RIO AUSTRALIAN EXPLORATION PTY. LIMITED

APPRAISAL OF THE FARRELL MINING FIELD

TULLAH, TASMANIA.

by
B.J. DREW

PROJECT NO. PRP/7/100

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496002

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SUMMARY AND RECOMMENDATIONS

Tullah is situated four and a half miles north-east of Rosebery in Western Tasmania.

Since 1899 more than 631,000 long tons of ore have been milled for a recovery of 80,000 tons of lead and 8,630,000 ounces of silver of total value £A3,350,000.

Galena, sphalerite, chalcopyrite and pyrite mineralisation is found in a quartz, siderite, and crushed wall rock gangue. The lodes are fissure veins in slates and tuffs and are localized within a few hundred feet of a bed of massive pyroclastics. The major lodes strike north to 10°magnetic and dip 60° to 70° west. They average 2 to 3 feet in width. Grade of ore averages approximately 14% lead, and 15 ozs silver per ton. The manager estimates the ore may also have 2-3% zinc and 0.5% copper per ton.

The only major workings are the North Mount Farrell Mine worked to Ten level (1116 feet vertical depth) and the new North Mount Farrell worked to nine level (869 feet vertical depth).

Approximately 11,000 feet of surface diamond drilling, mostly along the major lode channels, has failed to find payable mineralisation. This drilling, plus mine development, has tested the lode channels for a length of 10,000 feet.

Driving on eight level in the New North Mt. Farrell mine has found 87 tons per vertical foot of payable ore, and on nine level 12 tons. Ten level on the North Mount Farrell Mine has 186 tons of ore per vertical foot.

It is doubtful if sufficient ore would be found to justify the capital expenditure required to develop it. I do not consider that further work is warranted at Tullah unless the electromagnetic survey finds anomalies. If, however, the company decides to test the field, all accessible workings should be remapped in detail to try and determine the control for localization of ore shoots within the lode channels.

INTRODUCTION

FIELD WORK.

A geological examination of the Farrell Mining Field was made during December 1956 and January 1957. Sixteen days were spent on the field. Existing surface geological maps were checked in the field but no original surface mapping was done. Eight and nine levels of the New North Mount Farrell Mine were mapped; also the other levels and working stopes on this mine were inspected.

The lack of geological information on mine plans made necessary the collecting of information regarding lode widths, grade, and diamond drilling, from past fortnightly reports by the manager. Most of my time was spent collating data from these reports.

In compiling plans, use was made of a plan with scale one inch equals 400 feet and sections prepared by the E.Z. Coy. The Farrell Mining Coy. plans were very unsatisfactory.

Different levels of the North Mt. Farrell Mine were plotted at various scales with most of them on the unwieldly scale of 1 inch equals 25 feet. All levels for this mine were re-plotted at one inch equals 40 feet. Also all workings on the field were plotted showing their relation to one another on the scale one inch equals 400 feet. The positions of diamond drill holes drilled for the E.Z. Coy. and the Farrell Mining Coy. are also shown on this plan.

LOCATION AND ACCESS

Tullah, situated four and a half miles north-east of Rosebery, consists of about 30 houses, mostly in poor condition, an hotel, post office and store. It has no road outlet, access being only by railway.

The Emu Bay railway line from Burnie, on the north-west coast of Tasmania, to Zeehan, passes 3 miles west of Tullah. Five miles of two foot gauge railway, owned by the Farrell Mining Coy., connect Tullah with Farrell siding on the Emu Bay line. Farrell is 64 miles from Burnie. Freight charges from Burnie are £4. 4. 9 a ton.

The two foot gauge railway is in poor repair and frequent derailings take place. Time for the journey from Farrell to Tullah is about one hour each way. The mine manager estimates maintenance of the line and running the steam train costs the Company approximately £A13,000 a year.

The North Mount Farrell and New North Mt. Farrell mines are connected by a two foot gauge tramway.

Several miles of road suitable for 4-wheel drive vehicles connect the mines, and tracks suited for walking have been cut to various parts of the field.

PHYSICAL FEATURES

Surface elevation ranges from 600 feet above sea level at Tullah to about 2,000 feet at the top of Mt. Farrell. The terrain near the mines is rounded low hills covered with a dense growth of bracken and other scrub.

Average annual rainfall since 1947 has been 71 inches, the driest month being February with an average of 272 points and the wettest August with 820 points.

The town water supply is drawn from rainwater tanks; water for the treatment plant is pumped from the North Mount Farrell mine. When supplies run short, water is pumped from the permanent flowing Mackintosh River.

Two fast flowing rivers, the Mackintosh and Murchison, unite just below Tullah to form the Pieman River which flows west to the sea. The rivers drain a large area and are never dry. Minor streams flow N 60° W from Mt. Farrell and may follow a series of faults.

Electric power is supplied by the Tasmanian Government Hydro-electric scheme.

PREVIOUS REPORTS

Reports available are :-

1. Report on the Mount Farrell District, by W.H. Twelvetrees, Tasmanian Dept. of Mines, 1900.

2. Report on the Mt. Farrell Mining District, by G.A. Waller, Tasmanian Department of Mines, 1904.

3. The Mt. Farrell Mining Field, by L.K. Ward, Ann. Rep. Dep. Min. Tasmania, 1906.

4. Supplementary Report on Some Mines in Mt. Farrell District, by A. McIntosh Reid, Tasmanian Dept. of Mines, 1927.

5. The Farrell Mining Co. Ltd. Mines, Tullah, by Q.J. Henderson, Tasmanian Dept. of Mines, 1945.

6. Geology of Map Square 360850, by S.W. Carey.

7. First Report on The Murchison Mine, Silver-lead-zinc, Mt. Farrell, by G. Whitten, E.Z. Coy. of Australasia Ltd., 1947.

8. Second Report on The Murchison Mine, Silver-lead-zinc, Mt. Farrell, by G. Whitten, E.Z. Coy., 1947.

9. First Report on Dutton's Workings, Silver-lead-zinc, Mt. Farrell, by G. Whitten, E.Z. Coy., 1948.

10. Geophysical survey of Mackintosh Area, Tullah, by L.A. Richardson, E.Z. Coy., 1951.

11. Mount Farrell Mines, by G. Hall and V. Cottle, E.Z. Coy., in Geology of Australian Ore Deposits, 1953.

TENURE

The Farrell Mining Coy. Ltd. hold the following mineral leases:- Consolidated Lease 7191-M of 256 acres, mineral leases nos. 11065-M of 80 acres, 11257-M of 20 acres, 11292-M of 20 acres. The company has also applied for, and holds subject to survey, mineral lease formerly 32-M of 39 acres.

A 10-acre block of purchased land is owned by Mr. Daly of Tullah.

Special Prospector's Licence No. 287 covering 220 acres in force until 29.3.57 is held for the Farrell Mining Coy. by R.D. Midson. Special Prospector's Licence No. 277 covering 24± square miles, in force until 19.12.56, was held by E.A. Henderson for the E.Z. Coy. It is not known if this licence is still held by the E.Z. Coy.

It was reported at Tullah a small lease is held over the Murchison Mine by Mr. Macdermott of Tullah, but no record of this is shown on the Mines Department plan of current leases.

HISTORY AND PRODUCTION

Lead ore was first discovered at Mt. Farrell about 1899.

The North Mount Farrell Mine was worked from 1899 until its closure in 1932. The closure seems to have been caused by poor values in the stopes below ten level. All known payable ore had been stoped out above ten level and when two winzes and an intermediate drive 65 feet below the level did not give good ore on stoping the mine was closed.

Early in 1933 the lode of the New North Mt. Farrell mine was discovered and since then this has been worked continuously. Approximately 50 men are at present employed. Most of the ore produced on the field has come from the North Mt. Farrell and New North Mt. Farrell mines. Minor production has come from the Mt. Farrell, Dutton's and the Murchison Mine but records are not available.

The North Mount Farrell mine treated an estimated 425,000 long tons of ore for a recovery of 48,563 tons of lead and 4,994,338 fine ounces of silver of value £A1,381,344.

The New North Mt. Farrell, to the end of 1956, has treated 206,548 long tons of ore for a recovery of 31,858 tons of lead and 3,636,248 ounces of silver of total value £A1,973,117. Table 1 gives the annual production and value for the New North Mt. Farrell Mine since mining started.

Table 1.

Year	Ore Long Tons	Lead Long Tons	Silver Ozs. fine	Value £A
1934	5,453 slimes 8,265	1096	129,657	24,262
1935	7,743	1201	144,393	35,891
1936	10,248	1634	176,618	45,024
1937	8,950	1519	169,912	52,074
1938	10,800	1715.3	183,589	42,576
1939	13,738	2366	249,721	61,467
1940	17,198	4067	468,081	146,972
1941	16,537	2856	335,352	110,662
1942	10,840	1799	207,058	66,704
1943	9,648	1659	193,070	61,748
1944	7,683	1188	143,640	44,782
1945	7,116	1161	136,390	56,266
1946	8,852	1167	134,450	70,392
1947	9,584	1222	140,585	73,765
1948	7,565	765	82,320	55,743
1949	6,982	747	77,300	90,880
1950	6,902	894	94,040	118,852
1951	6,961	863	99,255	182,618
1952	6,805	1113	135,637	220,384
1953	6,282	1132	145,863	171,545
1954	5,778	837	98,483	127,183
1955	4,103	451	47,143	68,467
1956	3,605	406	43,691	44,860
Total	206,548	31,858	3,636,248	1,973,117

GEOLOGY OF THE FIELD

GENERAL OUTLINE

The principal rock types are massive pyroclastics, slates and tuffs, belonging to the Dundas Group of middle and upper Cambrian age. To the east this group is overlain by the Ordovician Owen Conglomerate which forms the prominent Mt. Farrell ridge.

The general term 'massive pyroclastics' is given by the E.Z. Coy. to a massive group of agglomerates, lavas and tuffs. At Tullah they tend to be coarse grained, highly felspathic rocks.

The slates and tuffs are interbedded with the slates predominant near the massive pyroclastics and mostly tuffs to the east. In places slaty cleavage has not been well developed in the slates, the rock type being a tuffaceous claystone, but generally the cleavage is strongly developed. The slates are grey or black, and fine grained. The tuffs are chloritic and schistose with quartz fragments up to one quarter of an inch in size.

Ward and Henderson considered some of these lava flows and tuffs to be intrusive felspar porphyries, but Carey and the E.Z. Coy. believe them all to be flows and tuffs.

STRUCTURE

The structural geology has not yet been satisfactorily interpreted.

The slates and tuffs strike about 350° magnetic and dip 55° to 70° west. Bedding is mostly obscured by cleavage, but on evidence of current bedding in the uncleaved tuffaceous claystones, Carey believes the slates and tuffs are overturned. The E.Z. Coy. hold they are right way up. The slaty cleavage strikes slightly west of north and dips about 70° W.

The contact of massive pyroclastics and slates is strongly faulted. The contact strikes 10° magnetic and dips 65° W. The main lode fractures appear to strike and dip parallel to this contact.

A series of minor faults striking N 60° W cut through Mt. Farrell.

In the southern part of the area (Plate 1) the Murchison River takes a sudden turn to a 210° direction for half a mile. From aerial photographs this appears to be the northern extension of a major fault.

ECONOMIC GEOLOGY

The ore bodies are fissure veins in a shear zone, in the slates and tuffs, within a few hundred feet of the massive pyroclastic boundary. An exception to this is the ore occurrence at the Murchison Mine. The major lodes are along two parallel fractures with minor branch lodes along breaks intersecting the main fractures at acute angles. The best mineralisation is found at the intersections of fractures.

The two major lode channels, the Main Lode and Quartz-Footwall Lode strike north to 10° magnetic and dip 60° to 65° west. Branch lodes strike at 17°, 35° and 170° magnetic and dip about 60° W.

Mineralisation is galena, sphalerite, chalcopyrite, pyrite and minor tetrahedrite in a quartz, siderite and crushed wall rock gangue. A seam of fault clay often up to one foot wide may form one of the walls of a lode; the footwall of the Quartz-Footwall Lode may have a quartz vein up to 2 feet wide. Galena is the most abundant metallic mineral; it occurs both coarsely crystalline and dense and fine grained in veins up to several feet wide of almost pure galena, or it may be disseminated through lode material.

The country rock is both slate and tuff. In the New North Mount Farrell mine tuff was the host rock where the best ore shoot mined to date was found on one and two levels north. This is the only place in this mine where the shoots attained any width (up to 40 feet wide for restricted lengths). The lower levels are in slate. The country near the lodes has been crushed and sheared and is often very contorted. It has not been hydrothermally altered but has minor veinlets of siderite and quartz.

Very little is known about the North Mount Farrell lodes; Ward reports widths of up to 35 feet in the No. 4 Adit level and higher up. Ten level has an average width of about 4 feet. Ward also states the lodes above No. 4 adit level are in slate.

Grade of ore can only be determined by metal recovered from total past production. Allowing 10% dilution, and for a loss of 0.5% Pb and 1 oz. of Ag in the tailings, the North Mount Farrell lodes would have averaged about 13.5% lead and 14 ounces of silver per ton. Grade of the New North Mt.Farrell ore is 17.5% lead and 20 ozs Ag per ton. Only argentiferous galena is recovered in the treatment although the manager says the ore may average 2-3% Zn and 0.5% Cu.

There may be some zoning of galena and sphalerite. Sphalerite appears to be concentrated at the extremities of ore shoots.

Faulting has taken place since the lodes were emplaced but has not displaced the lodes to any extent and has had little effect on mining. Most appear to be strike faults.

The ore shoots pitch south, mostly at about 70°.

DEVELOPMENT

NORTH MOUNT FARRELL MINE

The North Mount Farrell mine is now inaccessible. It is filled with water from six to ten levels. An internal three compartment shaft connects No. 4 adit level and all levels to nine. A three compartment shaft was sunk from the surface just before the mine closed and opened up ten level.

The main lode fissure, along which is localized most of the ore at the New North Mt. Farrell mine, does not extend to, or has not been mineralized at the North Mt. Farrell. The major lode at the latter mine seems to be along the quartz-footwall channel of the New North Mt. Farrell. Four lodes were worked in the North Mt. Farrell mine.

No. 1 lode had a strike of 35° magnetic and dipped about 60° west. Ward reports it was up to 35 feet wide with 240 feet length of payable ore on No. 4 adit level. No longitudinal projection is available, but the lode appears to have been driven on only at No. 3 and No. 4 adit levels and one level.

No. 2 lode had a strike of 17° magnetic and dipped at 50° west from No. 4 adit level to two level and then dipped 85° west until it joined No. 3 lode with a south pitching intersection. The width of the lodes is not known. A longitudinal projection (Plate 5A) shows stoping, but it does not show stoped out sections above No. 4 adit level. Ward reports stopes were carried to the surface above No. 2 adit for a length of 750 feet. He also reports stopes 400 feet long between Nos. 2 and 3 adits, and 250 feet long between Nos. 3 and 4 adits. The longitudinal projection shows stoping from No. 4 adit to six level where the lode apparently joined No. 3 lode. The ore shoot pitched south at about 70°.

No. 2A lode had a strike of 10° magnetic and dipped 75° west. A longitudinal projection (Plate 5A) shows stoping between one and two levels, and minor stoping between two and three.

No. 3 lode is the principal lode worked at the North Mt. Farrell mine. It strikes magnetic north and dips 60° west. It has been continuously stoped from surface to ten level but the longitudinal projection (Plate 5B) gives little information on stoping below seven level. The ore shoot pitches about 70° south. Stoping above the intermediate drive from the winze sunk below 10 level south produced unpayable ore but as the lodes on the whole are patchy this may be only a poor section.

Ward reports that above No. 4 adit the lode is 15 to 22 feet wide with a brecciated zone a further 6 feet wide on the footwall. The footwall is a wall of pug, but no well defined hanging wall is present.

NEW NORTH MOUNT FARRELL MINE

(a) General

This mine has been worked since 1933. The main three compartment shaft runs from the surface to seven level and an internal two compartment shaft from seven to nine levels. Nine level is still being opened up.

Three lodes have been worked but almost all the production has come from the main lode. The main lode strikes north to 10° magnetic and dips 65° to 80° west. Mineralisation in the main lode channel has been patchy and three shoots have been worked (Plate 7).

The best shoot was found north of the shaft between one and five levels. This shoot has a maximum level length of 400 feet, a maximum breadth of 300 feet, and pitch length of 700 feet. Between one and two levels, where a branch lode joined the main lode, very good ore was found up to 45 feet wide for a length of 20 feet or so. Below five level the shoot has a maximum level length of 90 feet. Average

width above five level would be 4 to 5 feet, and below it only about 2 feet. The pitch is to the south at about 75°.

Another shoot was worked south of the shaft from the surface to seven level. Too much unpayable driving is necessary to mine below seven level, so it has been left. Pitch length is 1100 feet with a maximum breadth of 130 feet and maximum level length of 340 feet. Average width would be 2 to 3 feet. The ore shoot pitches south at about 35°.

The third shoot occurs immediately south of the main shaft and has been stoped from above five to eight level. A stope is now being opened up between eight and nine levels. Pitch length of this shoot so far is 450 feet with a maximum breadth of 260 feet and a maximum level length of 280 feet.

The quartz-footwall lode strikes north to 10° magnetic and dips 45° west from the surface to four level and then at 75° west. Stoping has only been done in three small and widely separated stopes. Maximum stope length has been 150 feet and maximum height 30 feet.

Only one branch lode has been stoped. This was stoped between three and four levels for a level length of 300 feet. A little intermittent stoping was carried out below four level.

(b) Mill

The mill is in poor condition. It is capable of treating approximately 8 tons of ore an hour. Bulk head assays of the ore during 1956 have approximated 12% lead and 14 ozs silver per ton, while bulk tail assays averaged 0.6% lead and 1.2 ozs silver. The bulk assays are taken over a fortnightly period. A fortnightly bulk assay is also taken of the concentrate and during 1956 this averaged 60.5% lead, 13.6% zinc and 66 ozs silver per ton. Mine assays of the concentrate check closely with assays done on it by the buyers in America.

The flow is as follows :-

Ore → bin → jaw crusher → No. 1 elevator → vibrator (fines less than $\frac{3}{8}$" diameter pass through). The coarse → small rolls → vibrator again.

Fines → No. 2 elevator → No. 3 elevator → hopper → ball mill → pump → drag classifier → float (8 cells). The last 4 boxes → float again.

The first 4 boxes of the float → pump → refloat → filter → hopper and are railed to Burnie for shipment to America.

Aerofloat 15 is used for the flotation process.

MOUNT FARRELL MINE (Plate 2)

Little is known about this mine which consists of two adits. Ward reports the main lode (No. 3 lode of North Mt. Farrell) strikes from 9° to 25° magnetic and dips 60° west. The lode is 2 to 3 feet wide with fair ore and a well defined footwall.

Further east a massive quartz vein occurs. The footwall of this vein is very vuggy and these have been filled with galena and siderite to give 'bunches' of very good ore.

DUTTON'S WORKINGS (Plate 2)

These workings are the most southerly on the Farrell line of lode. Two adit levels have been driven and a connecting rise put through. The lode strikes 10° to 15° magnetic and dips 65° west. The lode channel is well defined averaging 5-6 feet wide with quartz, carbonates, and galena. A little underhand stoping has been done.

The E.Z. Coy. investigated these workings and put down 9 diamond drill holes (M.P's 33, 35, 37, 38, 43, 44, 70, 71 and 88) to test the lodes at depth with negative results. Drill logs are appended (Appendix 1) and positions of the holes are shown on the plan 1" = 400' (Plate 2).

MURCHISON MINE

The Murchison Mine has been worked from an open cut and three adit levels. The E.Z. Coy. examined this mine and tested the lode at depth with 4 diamond drill holes with negative results.

Mapping by G. Whitten of the E.Z. Coy. showed a 70 foot wide band of tuff in slate. The tuff strikes magnetic north and dips 70° W. The lode strikes 15° magnetic and dips vertically. Values seemed to be confined to the tuff even though the fracture in which mineralisation was localised continued into the slate.

A lens of ore 135 to 145 feet long and 9 to 11 feet wide has been worked for a shallow depth.

GEOPHYSICAL WORK

Geophysical surveys were done north of the New North Mt. Farrell mine for the E.Z. Coy. by L. Richardson.

Over the New North Mt. Farrell workings a pronounced self-potential anomaly (-250 millivolts) was found. A series of anomalies were found to the north; the strongest had a magnitude of -400 millivolts and one in line with the new North Mt. Farrell lodes -150 millivolts. These were drilled by the E.Z. Coy. (M.P's 86 and 87) with negative results, only pyritic slate being found.

To the east of the New North Mt. Farrell Mine, R. Midson, the manager of the Farrell Mining Coy., believes he has found gossanous material which may indicate a lode. He has taken out S.P.L. 287 to cover the area. Geophysicists of the Bureau of Mineral Resources are expected late in January to carry out a geophysical survey where the 'gossanous' material was found. I examined this material and believe it to be a ferruginous duricrust deposit and not the gossan of a lode.

DIAMOND DRILLING

On the Mt. Farrell Field twenty-seven surface diamond drill holes, totalling over 11,000' of drilling, have failed to find economic mineralisation. The locations of these holes are shown on Plate 2 and cross sections along holes M.P. 86, 87, 88, 71, 28, 29 and 30 are shown on Plates 3A, 3B, 3C, 3D, 3E and 3F.

The E.Z. Coy. put down 9 holes near Dutton's workings, 4 at the Murchison mine, 2 north of the New North Mt. Farrell and one (M.P.89) near the massive pyroclastic boundary west of Dutton's workings.

The Farrell Mining Coy. drilled 15 surface holes. Thirteen tested the Farrell line of lode from Dutton's workings to the Mt. Farrell workings without success. Two were put down to test reported lodes in the massive pyroclastics and went through these rocks all the way.

The Tasmanian Department of Mines drilled 4 holes (1 to 4N) to test the lode channels north of the New North Mt. Farrell with negative results.

Logs of drill holes of the Farrell Coy. and the Mines Department are poorly kept and little reliance can be placed on rock types. However, they failed to find economic mineralisation.

Full records are available

Several thousand feet of underground drilling has been done on the New North Mount Farrell Mine. No new lodes were found.

ORE RESERVES

NORTH MOUNT FARRELL MINE

On ten level north of the shaft 135 feet of payable (i.e. payable in 1930) ore of average width 4 feet was exposed. South of the shaft the lode appears to have been patchy but payable for a continuous length of 330 feet with lode width varying from 2 to 7 feet. I have taken an average width of 4 feet.

Length	Width	Length x Width
135'	4'	540'
330'	4'	1320'
465'		1860'

Tons per vertical foot = $\frac{465 \times 4 \times 1}{10}$ = 186.

Inferred ore below ten level is 186 tons per vertical foot of payable ore.

NEW NORTH MOUNT FARRELL MINE

Proved Ore :-

Main Lode South of shaft between four intermediate level and three levels	= 480 tons good grade ore.
Main Lode, between 6 and 7 levels, south of shaft (00 to 100 N)	= 280 tons good ore
Main Lode, between 8 and 9 levels, south of shaft (600 N to 700 N)	= 470 " fair "
Quartz-footwall lode, between 5 and 6 levels (100 N)	= 540 " " "
Total proved ore	=1770 tons payable ore.

Possible Ore (i.e. exposed on levels only).

Below eight level, north of shaft) = 3 lengths of ore totalling 45 tons per vertical foot.

Above and below nine level north of shaft are) 4 lengths of payable ore totalling 12 tons per vertical foot.

Below seven level south (100N) is -) 1 length of payable ore totalling 15 tons per vertical foot.

Total possible ore = 72 tons per vertical foot.

CONCLUSIONS

The failure of diamond drilling and driving to find payable ore along the strike, and the character of the shoots at depth in the mines does not give much hope of finding sufficient ore at Tullah to establish a mine.

B.J.Drew
Geologist.

Zeehan,
31st January, 1957.

APPENDIX

LOGS OF SURFACE DIAMOND DRILL HOLES AT TULLAH

SURFACE DIAMOND DRILL HOLES OF E.Z. COY. OF AUST. LTD.

No. : M.P.28

Co-ordinate Position : 9210'S 590'E

Reduced Level : 907'

Direction : 80° 26' magnetic

Angle : -29°

Length : 403'

Object : To test below No. 3 level for the continuation of the Murchison Lode.

Description of core

0 - 35'	Predominantly slate
	7'- 7½' Tuff
	7½' - 11' Traces disseminated pyrite
	11' - 15' Tuff bands up to 4" wide
	19' - 21' Tuff
35'-61½'	Predominantly tuff.
	45½' - 53' Irregular veins of calcite
	45½' -46½' Slate
	51½' -53' Slate bands.
	53' -55½' Zone showing vuggy and massive quartz in both slate and tuff.
	55½' -56½' Slate
	56½' -61½' Irregular calcite veinlets.
61½' - 184'	61½' -184' Predominantly slate
	61½' - 91' Irregular calcite veinlets
	91 -92½' Tuff
	92½' -105' Small calcite veinlets, some quartz.
	105' -184' Calcite veinlets containing traces pyrite.
	165' -184' Bedding contorted - some slickenside.
184' - 203'	Interbanded tuff and slate. Tuff slate. Fewer quartz carbonate veinlets.
203' - 208¾'	Predominantly slate. Small calcite veinlets with traces of pyrite.
208¾'- 217'	Predominantly tuff. Veinlets contain no pyrite.
217' - 232'	Predominantly slate. Veinlets contain traces of pyrite.
232' - 244½'	Predominantly fine grained tuff. Irregular quartz carbonate veins.
244½'- 253'	Predominantly slate. Minute faults at 34° to core.
253' - 256½'	Fine grained tuff.
256½'- 260½'	Slate.
260½'- 262'	Tuff.
262' - 263¼'	Slate.
263¼'- 265½'	Fine-grained tuff.
265½'- 290'	Interbanded tuff and slate; Tuff = slate.
290' - 312'	Predominantly slate - occasional streaks of pyrite.
312' - 312½'	Massive fine grained pyrite and traces of disseminated coarsely crystalline sphalerite.

SURFACE DIAMOND DRILL HOLES OF E.Z. COY. OF AUST. LTD.
Description of core (Cont'd.)

312½' - 314¾'	Massive coarse grained high grade lead zinc ore.
314¾' - 316¼'	Disseminated fine-grained pyrite and traces disseminated coarse grained sphalerite in quartz carbonate gangue.
316¼' - 354'	Medium grained tuff. At 323'- 3" Quartz carbonate vein. Traces disseminated fine grained sphalerite. At 330' - 3" Quartz carbonate vein. Traces disseminated coarse grained sphalerite.
354' - 355'	Slate.
355' - 362½'	Medium grained tuff.
362½' - 381'	Slate.
381' - 383'	Tuff. N.B. 381' - 384' Core rec. = 6"
383' - 393'	Slate.
393' - 403'	Tuff.

Assays

	Amt. of Core	Pb. %	Zn %	Fe %	Cu %	Ag Oz.	Au dwts.
312'0" - 314'9"	2'8"	10.6	22.4	0.43	-	18.2	0.8
314'9" - 316'3"	0'5"	1.0	5.2	0.26	-	1.9	0.1

Bore Hole Survey Data

Feet	Dir'n.	Angle
0	80½°	- 29°
100		- 26°
200	81°	- 25°
300	81½°	- 25°

No. M.P.29

Co-ordinate Position : 9210'S 590'E

Reduced Level : 906'

Direction : 80° 26' magnetic

Angle : -51°

Length : 373'

Object : To test for mineralization below that exposed in M.P.28

Description of Core

0 - 34½'	Predominantly slate. 18½ - 19¾ fine-grained tuff.
34½' - 60½'	Predominantly tuff. 41'- 42'Slate. 46⅓' - 49½' Slate : 2" Quartz at 47'. 53¾' - 54½' Slate.
60½' - 188'	Predominantly slate. At 61' - 4" Quartz vein.

SURFACE DIAMOND DRILL HOLES OF E.Z. COY. OF AUST. LTD.
Description of core (Cont'd.)

188'	- 203½'	Tuff with narrow bands of slate.
203½'	- 213'	Slate with narrow bands of tuff.
		At 204' - 1½" quartz vein.
213'	- 224'	Fine grained tuff.
224'	- 233¼'	Predominantly slate.
233¼'	- 250'	Predominantly fine grained tuff.
250'	- 314'	Predominantly slate.
		300 - 314 Evidence of shearing.
		308 - 309 Very strongly sheared Quartz calcite vein containing traces disseminated pyrite.
314'	- 318'	Tuff.
318'	- 362½'	Medium grained tuff.
		At 343' - 2" calcite veinlet.
362½'	- 373'	Slate.
		362½' - 364' Zone of quartz carbonate veinlets.

Clinostat Survey

0'	-51°
100'	-45°
200'	-37⅛°
300'	-31°

No. : M.P.30

Co-ordinate Position : 9315'S 620'E

Reduced Level : 908'

Direction : 90° magnetic

Angle : -44°

Length : 411'

Object : To test below No. 3 level for the continuation of the Murchison Lode.

Description of Core :

0'	- 40'	Predominantly slate.
		39' - 40' Quartz vein.
40'	- 57'	Predominantly fine grained tuff.
57'	- 169'	Slate.
		84½'- 92' Tuff.
		130 - 130½' Quartz vein.
		138¼' - 138¾' Quartz vein.
		At 156' - 2" quartz veinlet.
169'	- 246'	Mixed slate and fine grained tuff.
		At 179') 6" of quartz.
		187')
246'	- 294'	Mostly slate - some fined-grained tuff
		280' - 286½' Sheared zone
		288' - 289' Pyrite veinlets
		290' - 294' Silicified.
		At 292' Carbonate veinlets containing pyrite.
294'	- 305'	Fine to medium-grained tuff.
		At 295¼'; 296'; 297¼'; visible pyrite in quartz veinlets.

SURFACE DIAMOND DRILL HOLES OF E.Z. COY. OF AUST. LTD.

294' - 305' (Cont'd.)	At 298½', 3" of massive fine grained pyrite and coarse grained sphalerite in quartz carbonate veinlet - minor zinc ore. At 299'; 301; 1" of massive fine grained pyrite in quartz veinlets. Visible sphalerite. At 303½' - 2" quartz carbonate containing visible sphalerite.
305' - 341½'	Medium to coarse grained tuff. 305' - 305¼' Quartz carbonate veinlet containing pyrite. 306¾', 307 } 1" of pyrite in quartz veinlets. 310½' Quartz veinlets. 311' - 311½' Carbonate veinlet containing pyrite.
341½' - 368'	Slate.
368' - 387½'	Medium to coarse grained tuff. 370' - 371¼', At 373', 376' - 377' } Tuff has appearance of a conglomerate - see specimens.
387½' - 401½'	Slate.
401½' - 407'	Tuff.
407' - 411'	Slate.

Clinostat Survey.

0'	-44°
100'	-36¾°
200'	-32¼°
300'	-26¾°

No. : M.P. 32

Co-ordinate Position : 8875S 970E

Reduced Level : 1019'

Direction : 270° magnetic

Angle : -60°

Length : 361'

Object : To test the Murchison tuff band in the region of the Murchison fissure for the existence of other ore lenses arranged "en echelon".

Description :

0' - 305'	Coarse grained tuff. at 25' Quartz veinlet at 26' 2" " " at 26½', 2" quartz veinlet at 28', 2" " " containing traces of sulphides. 29'-30½'; 31½'-32'; 33'-35'; at 36'; 40½'-41½'; at 70'; quartz veinlets. 78' - 78½' quartz carbonate veinlet. Traces galena and sphalerite.

SURFACE DIAMOND DRILL HOLES OF E.Z. COY. OF AUST. LTD.

0' - 305' (Cont'd.)	At 82', 4" quartz carbonate Veinlet. Visible galena. At 92¼', quartz veinlet. At 95' " carbonate veinlet. 99' - 102'; at 105', quartz veinlets assimilating tuff. 113' - 113½' quartz veinlet. At 115', traces pyrite in carbonate veinlet. At 116' & 120' chlorite dykes. At 131¼'; 136½' quartz vein. 144' - 145' quartz carbonate veinlets. At 163', 2" quartz veinlet. 197½' - 198¼' quartz carbonate veinlet containing coarse-grained galena and sphalerite. 271' - 272' quartz vein. 276' - 276½' " "
305' - 312'	Medium-grained tuff.
312' - 315'	Coarse-grained tuff. 313½' - 314' carbonate veinlets. Traces galena.
315' - 318'	Medium grained tuff.
318' - 331'	Fine-grained tuff - silicified.
331' - 336'	Slate.
336' - 337'	Fine-grained tuff.
337' - 361'	Slate - traces pyrite.

Assays

	Amt. of Core	Pb. %	Zn. %	Fe. %	Cu. %	Ag. %	Au. %
197'6" - 198'3"	8"	6.7	6.8	-	-	3.7	1.6

Clinostat Surveys

0'	-60°
50'	-59°
100'	-57°
150'	-52½°
200'	-47°
250'	-43½°
300'	-39½°
350'	-35°

No.	M.P.33
Co-ordinate Position :	5250'S 225'W
Reduced Level :	914'
Direction :	90° magnetic
Angle :	-60°
Length :	256'
Object :	To test for lead zinc mineralisation below the quartz outcrop in Block K-239.

SURFACE DIAMOND DRILL HOLES OF E.Z. COY. OF AUST. LTD. (Cont'd.)

Description of Core :

0' - 169'	Slate 20½' - 24½'. 1' of core - all quartz. At 39½' carbonate veinlet. 41' - 44½' Quartz carbonate veinlet traces pyrite at 43' 49' - 54'; 57' - 58' Quartz veinlet. At 58', 1" of massive fine grained pyrite. 60' - 75', Quartz veinlets. At 83', ⅛" pyrite veinlets. At 84', 2" Carbonate veinlet. At 114', Traces pyrite. 123' - 130' quartz vein - barren.
169' - 201'	Medium grained tuff. At 173'; 172', 181'; 184'; 185' 2" of quartz. 189' - 190' Slate. At 192' 2" of quartz.
201' - 256'	Tuff - inclined to be fine-grained.

Clinostat Survey

50'	- 56°
100'	- 51½°

No: M.P.35

Co-ordinate Position : 5250'S 225'W

Reduced Level : 914'

Direction : 90° magnetic.

Angle : - 85°

Length : 232'

Object : To test Daly's Lode for mineralisation below M.P.33.

Description of core :

0' - 180'	Slate. 41' - 43' Sheared carbonate veinlets. Some galena. 46' - 47' } Carbonate veinlets. 48' - 50' } 57' - 61' Sheared carbonate veinlets. Traces galena. At 64', Traces galena in veinlets. 80' - 93' Quartz vein Visible fine grained pyrite & galena. 99 - 102, Quartz vein, visible pyrite. At 107 Quartz veinlet. 112' - 114' Quartz veinlet, visible pyrite. At 143' 2" Quartz carbonate veinlet. 143¾' - 144½' Quartz veinlet.

SURFACE DIAMOND DRILL HOLES OF THE E.Z. COY. OF AUST. LTD.(Con'td.)

180' - 232' Tuff
2" quartz at 232'.

Assay

	Amt. of Core	Pb %	Zn. %	Fe %	Cu. %	Ag. Ozs	Au. dwts.
57'0" - 61'0"	2' 6"	2.9	Nil	-	-	2.0	0.6

Clinostat Survey

0'	-85°
50'	-82°
100'	-78°
150'	-73°

No. M.P.37

Co-ordinate Position : 5450'S 400'W

Reduced Level : 857'

Direction : 90° magnetic.

Angle : - 45°

Length : 284'

Object : To test Daly's Lode for mineralisation south of M.P.33 and M.P.35.

Description :

0' - 30' Slate.
20' - 25' } ⅛" carbonate veinlets -
29' - 30' } very contorted.

30' - 105' Fine grained tuff.
30' - 31' Minor galena.
31' - 40½' Quartz carbonate veinlets.
At 42' } 2" quartz carbonate veinlets.
At 53' }

105' - 284' Slate.
110' - 115' Quartz carbonate veinlets.
At 118' " " " containing pyrite.
134' - 185' Zone of quartz carbonate veinlets - Much shearing. Traces pyrite throughout.
198' - 199' } Quartz carbonate veins.
208' - 209' }
All slate from 185' contains disseminated fine grained pyrite in thin crusts in the bedding plane.

Clinostat Survey

0'	-45°
100'	-40°
200'	-31½°
280'	-26°

SURFACE DIAMOND DRILL HOLES OF E.Z. COY. OF AUST. LTD. (Cont'd.)

No. : M.P.38

Co-ordinate Position : 5650'S 450'W

Reduced Level : 998'

Direction : 90° magnetic.

Angle : - 45°

Length : 90'

Object : To test Daly's Lode South of M.P.33, M.P.35, and M.P.37.

Description of core :

0'	- 35'	Cemented work.
35'	- 90'	Slate. At 60', 2" quartz veinlet. 65-66' Quartz vein. At 77' 2" quartz veinlet. M.P.38 was stopped at 90', only 7'6" of core having been recovered. A bad cave at 40' necessitated casing the hole past this point, but during this operation a further cave blocked the hole completely. As pitting had delineated the tuff band more accurately M.P.38 was replaced by M.P.43 which was drilled to intersect the lode channel where it crossed the tuff band.

No. M.P.43

Co-ordinate Position : 5845'S 470'W

Reduced Level : 833'

Direction : 90° magnetic.

Angle : - 50°

Length : 350'

Object : To test Daly's Lode South of M.P.33, M.P.35 and M.P.37.

Description of Core :

0'	- 22'	Wash
22'	- 35'	Slate. At 30' 3" of quartz. 34' - 34½' quartz.
35'	- 39'	Tuff.
39'	- 50'	Slate.
50'	- 54'	Tuff. 50' - 51 Quartz vein. At 54' 2" quartz veinlet.

SURFACE DIAMOND DRILL HOLES OF E.Z. COY. OF AUST. LTD. (Con'd.)

54'	- 125'	Slate. 55½' - 56½'; 64' - 66'; 74' - 75¼' Quartz vein 85' - 95'; 115' - 125' Carbonate veinlets.
125'	- 159'	Tuff. 139' - 140' Carbonate veinlet. At 151' 2" of quartz.
159'	- 350'	Slate. 163' - 164'; 169' - 170' Quartz veinlets. 170' - 170½'; 193' - 215' Quartz carbonate veinlets; visible pyrite and galena. 220' - 229' Quartz veinlets. 240' - 241' Carbonate veinlets. 251' - 252'; 254 - 273' carbonate veinlets. At 298' quartz veinlets 300' - 301' quartz.

Clinostat Survey

0'	-50°
100'	-44¾°
200'	-33½°
300'	-29°

No. : M.P.44

Co-ordinate Position : 5240'S 670'W

Reduced Level : 869'

Direction : 90° magnetic

Angle : - 60°

Length : 209'

Object : To test the Farrell Line of Lode, South of Dutton's Workings.

Description of Core :

0'	- 20'	No core
20'	- 53'	Tuff
53'	- 68'	Silicified tuff At 58' visible galena.
68'	- 76'	Slate. 68' - 69' Carbonate veinlets.
76'	- 164'	Sandy tuff or sandstone with slate bands. 112' - 114' carbonate veinlets. At 116' " " 119' - 121' Quartz vein At 122' visible galena. 137' - 138' Carbonate veinlet. 141' - 142½' quartz vein. 142½ - 152' Zone of carbonate veinlets Farrell Line of lode.
164'	- 195'	Slate. At 167' ¼" carbonate veinlet. At 169' 1" quartz veinlet. At 170' 3" carbonate veinlet - a possible fault.

SURFACE DIAMOND DRILL HOLES OF E.Z. COY. OF AUST. LTD. (Contd.)

164' - 195' (Cont'd.)	178½' - 179' Quartz vein. At 192' 3" quartz veinlet. 194' - 195' quartz vein.
195' - 196'	Tuff
196' - 208'	Slate. At 199' 3" of quartz) At 200' 6" of quartz) Quartz lode. 201½'-203' quartz vein)

Clinostat Survey

0'	- 60°
100'	- 48¼°
200'	- 42¼°

Result

Intersected Farrell Line of Lode and a quartz lode both of which did not contain commercial mineralisation.

No. M.P.70

Co-ordinate Position : 5175'S 1010'W

Reduced Level : 859'

Direction : 100° magnetic

Angle : - 45°

Length : 546'

Object : To test the Farrell Line of Lode between M.P. 44 and the North Mt. Farrell Co.'s holes to the North, but at a greater depth.

Description of Core :

0' - 176'	Massive pyroclastics. 0' - 40 Pinkish variety from 40 Rock gets lighter coloured, is brecciated and then silicified. 158'-160½' Signs of bedding. 163'-164' Bedded M.P. 164'-164½' Slaty and contorted.
176' - 179'	Fault Breccia. A zone of M.P. fragments ⅛" and ½" in size, arranged subparallel and set in a slaty ground-mass.
179' 240'	Bedded grey and black coloured slates - not very fine grained. At 203' 2" brecciated zone. 204' - 225' Slate is coarser. At 221' 2" brecciated zone. 226½' - 227) Slate contains 230' - 231½') silicified bands. 237' - 240' Slate is coarser.

SURFACE DIAMOND DRILL HOLES OF E.Z. COY. OF AUST. LTD. (Cont'd.)

240'	- 245'	Fuschite sericite schist.
245'	- 264½'	Slate. 252' - 253' Silicified bands. 253' - 255' Sandy or tuffaceous. 260' - 261' Quartz carbonate vein - barren. 262' - 264' Zone of carbonate veinlets. At 264' 3" quartz vein.
264½'	- 399½'	Slaty sandstone or tuffaceous slate. 284' - 285' Brecciated. At 293' 2" carbonate veinlet. 296' - 297'; 298' - 298½'; 300 - 301'; 304½' - 306'; 307 - 307½'; Zones of carbonate veinlets. 314' - 315' Zone of carbonate veinlets - possible fault. 328' - 329'; at 333', 339' carbonate veinlets. At 346' 6" carbonate vein. - Possible fault. At 360' Carbonate veinlet.
399½'	- 414'	Mostly fine grained slates. 405' - 406' carbonate veinlets. At 413' 2" carbonate veinlets.
414'	- 445'	Slaty sandstone or tuffaceous slate. 420½' - 421' Brecciated zone. 433' - 433½'; 434½' - 435'; 435½' - 436'; 437' - 437½' Brecciated zones containing carbonate and quartz veinlets. 439' - 440' Quartz vein. 440' - 443' Zone of carbonate veinlets. 443' - 445' Zone of brecciated quartz some carbonates. Visible galena.
445'	- 457'	445' - 457' Tuff. Inclined to be coarse-grained.
457'	- 462'	Black slate. At 457' quartz vein containing pyrite. At 463' visible galena.
462'	- 485'	Tuff.
485'	- 530'	Black slate. 485' - 510' quartz containing pyrite and siderite. At 510', 514', 515', 516', 2" quartz veinlets.
530'	- 546'	Slate, greyer than above. Shows good bedding but is much folded.

Clinostat Surveys

Feet	Dir'n.	Angle
0	100°	-45°
100		-41°
200		-38¾°
300		-32½°
400		-25½°
500		-21¼°

Result The Farrell Line of Lode was represented by the quartz and carbonate mineralization between 433 and 445' and a quartz lode - different from that in the Farrell Mines - was intersected from 485' to 516'. Neither lode channel contained commercial mineralization where intersected.

SURFACE DIAMOND DRILL HOLES OF E.Z. COY. OF AUST. LTD. (Cont'd.)

No.: M.P.71

Co-ordinate Position : 5585'S 1090'W

Reduced Level : 834'

Direction : 100° magnetic.

Angle : -50°

Length : 594'

Object : To test the Farrell Line of Lode South of M.P.70

Description of Core :

0' - 52' Wash

52' - 153' Massive pyroclastics - mostly pinkish variety. Not strongly silicified but becomes more so as the boundary is approached.

153' - 283' Slate.
153' -163' 2' Core recovered.
153' -166' Slate with quartz and carbonate veinlets.
166' - 169' Brecciated zone. Slate and quartz fragments in a slaty groundmass.
169' - 283' Sandy slate or tuffaceous slate.

283' - 288' Fuschite sericite schist.

288' - 388' Sandy or tuffaceous slate.
At 289' 2" quartz carbonate veinlet.
294'-294½' 2" quartz carbonate veinlet.
At 305' 2" quartz carbonate veinlet.
310' - 310½'; 314-314½' quartz carbonate veinlets.
339½'-340½' quartz vein.
343'-344½'; 352-353½'; 354-354½;
356-358'. Zones of scattered carbonate veinlets.
At 363½' 3" carbonate vein containing slate fragments.
366'-366½'; 367-367½'; 369½'-373' Zones of scattered carbonate veinlets.
At 374' quartz vein.

388' - 463' Tuff.
391-395' Sericitic tuff.
399-401' Carbonate vein.
427'-428' Silicified.

463' - 594' Contorted Slates.
463'-484¼' Zone of carbonate veinlets. Visible pyrite and galena.
484¼'-501' Zone of scattered carbonate veinlets.
At 489', 490', 491', 2" carbonate veinlets containing fragments of slate.
At 495, 496½, 497', 2" carbonate veinlets containing traces pyrite.

501' - 504' Zone of carbonate veinlets.
At 542', 545½, 2" carbonate veinlets
562'-563½'; 566-567 quartz vein.
At 575', 2" carbonate veinlet.
576'-578' Quartz veinlet.
At 585' 2" quartz veinlet.

SURFACE DIAMOND DRILL HOLES OF E.Z. COY. OF AUST. LTD. (Cont'd.)

Clinostat Surveys

Feet.	Dir'n.	Angle
0	100	-50°
100		-40°
200		-38°
300		-35°
400		-31½°
500		-27¾°

Result : The Farrell Line of Lode was represented by the carbonate mineralization between 463' and 484¼'. No mineralization equivalent to the quartz lode of M.P.70 was intersected in this hole.

No.: M.P.86

Co-ordinate Position : 4080'N 1050'E

Reduced Level : 1214'

Direction : 122° magnetic.

Angle : -60°

Length : 331.

Object : To test for mineralization below geophysical anomaly centred at 33400N, 8300E.

Description

0'	- 35'	Wash
35'	- 180'	Massive pyroclastics.
180'	- 238'	Tuff.
238'	- 331'	Shaly slates.
		mineralization.
238'	- 284'	Weak disseminated pyrite.
292'	- 307'	Quartz carbonate veinlets and disseminated pyrite.
310'	-	6" disseminated pyrite.

Clinostat Surveys

Feet	Dir'n.	Angle
0	122°	-61°
100		-53½°
200		-44½°
300		-50°

SURFACE DIAMOND DRILL HOLES OF E.Z. COY. OF AUST. LTD. (Cont'd.)

No. M.P.87

Co-ordinate Position : 3280'N 1230'E

Reduced Level : 1350'

Direction : 90° magnetic.

Angle : 48°

Length : 576'

Object : To test for mineralization below geophysical anomaly centred at 32448N. 8330E.

Description :

0'	- 11'	No core.
11'	- 130'	Tuff
130'	- 277'	Slates.
277'	- 337'	Tuff.
337'	- 499½'	Slates.
499½'	- 576'	Tuff.

Mineralization :

273'	- 301'	Quartz carbonate veinlets and veins, with disseminated pyrites occasionally.
313'	- 317'	Quartz carbonate veins and veinlets.
322'	- 337'	Quartz carbonate veins and veinlets with blobs of sphalerite at 324' and occasionally disseminated pyrite.
338½'	- 375'	Weak disseminated pyrite.

Result : Only weak pyrite mineralization encountered.

Clinostat Survey

Feet	Dir'n.	Angle
0	90	-49°
100		-44°
200		-38°

No. M.P.88

Co-ordinate Position : 5280'S 820'W

Reduced Level : 854'

Direction : 280° magnetic

Angle : -65°

Length : 859'

Object : To test for mineralization in the shear zone intersected in drill holes M.P.33 and 35 where it passes into the underlying tuffs.

SURFACE DIAMOND DRILL HOLES OF E.Z. COY. OF AUST. LTD. (Cont'd.)

Description :

0'	- 48'	No core.
48'	- 246'	Tuff
246'	- 255'	Slaty tuff.
255'	- 276'	Tuff.
276'	- 277'	Slate.
277'	- 310'	Tuff.
310	- 324½'	Slates.
324½'	- 356'	Tuff.
356'	- 411'	Slates.
411'	- 449'	Tuffs.
449'	- 456'	Slaty tuff.
456'	- 582'	Tuff.
582'	- 659'	Slates.

Mineralization

98'	- 156'	Quartz carbonate veins with disseminated galena, sphalerite, and pyrites.
204'	- 212'	Quartz carbonate veinlets with disseminated galena and sphalerite.
300'	- 312'	Quartz carbonate veinlets with disseminated blobs of galena and sphalerite. Farrell Lode.
351'	- 383'	Quartz carbonate veinlets. Veinlets with disseminated pyrites - Quartz Lode.
582'	- 609'	Quartz carbonate veins and veinlets with disseminated blobs of sphalerite and disseminated pyrites. Daly's Lode.

Clinostat Survey

Feet	Dir'n.	Angle
0	280	-65°
100'		-60.2°
200'		-54°
300'		-43.2°
400'		-37.6°
500'		-29.7°

Result

The Farrell, Quartz and Daly's Lines of Lode were intersected but none showed economic mineralization.

No. : M.P.89

Co-ordinate Position : 8570'S 1570'W

Reduced Level : 834'

Direction : 90° magnetic

Angle : -65°

Length : 268'

SURFACE DIAMOND DRILL HOLES OF E.Z. COY. OF AUST. LTD.(Cont'd.)

Object : To test for mineralization adjacent to the massive pyroclastic boundary where it is believed to have been faulted.

Description of Core :

0'	- 6'	Sands.
6'	- 90'	Boulders and gravels.
90'	- 265'	Sands and clays.
265'	- 268'	Boulders.
268'		Sands.

Clinostat Survey

Feet	Dir'n.	Angle
0	90°	-65°
100		-62.5°
200		-58.4°

Result.

The hole penetrated only unconsolidated sediments and a few bands of boulders, and had to be abandoned before bedrock was reached.

SURFACE DIAMOND DRILL HOLES OF FARRELL MINING CO. LTD.

No. 1 - S

Co-ordinate Position : 5040'S 675'W

Reduced Level : 886'

Direction : 107° magnetic

Angle : -41°

Length : 231'6"

Object : To cut Dutton's Lode 100' below Dutton's tunnel level.

Description of Core

0	- 32'	Grey siliceous felsite.
32'	- 53½'	Felsites
53½'	- 102'	"
102'	- 224'	Grey slates. At 224' 5" seam of quartz.
224'5"	- 231½'	Dark slates.

Assay

Lode cut at 179' and 15" of core recovered assayed 28% Pb and 25 ozs Ag/ton.

Clinostat Survey

158' -34½°

N.B. These holes were logged by the driller and massive pyroclastic and tuff are both recorded as felsite.

No. 2-S

Co-ordinate Position : 5040'S 675'W

Reduced Level : 886'

Direction : 90° magnetic

Angle : 41°

Length : 200'

Object : As 1-S

Description of Core

0'	- 5'	Felsites
5'	- 12½'	Quartz with a little PbS
12½'	- 104'	Felsites.
104'	- 174'	Grey slates.
174'	- 180'	Lode.
180'	- 200'	Dark slates.

Assay

Lode assayed 5.3% Pb & 6.5 oz. Ag per ton.

Clinostat Survey

104'	-38½°
200'	-34½°

No. : 3-S

Co-ordinate Position : 5010'S 670'W

Reduced Level : 891'

Direction : 107° magnetic

Angle : -60°

Length : 308'

Object : To test quartz band in No. 2 and Dutton's Lodes 200' below tunnel.

Description of Core

0'	- 49'	Felsites.
49'	- 59(?)	Quartz seam (no values)
59(?)	- 182'	Felsites.
182'	- 238'	Grey slates.
238'	- 240'	Lode.
240'	- 308'	Dark slates.

SURFACE DIAMOND DRILL HOLES OF FARRELL MINING CO. LTD. (Cont'd.)

Assay

Lode assayed at 5.8% Pb

Clinostat Survey

200' -32½°

Plotting contacts in the above 3 holes gave the felsites a dip of 71°W.

No. : 4-S

Co-ordinate Position : 4810'S 585'W

Reduced Level : 925'

Direction : 105° magnetic.

Angle : -55°

Length : 213'

Object : To cut lode 100' below Dutton's Tunnel level

Description of Core :

0'	- 95'	Felsites.
95'	- 98'	"
98'	- 170'	Slate.
170'	- (170(+)?)	Lode (No values)
?	- 213'	Dark slates.

Clinostat Survey

148' -43°

No. : 5-S

Co-ordinate Position : 4380'S 440'W

Reduced Level : 1038'

Direction : 110°

Angle : -55°

Length : 173½'

Object : To cut lode at R.L.901'

Description of core

0	- 121'	Felsites, but contact at 121' was not distinct.
121'	- 152'	Slates.
152'	- ?	Lode.
?	- 170'	Slates
170'	- ?	Lode - very broken.

SURFACE DIAMOND DRILL HOLES OF FARRELL MINING CO. LTD. (Cont'd.)

Assay :

No payable values.

Clinostat Survey :

100' -38°

No. 6-S

Co-ordinate Position : 4100'S 370'W

Reduced Level : 1094'

Direction : 106° magnetic.

Angle : -60°

Length : 307'

Description of Core :

220' Main Lode
- very little core in lode channel
- no payable values.

268' Scattered iron carbonate and galena but nothing payable.

Clinostat Survey

200' -45°

No. 7-S

Co-ordinate Position : 4000'S 300'W

Reduced Level : 1111'

Direction : 106° magnetic

Angle : -60°

Length : 308½'

Description of Core :

0' - 114' Felsite.
114' - 249' Slates.
249' - ? Lode channel - no ore.
? - 276'
276' - 279' Eastern Lode - a little galena but not in payable quantities.

Clinostat Survey

200' -38°

SURFACE DIAMOND DRILL HOLES OF FARRELL MINING CO. LTD. (Cont'd.)

No. 8-S

Co-ordinate Position : 3940'S 290'W

Reduced Level : 1117.5'

Angle : -65°

Direction : 106° magnetic

Length : 338½'

Description of Core

0'	- 114'	Felsites.
114'	- ?	Slates.
235'		A little galena
250'		" " "
270'		" " "
		Nothing payable.

Clinostat Survey

100'	-56°
200'	-40°

No. : 9-S

Co-ordinate Position : 3890'S 290'W

Reduced Level : 1127'

Direction : 106° magnetic

Angle : -65°

Length : 313½'

Description of Core

0'	- 60'	Felsites.
60'	- 141'	"
141'		Slates.
263'	- 268'	Splashes of PbS but no payable ore.
313½'		Slates.

Clinostat Survey

100'	-52½°
200'	-42½°

SURFACE DIAMOND DRILL HOLES OF FARRELL MINING CO. LTD. (Cont'd.)

No. : 10-S

Co-ordinate Position : 3750'S 255'W

Reduced Level : 1146'

Direction: 106° magnetic

Angle : -65°

Length : 348½'

Description of Core

0' - 130'	Grey Slates.
130' - 215'	Felsites.
215' - ?	Slates.
At 246') 259')	Splashes of PbS
308' - 321'	Felsite.
321' - 323'	Grey Slate.
323' - 348½'	Black Slate.
At 317') 323') 328')	Splashes of PbS - but nothing payable.

Clinostat Survey

100'	-50½°
200'	-35°

No. : 11-S

Co-ordinate Position : 3350'S 190'W

Reduced Level : 1182'

Direction : 109° magnetic.

Angle : -69°

Length : 315'

Description of Core

0' - 90'	Grey slate.
90' - 172'	Felsite.
172' - 315'	Slate. Grey Slate.

Assay

No values.

Survey

100'	-55°
200'	-36°

SURFACE DIAMOND DRILL HOLES OF FARRELL MINING CO. LTD. (Cont'd.)

No. : 12-S

Co-ordinate Position : 3115'S 75'W

Reduced Level : 1222'

Direction : 107° magnetic

Angle : -65°

Length : 285'

Description of Core

0' - 76'	Felsites.
76' -	Slates.
	Contact at 76' was broken and had a little ore.
- 186'	Slates.
195' - 206'	Lode channel of quartz with splashes of PbS
213)	
250)	A little non-payable ore
257)	257' was quartz lode.
- 285'	Black Slates.

Clinostat Survey

100'	-48½°
202'	-37°

No. : 13-S

Co-ordinate Position : 3790'S 00'W

Reduced Level : 1236'

Direction : 90° magnetic

Angle : -67°

Length : 334'

Object : To test small seam of ore showing in old Mt. Farrell workings.

Description of Core

0' - 70'	Slates.
70' - 158'	Felsites.
158' - 207'	Slates.
207' - 209'	Felsites.
209' - 309'	Slates.
309' - 320'	"
320'	Lode - No ore
	broken ground from 320'-331'
- 334'	

Clinostat Survey

100'	-51½°
200'	-48½°

SURFACE DIAMOND DRILL HOLES OF MINES DEPARTMENT.

No. : 1-N

Co-ordinate Position : 1770'N 600'E

No. : 2-N

Co-ordinate Position : 2050'N 735'E

Apparently information available at Dept of Mines records not seen by Drew. gjp

No. 3-N

Co-ordinate Position : 2250'N 840'E

No. 4-N

Co-ordinate Position : 2525'N 570'E

No further information available on Mines Department Drill Holes.

342

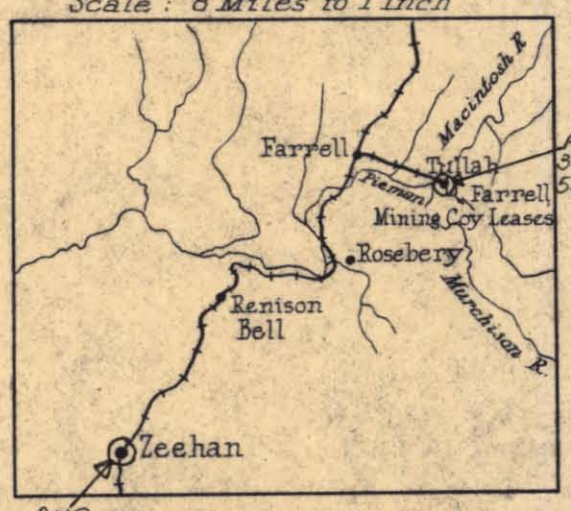
496038

AMG REFERENCE POINTS ADDED

PLATE 1

LOCALITY PLAN

Scale : 8 Miles to 1 Inch



S.P.L. 277
24 Square Miles ±
E.A. HENDERSON (E.Z. Coy.)
in force until ~ 19:12:56

Mackintosh River

Macquarie North

S.P.L. 287
R.D. MIDSON
in force until
29·3·1957

11257-M

11292-M

New North Mt. Farrell Shaft

11065-M

Consolidated Lease
7191-M

TOWN

Treatment Plant

North Mt. Farrell New Shaft

No 4 Adit

9775-M

PIEMAN RIVER

Track

MOUNT FARRELL

Dutton's

Central Mine

10 acres purchased by J. Daly

North Murchison Mine

Murchison Mine

Soil Covered

Old Mill Site

Murchison River

Probable Cambrian

85°
52°
70°
54°
60°
84°

5 cm

LEGEND

NB. Base Plan from Enlarged Aerial Photo Pieman River, Run 6 No 37

- Ordovician - Owen Conglomerate
- Cambrian - Dundas Group - Slates & Tuffs.
- Cambrian - Dundas Group - Massive Pyroclastics.
- Outcrop.
- 11257-M — Mining Leases & Special Prospect Licences.
- Tramway.
- Track.
- Established Boundary ~ Position Approximate
- Inferred Boundary
- Shafts
- Adit Entrance
- 60° — Strike & Dip of Beds
- F — Fault, inferred

RIO AUSTRALIAN EXPLORATION PTY. LTD.		
THE MOUNT FARRELL MINING FIELD		
DATE 1st January '57	SCALE 1 inch = 1320 feet (approx)	
Geologist B.J. Drew	Geophysicist	Plate 1
Draftsman D.J. Lanford	Authority PRP / 7 / 100	


040
496039
S.P.L. 287
EDMIDSON
220 Acres.
11065 - M.
80 Acres.
11257 - M.
20 Acres.
11292 - M.
20 Acres.
Consolidated Lease 7191 M.
165 Acres.
M.L. Applied for
38 Acres.
10 Acres
Purchased by
J. DALY.
North Mt Farrell
New Shaft RL 960'
Button Grass.
Slate
Micaceous Sandstone.
Slate.
Micaceous Sandstone.
Old Mill Site
Geophysical Boundary
Possibly Massive Pyroclastic Boundary
Open Cut
North Murchison Mine.
Murchison Mine
Mostly Slates - some narrow tuff bands
Slates and fine grained rocks
Argillaceous Sandstone
Slate and Tuff
Tuff and Slate
Disseminated Pyrite.
Kitson's Track
MURCHISON RIVER
LEGEND
Massive Pyroclastics.
Tuff.
Slate.
Tuff and Slate interbedded.
Quartz.
Fault.
Geological Boundary (approximate).
Geological Boundary (inferred).
Geophysical Boundary.
Lease Boundary.
Underground Workings.
Adit Entrance.
Vehicle Tracks.
Walking Tracks.
Creeks and Rivers.
Diamond Drill Hole, Collar Position, and Direction.
M.P.71.- E.Z. Coy. Holes; D.D. 1.S.- Farrell Mining Coy. Holes; D.D. 1.N.- Mines Dept. Holes.
RL 800'
Reduced Levels - Based on Assumed R.L. 1000 feet for Collar of New North Mt. Farrell Shaft.
11292-M
Lease Number.
"Grid is Magnetic North"
Datum for Co-ordinates is South-Western corner peg of Lease 11257-M. Datum has assumed Co-ordinates 1300 N, 500 E.
RIO AUSTRALIAN EXPLORATION PTY. LTD.
MT. FARRELL MINING FIELD
SURFACE GEOLOGICAL PLAN
BASED ON E.Z. COY. MINES DEPARTMENT AND FARRELL MINING COY. PLANS
DATE: 21st January, 1957
SCALE: 1 inch = 400 feet.
Geologist: B. J. Drew
Geophysicist:
Draftsman: D. J. Lawford
Authority: P.R.P./7/100
Plate 2
5 cm

041

496040

5 cm

1100E 1200E 1300E 1400E 1500E 1600E 1700E

RL1300'

RL1200'

RL1100'

RL1000'

RL900'

MP86

Alluvial

Quartz Schist

Q

MASSIVE AMPHIBOLITES

TUFF

SLATE

S.P. Anomaly projected 80°S.E.

Disseminated pyrite

Quartz - Carbonate & disseminated pyrite

LEGEND As for Plate 2

RIO AUSTRALIAN EXPLORATION PTY. LTD.

MOUNT FARRELL MINING FIELD

CROSS SECTION OF D.D. HOLE M.P. 86 AFTER E.Z. COY.

Section looking 32°

Coordinate position of collar of hole 4080'N, 1050'E. Reduced level of collar of hole 1214'

DATE

SCALE 1 inch to 40 feet

Geologist B.J. Drew

Geophysicist

Draftsman

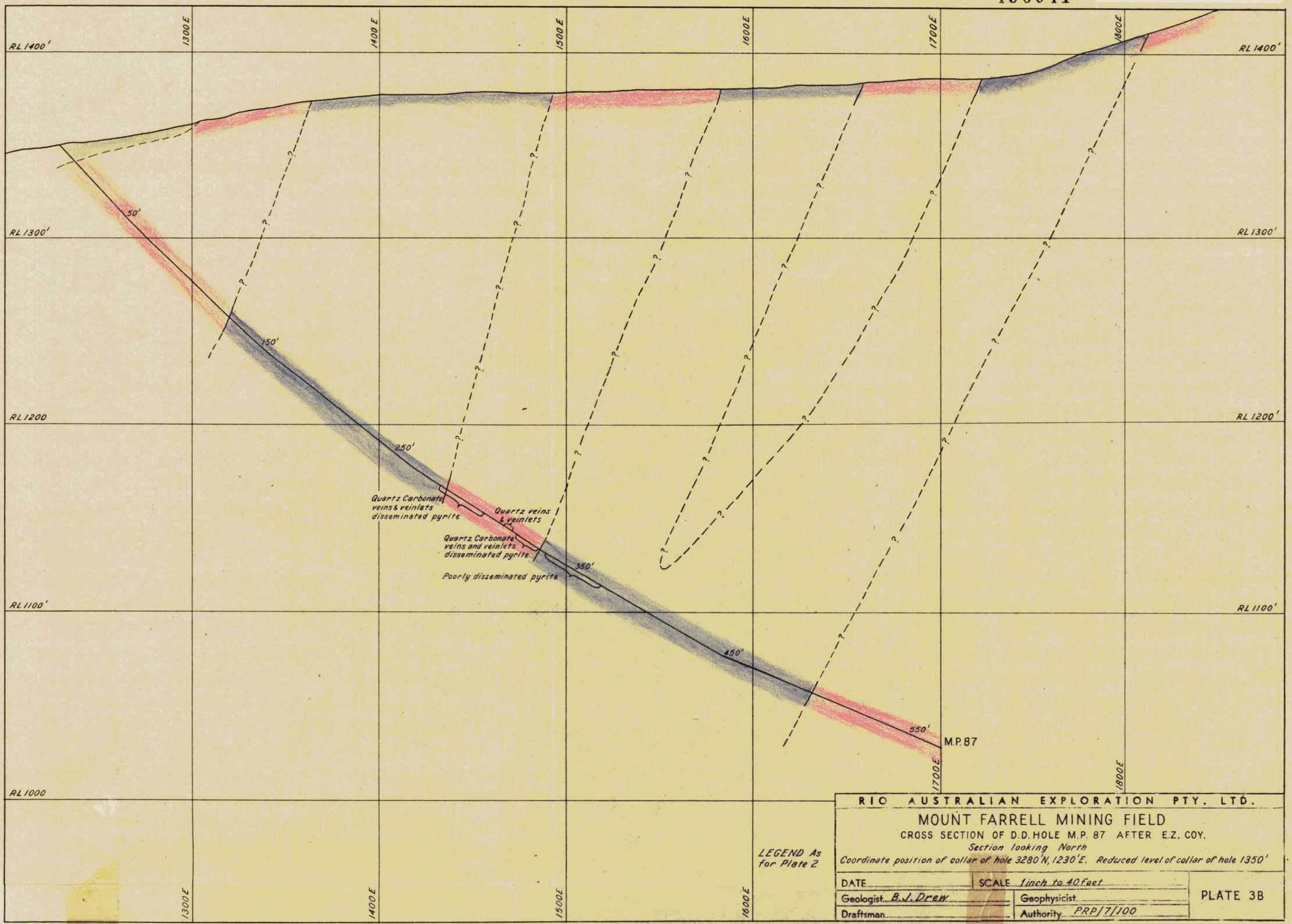
Authority PRP/7/100

PLATE 3A

087

496041

5 cm



LEGEND As for Plate 2

RIO AUSTRALIAN EXPLORATION PTY. LTD.

MOUNT FARRELL MINING FIELD

CROSS SECTION OF D.D. HOLE M.P. 87 AFTER E.Z. COY.

Section looking North

Coordinate position of collar of hole 3280'N, 1230'E. Reduced level of collar of hole 1350'

DATE	SCALE *1 inch to 40 feet*		PLATE 3B
Geologist *B.J. Drew*		Geophysicist	
Draftsman		Authority *PRP/7/100*	

038

496042

5 cm

1000W 900W 800W 700W 600W 500W 400W 300W

RL900 RL800 RL700 RL600 RL500 RL400

Dutton's
No2 Level Dump

Dutton's
No1 Level Dump

Projected 200' South along line of strike of mapped boundary

No Core

Fault Breccia

Fuchsite Sericite Schist

250'

350'

450'

Farrell Line of Lode

Quartz Lode

Q Cb Py

MP70

550'

MP88
projected 100'-150' North

LEGEND As for Plate 2

REFERENCE & REVISION

RIO AUSTRALIAN EXPLORATION PTY. LTD.

MOUNT FARRELL MINING FIELD

CROSS SECTION OF D.D. HOLES M.P. 70 & 88 AFTER E.Z. COY.

Section looking 10°

Coordinate position of collars of holes :- M.P. 70 5175'S., 1010'W. ; M.P. 88 5280'S., 820'W.

Reduced level of collars of holes M.P. 70 859', M.P. 88 854'

DATE

SCALE *1 inch to 40 feet*

Geologist *B. J. Drew*

Geophysicist

Draftsman

Authority *PRP/7/100*

PLATE 3C

1100W 1000W 900W 800W 700W 600W 500W

M.P. 71

Wash

RL800

RL700

RL600

RL500

RL400

Contact

Fault Zone

Fushsite Sericite Schist

TUFF/SLATE

Farrell Line of Lode

TUFF

Carbonate

SLATE

5 cm

LEGEND As for Plate 2

RIO AUSTRALIAN EXPLORATION PTY. LTD.

MOUNT FARRELL MINING FIELD

CROSS SECTION OF D.D. HOLE M.P. 71 AFTER E.Z. COY.

Section looking 10°

Coordinate position of collar of hole 5585'S, 1090'W. Reduced level of collar of hole 834'

DATE

SCALE 1 inch to 40 feet

Geologist B.J. Drew

Geophysicist

Draftsman

Authority PRP/7/100

PLATE 3D

063

496044

600'E 700E 800E 900E 1000E 1100E

RL1000 RL 1000

№ 1a Level
Murchison Mine

RL900 RL900

№3 Level

RL800 RL800

Pb %	Zn %	Fe %	Ag %	Au dwt
10·6	22·4	0·43	18·2	0·8
1·6	5·2	0·26	1·9	<0·1

MP28

SLATE

RL700 RL700

TUFF

MP29

RL600

600E 700E 800E 900E 1000E 1100E

5 cm

LEGEND As for Plate 2

RIO AUSTRALIAN EXPLORATION PTY. LTD.

MOUNT FARRELL MINING FIELD

CROSS SECTION OF D.D. HOLES M.P. 28 & 29 AFTER E.Z. COY.

Section looking 351°

Coordinate position of collar of holes 9210'S, 590'E. Reduced level of collar of hole 906'

DATE | SCALE 1 inch to 40 feet

Geologist B.J. Drew | Geophysicist

Draftsman | Authority PRP/7/100

PLATE 3E

041

600E 700E 800E 900E 1000E 1100E 1200E

RL1000 RL900 RL800 RL700 RL600

50'

150'

250'

Cb

350'

Zone of Quartz, Carbonate Pyrite & Sphalerite Mineralisation

MP 30

— № 1 Level horizon

Murchison Mine

— № 2 Level horizon

— № 3 Level horizon

5 cm

LEGEND As for Plate 2

RIO AUSTRALIAN EXPLORATION PTY. LTD.

MOUNT FARRELL MINING FIELD

CROSS SECTION OF D.D. HOLE M.P. 30 AFTER E.Z. COY.

Section looking North

Coordinate position of collar of hole 9315'S, 620'E. Reduced level of collar of hole 908'

DATE	SCALE 1 inch to 40 feet	PLATE 3F
Geologist B.J. Drew	Geophysicist	
Draftsman	Authority PRP/7/100	