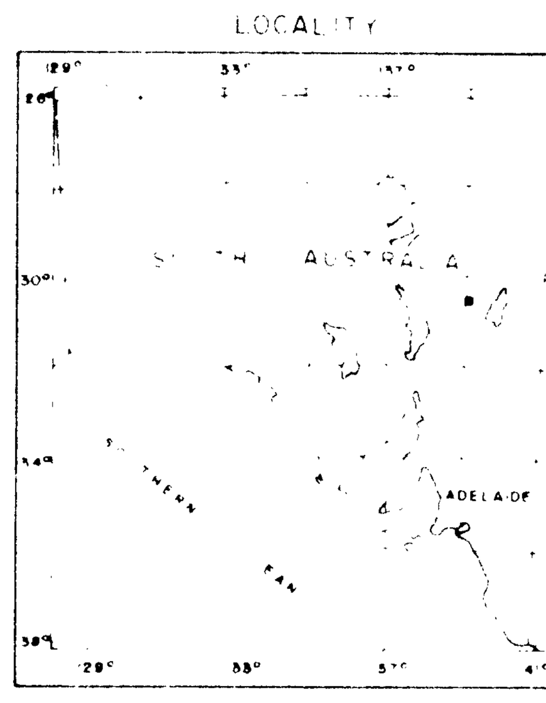
FINAL REPORT

PLATE I

SML 676

LOCATION DIAGRAM of stream samples, chip samples and sections and GEOLOGICAL MAP of ENVIRONS S-W of ITALOWIE GORGE

SCALE [illegible]



S. A. [illegible] OGNAR)

MARCH, 1973

LEGEND

Age		Unit	Description
RECENT		[illegible] ALLUVIUM AND [illegible]	
PLEISTOCENE		[illegible]	[illegible] derived from Pound Quartzite
LOWER CAMBRIAN		WILKAWILLINNA L/S	Generally brown-buff limestone with silty beds [illegible] possible sedimentary [illegible] near base
LOWER CAMBRIAN	Upper Mbr. / Lower Mbr.	[illegible]	[illegible] with ferruginous and sandy [illegible] transgressive boundary with Wilkawillina Limestone. Lower unit more arenaceous
UPPER PROTEROZOIC	Marinoan	POUND QUARTZITE	Massive and well bedded quartzite and arkose
UPPER PROTEROZOIC	Marinoan	[illegible]	Calcareous [illegible] siltstones with interbedded thin limestone.
UPPER PROTEROZOIC	Sturtian	BALCANOONA FORMATION	[illegible] weathering, buff to grey dolomite, limestone & silty limestone. Locally has [illegible] development. Intertongues with Tapley Hill Formation.
UPPER PROTEROZOIC	Sturtian	TAPLEY HILL FORMATION	Thinly bedded grey-green weathering dark blue-grey siltstones.
UPPER PROTEROZOIC	Sturtian	BOLLA BOLLANA FORMATION	Massive purple-brown to grey-green boulder tillite
UPPER PROTEROZOIC	Willouran	CALLANNA BEDS	Dolomites, sandy dolomites, dolomitic marbles, dolomitic sandstones (hornfelsed) in diapiric structures.
		FAULT BRECCIA	

Geological Boundary - observed
- approximate

Fault (approximate)

Y 30° Bedding

MD 12(5) MS 65 MJ 15(1) Stream Sample [with mercury content (ppm) in brackets]

BI 815 Petrological or Chip Sample [with mercury content (ppm) in brackets]

Section 6 Chip Sample Section - 1972

Section B Chip Sample Section - 1971 (approximate)

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