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A PROGRESS REPORT ON

MINING LEASES 32M/81 AND 30M/74

MATHINNA TASMANIA

FOR PERIOD 15th MARCH, 1984 - 15th JUNE, 1984

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Report No 1005A

SUMMARY

1. Exploration activities on Mining Leases 32M/81 and 30M/74 at Mathinna in Tasmania over the 3 month period up until 15th June 1984 have involved re-drilling of the tailings, assaying of samples and some metallurgical work.

2. Detailed calculations of reserves are yet to be completed, but on rough calculations indicates about 120,000 tonnes of tailings occur with a head grade of about 1.6 - 1.7 gms/tonne, with another 20,000 tonnes of low grade tailings at a head grade of about 1.2 gms per tonne. The average overall grade is about 1.5 gms/tonne.

3. Most of the metallurgical work indicates that without regrinding, recoveries of about 40% only would be expected and that with regrinding this might improve to 50%. However, one metallurgist obtained much better result and hence check laboratory testing is currently in progress.

1. INTRODUCTION

1.1 This report covers exploration activity in the 3 months up until 15th June, 1984 on Mining Leases 32M/81 and 30M/74 held by Tasminex N.L. at Mathinna in North Eastern Tasmania.

1.2 Epoch Minerals Exploration N.L. have taken up an option to acquire these two leases and as such have commenced a programme of exploration and evaluation of gold bearing tailings situated on these leases.

1.3 Field work over the past 3 months has involved the drilling of holes through the tailings on a 50 x 50 metre grid; the assaying of these tailings and reassessment of potential reserves and the commencement of laboratory metallurgical tests. A small programme of orientation geophysics has also been completed.

1.4 The programme for the ensuing 3 months is dependent upon the results of the metallurgical tests. If these results are favourable, representative material will be shipped to Epoch's permanent test plant site at Canbelego N.S.W. for further evaluation of recoveries and a mining feasibility study will be carried out.

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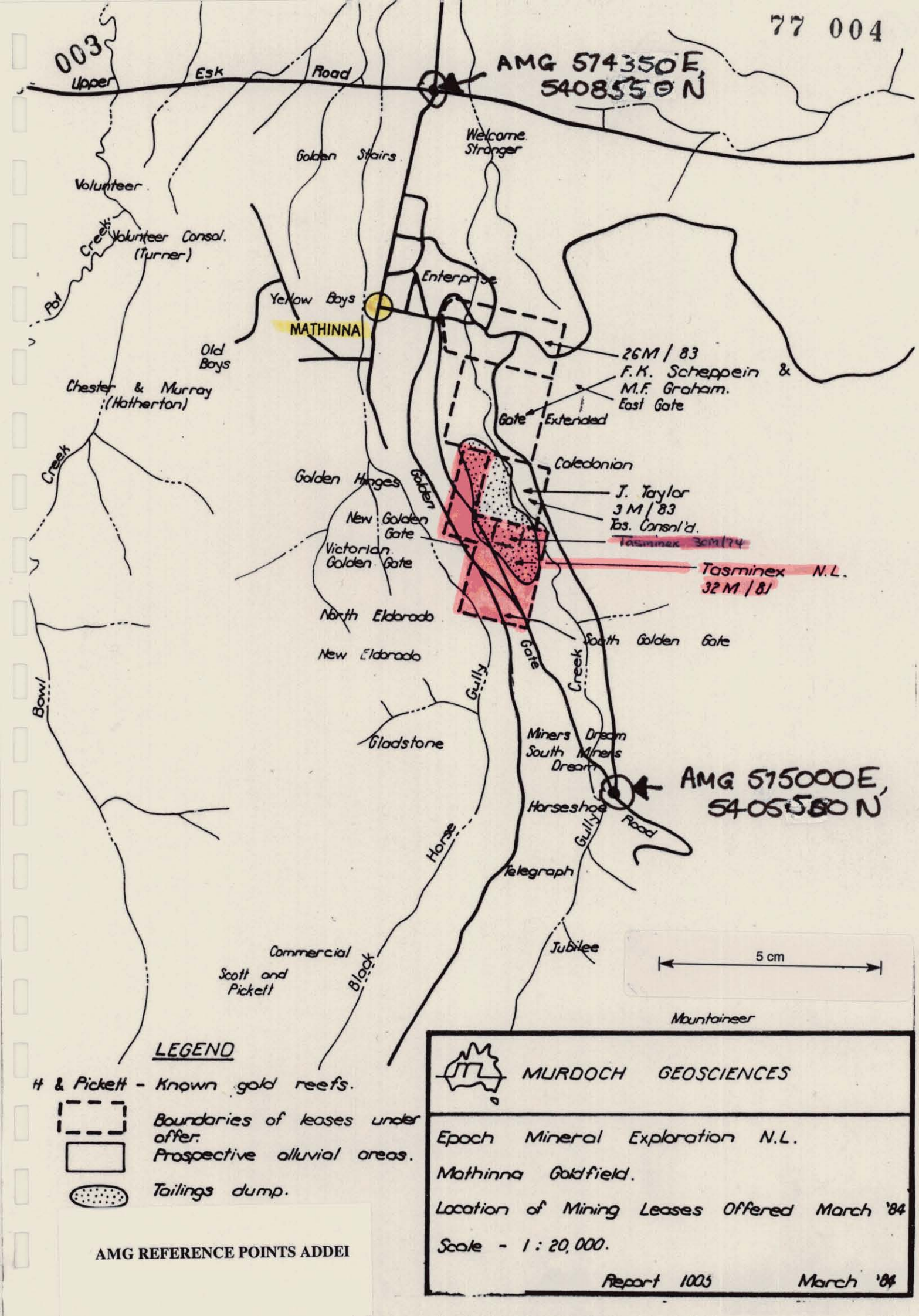
77 004
003
Upper Esk Road
AMG 574350E, 5408550N
Welcome Stranger
Golden Stairs
Volunteer
Volunteer Consol. (Turner)
Creek
Pot
Yellow Boys
MATHINNA
Enterprise
Old Boys
Chester & Murray (Hatherton)
Creek
26M/83
F.K. Scheppein & M.F. Graham.
East Gate
Gate Extended
Caledonian
Golden Hinges
Golden
J. Taylor
3M/83
Tas. Consol'd.
New Golden Gate
Tasminex 30M/74
Victorian Golden Gate
Tasminex N.L.
32M/81
North Eldorado
New Eldorado
South Golden Gate
Gate
Creek
Gully
Bowl
Gladstone
Miners Dream
South Miners Dream
AMG 575000E, 5405580N
Horseshoe
Gully
Road
Horse
Telegraph
Commercial
Scott and Pickett
Black
Jubilee
5 cm
Mountaineer
LEGEND
H & Pickett - Known gold reefs.
Boundaries of leases under offer.
Prospective alluvial areas.
Tailings dump.
AMG REFERENCE POINTS ADDEI
MURDOCH GEOSCIENCES
Epoch Mineral Exploration N.L.
Mathinna Goldfield.
Location of Mining Leases Offered March '84
Scale - 1:20,000.
Report 1003 March '84

2. GEOLOGY

2.1 The Mathinna Goldfield occurs within Lower Palaeozoic Mathinna Beds, the host rock for all the gold fields in N.E. Tasmania. The predominant rock types are slates and quartzites, but variations between these two rock types can also occur.

2.2 The majority of auriferous reefs in the Mathinna area, occur either along or closely associated with a complex anticline in a zone about ½ km wide. The gold occurs in quartz veins, generally confined to fissure faults or major joint planes, with only minor infiltration of the country rock.

2.3 The control on mineralization is not entirely structural. It appears that the competency of the lithology appears to have some influence on the size of the reef. (i.e. reefs are generally wider in slates than in quartzites). The greatest concentrations of reefs tend to occur where the cross folding on the anticline is locally more intense.

2.4 A number of major faults occur in the Mathinna area and it appears that these faults have assisted in guiding and controlling the flow of the mineralization fluids, expected to have originated from Upper Palaeozoic granites, which would have intruded the Mathinna Beds at depth. These granites crop out to the north, north-east and north-west of Mathinna.

2.5 The major mine in the Mathinna Area was the New Golden Gate Mine. This mine was situated on 32M/81 as shown on Plate 1. A major fault was found in this mine. The shear zone varies from 0.1 - 1.2 metres in width and is reported to contain irregular lenses and veins of quartz, which rarely contain gold. However, the rich shoots worked in this mine were all situated near to this fault, indicating its importance in the location of gold mineralization on this property. The shear zone is situated near the apex of an anticline which is expected to run north-south through the area.

../3

2.6 The main reefs strike north-south parallel to the anticline with minor reefs S.E. and N.W. The minerals associated with gold in the reefs are pyrite, arsenopyrite, chalcopyrite, galena and sphalerite. The payable portions of the reefs are reported to have contained 1 - 1½% sulphides, containing from 8 - 15 gms/tonne of gold. For a long time the New Golden Gate sulphides yielded 300 gms/tonne and some pyrites at the 1600 ft (485 metres) level yielded 2500 gms/tonne. Galena and sphalerite are universally regarded in the field as good indication of gold.

2.7 Total production from the New Golden Gate Mine was 267,140 tonnes of quartz, which produced 222,755 ounces of gold at an average 35 grams per tonne. The main shaft was sunk to 1620 ft (491 metres) and the reefs opened up on 17 levels. It was the deepest gold mine in Tasmania.

2.8 The shafts for the Tasmanian Consuls Mine also occur on this lease. This mine appears to be associated with the same fault and anticline structure as occurs at the New Golden Gate Mine. The Tasmanian Consuls Mine was worked on 9 levels to an ultimate depth of 1400 ft (424 metres). Total ore crushed was 6333 tonnes for 3130 ounces of gold.

3. POTENTIAL RESERVES OF TAILINGS

3.1 The tailings were originally drilled by Hughes of the Tasmanian Mines Department in 1948 on a 12 metre x 12 metre grid. The results of that drilling programme have been included on Plate 1 accompanying this report. The grades originally in dwts/ton have been converted to gms/tonne and the depth of tailings encountered in each hole originally in feet, have been converted to metres. The treated quartz from the New Golden Gate and Tasmanian Consuls Mine now lies within the floor of Long Gully as tailings, partly on the leases covered by this report and partly on adjoining lease 3M/83 held by another party.

3.2 As a check on these results Epoch Minerals redrilled the area in April 1984 on a 50 metre x 50 metre grid. The Epoch drilling indicated roughly similar depths of tailings at each site as indicated by Hughes, suggesting that little of the material available in the 1940's has been subsequently eroded away. At worse the reserves available may only be 5% less than in 1948.

3.3 The relative position of the Epoch and Hughes holes are shown on Plate 1. In the Epoch programme, separate samples were collected over each one metre intervals for each holes. The samples were split on site into two representative samples. The first set of samples were forwarded to Australian Laboratory Services in Brisbane to determine total gold content by fire assay methods. The second set of samples were all mixed together and then both split twice to form 4 representative samples of the area. The first representative sample was forwarded to Robertson Research Pty. Ltd. to carry out metallurgical laboratory testing on the cyanide leaching characteristics of the sample. The other samples have been retained for future reference.

../5

3.4 We have re-calculated the potential reserves only roughly at this stage. A more accurate calculation will accompany our next report. To determine an approximate figure the depth of tailings recorded in each of Hughes drillholes has been multiplied by the area of influence of the tailings around it (i.e. half the distance to the adjoining drillholes on each side) to obtain a total volume. The volume has been multiplied by 1.6 (the approximate density of dry tailings) to obtain a total tonnage.

3.5 Overall from Hughes drilling we estimate there to be 140,000 tonnes of tailings available upon the two leases in question. The average grade of these tailings will be 1.58 gms/tonne. The Epoch results considered alone indicate a similar tonnage at a grade of about 1.53 gms/tonne.

3.6 This programme of check drilling indicates that the grades as determined by Hughes are reasonable and that there is little need for detailed redrilling at this stage.

3.7 It is possible to divide the available reserves into a higher grade northern section and a lower grade southern section. From the drill results there appears to be about 120,000 tonnes of higher grade at an average of around 1.6 - 1.7 gms/tonne and 20,000 tonnes of lower grade at an average of around 1.0 - 1.2 gms/tonne. However, detailed calculations are yet to be completed.

../6

4. METALLURGICAL RESULTS

4.1 A number of organizations have investigated the likely recovery of gold from the tailings at Mathinna since they were first drilled by Hughes in the 1940's. The most extensive test work was carried out by the C.S.I.R.O. sometime in the 1950's and a lot of the data they collected is very relevant today. The highest recoveries indicated to date have come from testwork carried out by Mr. David Wright, Metallurgist of Bendigo. We currently have a series of laboratory tests in progress. However, at time of writing this report, information from these tests is unavailable for inclusion in this report.

4.2 Basically the C.S.I.R.O. took 3 composite samples from Hughes drill cuttings and did a number of tests on each sample. The average head grade of the samples as calculated from bore-hole assays was 1.65 gms/tonne.

4.3 Sizing analysis was carried out on the samples as follows -

Table 1 - Sample Sizing Analysis

Sieve size		% passing
+ 600 microns		3.5
+ 400 microns		10
+ 300 microns		20.7
+ 200 microns		30.6
+ 150 microns		40.4
+ 100 microns		48.0
+ 75 microns		54.4
- 75 microns	% retained	45.6

4.4 A portion of 2 of the samples were subjected to assay sizing tests for gold and sulphur.
The gold was distributed as follows -

Table 2 - Average Assay Grade for sizing

Sieve size (in microns)	Assay Grade gms/tonne	Gold % Distribution
+ 200	1.47	29%
+ 75/- 200	0.87	12.8%
- 75	3.26	58.2%

../7

Sulphur was distributed as follows -

Table 3 - Average Assay Grade for sizing - sulphur

Sieve size (in microns)	Assay Grade (sulphur %)	% Distribution
+ 200	0.075	20.6
+ 75/- 200	0.06	12
- 75	0.31	67.4

These results show that the sulphur and gold assays for each screen sizing are roughly proportional, indicating a close association between gold grade and sulphur.

4.5 The 3 samples were then subjected to agitation-cyanidation tests initially without re-grinding. After 6 hours the average recovery was only 0.65 gms/tonne and after 20 hours was 0.78 gms/tonne. This latter figure only represents about a 50% recovery.

4.6 Assay-sizing tests were carried out on the cyanide residuals of 2 samples and the average grade of the gold left in the residue was -

Table 4 - Gold in residue - Sizing tests

Sieve size (in microns)	% gold in residue
+ 200	45%
+ 75/- 200	16.1%
- 75	38.9%

A comparison of these results with Table 2 above, indicates that the main area where gold was lost is in the coarser fraction and that overall, recoveries might be improved by grinding.

4.7 Some tests were carried out on one sample to indicate the improvement that might be expected after grinding and then agitated-cyanidation for 20 hours.

Table 5 - Cyanidation - Regrinding tests

% minus 75 microns	% Extracted gms/tonne
* 35.9	38.3
46.1	45.9
64.6	48.8
97.7	54.2

* This is the no regrinding situation

These results indicated that only an extra 16% of gold could be extracted by grinding almost all of the sample to minus 75 microns. Taking 1.6 gms/tonne as our average grade, this would amount to another 0.25 gms/tonne, bringing total recoveries up to about 1 gm/tonne.

4.8 In the original cyanidation tests that occurred without regrinding it was observed that 63% of the gold that was extracted was from the - 75 micron fraction. Tests were carried out to determine how much gold might be obtained by classifying out the coarser fraction (+ 75% microns). This would result in reducing the volume of tails to be treated to about 1/3. The tests were a little inconclusive, but indicated that the recovered grade per tonne might be increased by about 20% by classification.

4.9 Flotation tests resulted in an average recovery of around 50%, similar to the cyanidation tests, indicating that either method could be used. Only an extra 0.2 gms/tonne was extracted by cyanidation of the flotation tailings for 6 hours.

4.10 Metallurgical testing was carried out in 1980 by Mr. D. Wright Metallurgist of Bendigo. 3 x 200 litre drums of samples were augered for assay and preliminary cyanide testing. The average head grade of these samples was 2 gms/tonne and the average recovery by cyanide tests after 24 hours agitation was 1.5 gms/tonne. These results are much more encouraging than the C.S.I.R.O. results. The aim of our metallurgical investigations are to see if Wright's results can be reproduced initially in the laboratory and then later in a larger scale pilot plant operation.

4.11 On the negative side however, metallurgical testing was carried out for Tasminex N.L. by Aberfoyle Services Pty. Ltd. in 1983.

Calculated recoveries from cyanide leach extraction tests were -

	Leach time	
No grinding	24 hours	40%
	48 hours	41%
	72 hours	48%
By grinding to 100% minus 75 microns	24 hours	54%
	48 hours	64%
	72 hours	59%

These results are more in line with the C.S.I.R.O. results and at these levels of recovery, retreatment would be difficult to justify.

5. GEOPHYSICS

5.1 Some preliminary geophysical testing was carried out at Mathinna using the Geonics E.M. 34 Electromagnetic unit. This unit records variation in earth's relative conductivity from place to place and is generally effective to depths only in the order of 10 metres or so.

5.2 A number of parallel east-west lines were profiled perpendicular to the trend of the anticline and the fault in this area, with the aim of seeing whether this geophysical method would be useful in delineating the trend of the anti-cline and fault.

5.3 The results are plotted as profiles of conductivity in mhos/metres (on a logarithmic scale) against traverse position. The horizontal scale is 1 cm = 20 metres and the vertical scale 1 cycle = 4 cms.

5.4 The results indicate that higher conductivity occurs within a north-south zone about 40 - 60 metres wide (indicated by a horizontal bar below each profile). The trend of this zone is centred some 100 metres to the east of the Golden Gate Shaft and roughly parallels the western side of the tailings dump.

5.5 The higher conductivities are likely to be associated with either -

(a) A zone of deeper weathering.
(b) Zone of structural weakness (shear or brecciated zone)
(c) Predominantly argillaceous lithology.

The results indicate the high conductivities are unlikely to be a reflection of the thickness of tailings.

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5.6 From experience in the Mathinna Beds elsewhere (a) and (b) is more likely to occur than (c). Further, deeper weathering and structural weakness in this area are likely to coincide with the axis of the anticline.

5.7 A sharp geo-electrical gradient occurs 20 - 40 metres east of the Golden Gate Shaft and this feature can be traced southwards on all traverse lines by the letter G.

5.8 This gradient could coincide with either a major fault or the edge of the zone of structural weakness. The gradient on the other side of the area of high conductivity is much more gradual,indicating a gradual increase in brecciation from east to west into the zone. A fault is much less likely to occur on this side, than it is along the western side of the anticline.

5.9 The gradient on the western side of the high conductivity area is considered the most prospective broad scale area in which to search for hitherto undiscovered hardrock gold mineralization. Detailed profiling should be carried along this gradient now to locate areas where major cross-cutting features may intersect this gradient. Such targets would be considered prospective for the development of gold ore-shoots. Follow-up geophysics in the form of I.P. and TEM surveys could be useful to assist confirm the geological nature of interpreted geophysical targets,prior to drilling.

Fence

Stream

Shed

Vehicle Track

Gate Shaft

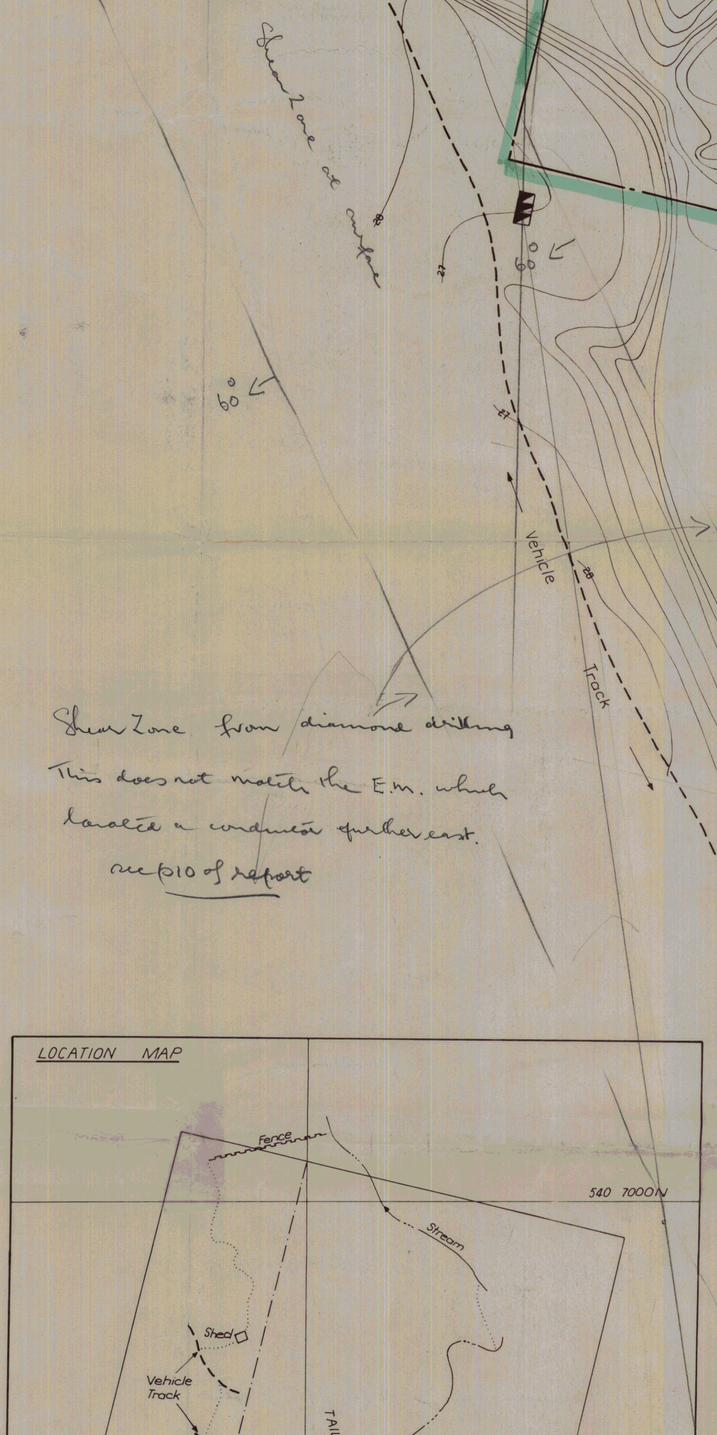
Shear zone at surface

Conductor

Long Gully Stream

2 metre high wall

Shear Zone from diamond drilling
This does not match the E.M. which
has delt a conductor further east.
see p10 of report



TN

LEGEND

Hughes 1948

Drillhole
Grade gms / tonne.
Depth of hole in metres.

Epoch 1984

1505 / 100E
2.2m
(0-1, 1.09
1-2, 1.39
2-3, 0.33)
Depth of tailings
Grade in gms / tonne.
Depth interval.

South Gate Shaft 24m off edge of sheet

77 015

5 cm

MURDOCH GEOSCIENCES
84-2160

Client : Epoch Mineral Exploration N.L.
Location : Mathinna Tailings Project - Tasmania.
Scale - 1 : 600.
Plate 1 Report 1005 / A June '84

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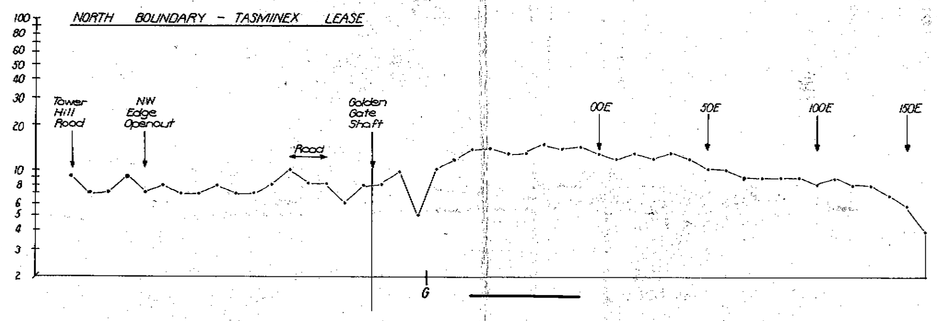
ELECTROMAGNETIC SURVEY - MATHINNA

NORTH BOUNDARY - TASMINEX LEASE



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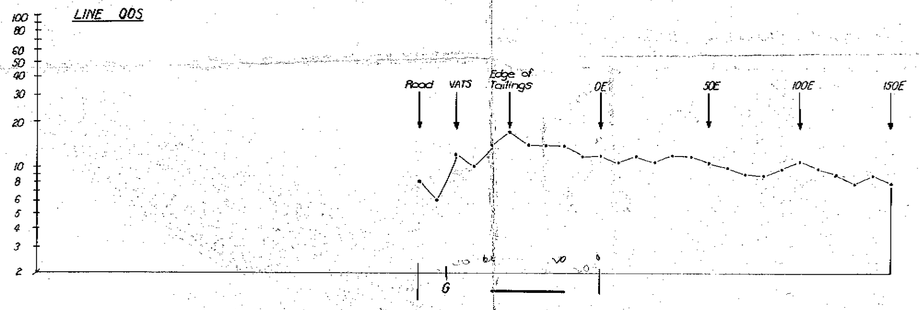
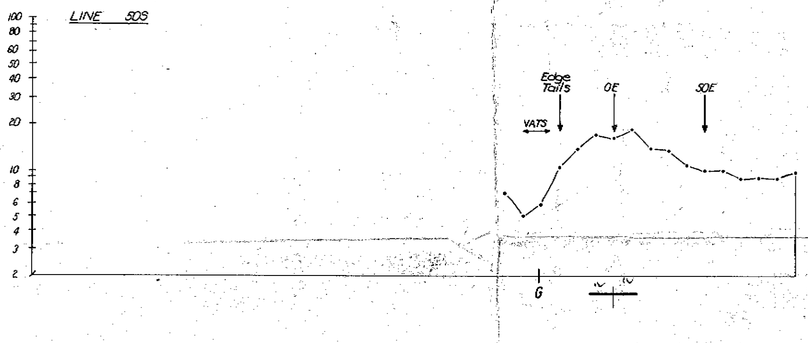
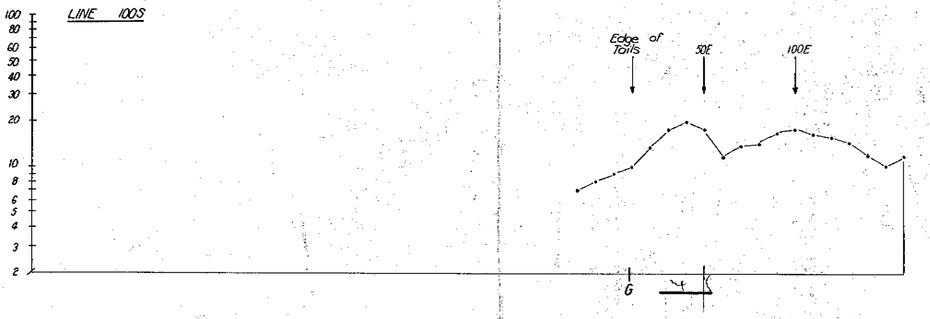
LINE 00S



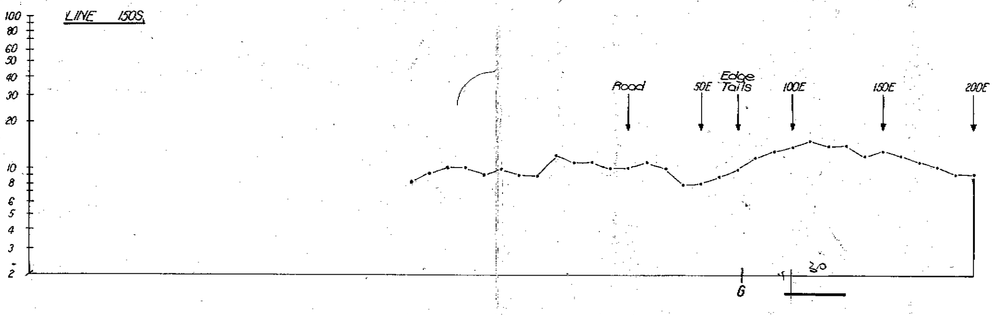
LINE 50S



LINE 100S



LINE 150S



6 cm

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MURDOCH GEOSCIENCES

84-2166

Client : Epoch Mineral Exploration N.L.

Location : Mathinna - Tasmania.

Electromagnetic Survey Results.

Scales :- Vertical - logarithmic 1 cycle = 4 cms
Horizontal - 1 cm = 20 metres.

Plate 2 Report 1005/A June '84