DEPARTMENT OF MINES
SOUTH AUSTRALIA

INVESTIGATION OF THE COMMONWEALTH MINE MOUNT PAINTER PROVINCE

COPLEY

Umberatana

by

M.G. MASON
GEOLOGIST
METALLIC MINERALS SECTION

Contents

Rept.Bk.No. 70/188
G.S. No. 4572
D.M. No. ~~1486/~~66
145/70

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FIGURES

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ABSTRACT

Geological mapping and geochemical soil sampling at the Commonwealth mine have failed to locate economically significant mineral deposits.

Copper minerals occur in fractures or are associated with fractures, and were probably derived from hydrothermal fluids expelled from the basement areas, during emplacement of the "Younger Granite" suite near the end of the Delamerian orogeny.

INTRODUCTION

The Commonwealth Mine is situated 4 miles east of the Yudnamutana mining field in the northern portion of the Flinders Ranges. It lies in the eastern part of an area reserved from the operation of the Mining Act in September, 1966. (See Mason, 1970). Access is from two directions, one from the west on foot from the Wheal Frost mine and the other from the south, by way of tracks, bulldozed by Exoil N.L.

The mine is on a hill rising about 300 feet above the level of the Commonwealth Mine Creek and is surrounded by high rugged hills (Plate 14). The main workings are sited on two jasperoid outcrops about 70 yards apart, along the spine of the hill.

The mine was apparently first discovered and worked about 1902 when about 13 tons of high grade copper ore in the form of malachite and chalcocite was produced. Work came to a standstill in 1904. The mine was reported on by F.R. George in 1904 (Brown, 1908, p.43). Johnson (1955) examined the mine during the course of a radiometric survey of the district.

The present study, involving detailed geological mapping and a geochemical soil sampling programme around the Commonwealth Mine was recommended by P.G. Miller, Senior Geologist (D.M.1486/66) as part of an exploration project within the reserved area. This report supplements an account of mineral exploration in Yerelina Valley, Yudnamutana mining field by Mason (1970).

Sampling of stream sediments and heavy mineral concentrates in streams draining basement rocks was carried out over an area of about eight square miles. This survey included the area around the Commonwealth mine. Results of this sampling are detailed in Mason and Barnes (1970).

One geographic feature has been informally names Commonwealth Mine Creek (See Plan 70-34).

Petrological descriptions of rock samples prepared by R. Cooper of the Australian Mineral Development Laboratories are attached in Appendix I.

ACKNOWLEDGEMENTS

Assistance in preparation of this report was given by personnel of the Mineral Resources Division of the Geological Survey of S.Australia.

GEOLOGICAL SETTING

The Commonwealth Mine is located in an inlier of Wywyana Formation (Adelaidean) rocks which is surrounded on all sides by metasediments of Lower Proterozoic age.

The regional geology, including stratigraphy and structure of the Precambrian rocks, is discussed in detail by Coats in Coats and Blissett (1970).

Along the northern boundary of the inlier the Wywyana sequence rests disconformably on a member of the Freeling Heights Quartzite while the southern boundary abuts the Hamilton Fault and is in contact with rocks of the Corundum Creek Schist member.

Masses of granite and pegmatite of the "Younger Granite Suite" intrude the Lower Proterozoic basement in the vicinity of the Commonwealth Mine.

MINE GEOLOGY

The Commonwealth Mine workings are sited on a jasperoid outcrop within the Hamilton Fault zone, which here strikes northwesterly and dips steeply, probably to the northeast. The Wywyana rocks are oriented into an elliptical basin dipping southwestwards towards the fault zone.

Minor fractures cut the rocks in a northwesterly direction and are parallel to a prominent foliation and cleavage direction. The "Younger Granites" have been emplaced elongated in an easterly direction, possibly related to the stress directions present during the early stages of the orogeny preceding the granite intrusion (Delamerian Orogeny).

MINERALIZATION

Secondary copper minerals occur in the Wywyana formation and the Hamilton shear. The Hamilton shear contains sheared actinolite marble. Minor malachite staining has been noted in the "Younger Granites" adjacent to the Wywyana rocks, and silver and barite are also present.

As in Yerelina Valley to the west (Mason, 1970), copper minerals are located within or adjacent to fractures, and are confined to rocks of the Wywyana Formation. The distribution of copper is similar even though at the Commonwealth Mine the thermal metamorphic grade is much higher. Therefore, the deposition of copper is probably related more to chemically favourable areas for precipitation than to variations in temperature and pressure (physical parameters). The main favourable positions for deposition were within the Hamilton Fault, e.g. the site of the Commonwealth mine workings. Even here the ore was formed by secondary enrichment and indications are that the original fault material was quite low in primary copper minerals.

The origin of the copper in the Mount Painter Block has been discussed in detail elsewhere. (Coats and Blissett, Bull. 43 in press)). (Mason, 1970). Copper could have been derived from the hydrothermal solutions associated with the "Younger Granites" or from copper rich zones within the Wywyana formation.

GEOCHEMISTRY

Geochemical soil samples were taken from the Commonwealth mine area on a grid laid out by tape and compass and based on aerial photographs. Sample numbers and their positions are plotted on Plan 70-31. All samples were taken at a depth of 9 inches. Samples from lines 1400W and 1800W were divided into the following five B.S.S. size fractions; -9 + 16, -16 + 32, -32 + 60, -60 + 80, -80 and each fraction analysed for molybdenum, copper, bismuth, tin and tungsten. These results (G.11135/69 - G.11224/69) are shown in Appendix II. Plan 70.237 shows that the -32 + 60 fraction gave higher values for tin and copper and it was considered that this fraction was suitable for all the elements analysed. The -32 + 60 fraction of the remaining samples was analysed for Mo, Cu, Bi, Sn and W. The results are tabled in Appendix II (G.11276/69 - G.11355/69).

Tungsten

Tungsten values were almost all below 50.p.p.m. (detection limit) and no anomalous areas could be defined. No further exploration for tungsten is recommended.

Bismuth

Only one value above 2 p.p.m. of bismuth was recorded. No further work for bismuth is recommended.

Molybdenum

Molybdenum values above 5 p.p.m. may be considered anomalous and although values above this figure were recorded they do not form any definite pattern and no further work is warranted. (For results see Plan 70-227).

Copper

Copper values were studied statistically using the Gaussian method giving a threshold of 200 p.p.m. (Copper results are plotted on Plan 70-228). The results were also examined using a cumulative frequency diagram (method described by Tennant and White, 1959). Assuming a log normal distribution for the copper values, one population appears to be present (Plan 70-222), indicating that copper present has been distributed by one process, similar to that in the Yerelina Valley. Therefore, no significant copper orebodies are expected in the Commonwealth Mine area.

Plan 70-228 shows that high copper values occur along a line closely following the trace of the Hamilton Fault through the area (Cf Plan 70-34). This suggests that copper is now concentrated within or near the Hamilton shear zone. Mining activity for copper was also concentrated in this zone.

Tin

Tin values are reasonably high, and variable. They were statistically tested by Gaussian methods and threshold estimated at 12 p.p.m. (Results plotted on Plan 70-227).

Again values may be interpreted as part of one log-normally distributed population (See Plan 70-221).

From Plan 70-227 no pattern of higher tin values can be determined and no anomalous zones appear to be present. No further work is proposed.

A radiometric survey was carried over the grid area using a geiger counter. No value greater than twice background was recorded and no further action is recommended.

An ultraviolet light survey revealed only minor fluorescent quartz associated with the Hamilton Fault zone. This quartz was probably formed during the formation of the Tertiary peneplain surface.

CONCLUSIONS

Copper minerals occur within rocks of the Wywyana Formation and within the adjacent Hamilton shear. Mineralisation is related to hydrothermal activity associated with the "Younger Granites". The same source was postulated for the adjacent Yerelina Valley deposits.

No significant disseminated or vein type copper deposits are expected within the Wywyana Formation, or in the Hamilton fault near the Commonwealth Mine.

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10.12.1970
MGM:MK

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APPENDIX I

COMMONWEALTH MINE AREA

Petrological Examination of Rock Specimens by R. Cooper. Australian Mineral Development Laboratories. Extracted from AMDEL report MP.1929/70 by R. Cooper.

Sample Locations are shown on Plan No. 70-34.

Sample PC1: P855/69: TS24032.

Deformed graphic granite - consists primarily of pink feldspar and long narrow vein-like fragments of quartz.

Thin Section:

An optical estimate of the constituents given the following:

	%
Microline	70
Albite	8
Quartz	20
Muscovite	2

The rock has a coarse graphic texture. Elongated, aligned crystals (at areas of quartz grains) occur in large optically continuous areas of microline which are several cms. across. Fringing the quartz and transecting the microline are narrow (0.8 mm. wide) veins of albite. Muscovite is associated with the quartz.

This is a deformed graphic granite with some deformation of quartz and exsolving of albite into a set of tension gashes throughout the microline and at an angle to the quartz intergrowths.

Sample PC3: P856/69: TS24033.

Albite-oligoclase - biotite - apatite - corundum - allanite - ? ilmenite rock.

Thin Section:

An optical estimate of the constituents gives the following:

	%
Biotite	25
Albite-oligoclase	55
Apatite	5
Opaques (?ilmenite)	7
Rutile	1
Corundum (relict)	1
Allanite (slightly metamict)	1
Zircon	Trace
Opal	5

The specimen consists of biotite and albite-oligoclase rich layers. Radiating from the biotite flakes, through albite-oligoclase are slightly curved fractures similar to expansion cracks that form around serpentinized olivine or radioactive minerals like allanite. This biotite may have formed by the breakdown of olivine.

There is some chloritization of the biotite flakes adjacent to the opaline quartz veins but the introduction of quartz has had no effect on the rock.

Originally the rock was deficient in quartz. The older assemblage did not include biotite. The presence of corundum suggests that this was a high grade - ?pyroxene-hornfels facies assemblage and was most likely derived from an aluminous pelite. If the biotite has formed from the break-down of olivine then the pelite could also have been slightly calcareous, as a high grade assemblage derived from a carbon-ate rock often contains forsterite.

The formation of the biotite undoubtedly involved some potassium metasomatism as well and the quantity of opaques suggests mineralization and introduction of titanium.

History:

Pelite - aluminous and/or calcareous.
High-grade thermal metamorphism.
Assemblage containing albite-oligoclase, ?forsterite, corundum, allanite and apatite.
Metasomatism and some deformation.
Breakdown of forsterite to biotite, and mineralisation.
Fracturing.
Formation of opal veins.

Sample PC6: P857/69: TS24034.

Talc-Hematite rock: Wywyana Formation.

Granular masses of an opaque mineral (hematite) and talc. The talc replaced an amphibole, for sprays and rosettes, up to ½" across, of a mineral with a fibrous habit are evident in the weathered surface.

Thin Section:

An optical estimate of the constituents gives the following:

	%
Talc	55
Hematite	30
Amphibole	15

The talc has replaced a colourless amphibole, probably cumming-tonite, which occurs in sheaves of narrow prismatic crystals.

Conclusions: The rock which now consists mainly of talc and hematite appears to have formed from the breakdown of a pure amphibole (cummingtonite).

Sample PC7: P858/69: TS24035.

Tourmalinized potash felspar-biotite-quartz hornfels.

A fine grained grey rock.

Thin Section:

An optical estimate of the constituents gives the following:

	%
Quartz	15
Potash feldspar	60
Albite-oligoclase	3
Biotite	18
Muscovite	Trace
Tourmaline	2
Rutile	1
Zircon	Trace
Apatite	Trace

The rock has an equigranular-granoblastic texture. It consists mainly of poikiloblastic crystals of potash feldspar, grains of quartz and flakes of biotite. A rock such as this could be formed by the thermal metamophism and metasomatism (introduction of boron and potassium) of a pelite or arkose.

The metamorphic grade is hornblende-hornfels facies.

N.B. Similar to hornfels bands in the Wywyana Formation at Yudnamutana except that tourmaline is colourless.

Sample PC9: P859/69: TS24036.

Weathered quartz-microline-biotite hornfels.

A light coloured fine grained rock.

Thin Section:

Optical estimate of the constituents gives the following:

	%
Quartz	45
Altered microcline	30
Chloritized biotite	20
Muscovite	1
Opaque Minerals (hematite and rutile)	4

An eqigranular-granoblastic texture composed mainly of quartz, and altered microcline and biotite. The biotite has been chloritized. The alteration of the biotite has resulted in the release of grains of brown geothite which are concentrated at the edges of the flakes.

Conclusions: The rock could have been formed by the hornfelsing and metasomatism (introduction of potassium) of a pelitic or arkosic sediment. The metamorphic grade was probably hornblende-hornfels facies.

Sample PC10: P860/69: TS24037.

Fine arkosic conglomerate.

A light coloured rock, in the cut surfaces of which rounded fragments up to ¼" long can be seen.

Thin Section:

An optical estimate of the constituents gives the following:

	%
Quartz	65
Microline (altered)	30
Yellow brown chlorite (iron stained)	4
Muscovite	Trace

The rock has an irregular granoblastic texture and is composed of quartz and altered microcline. Some grains of microcline have been nearly completely replaced by a yellow-brown iron-stained chlorite mineral.

One pebble, at least 2.0 cm. wide, resembles petrographically the granite P855/69 which has been described. It contains flakes of colourless muscovite.

Sample PC13: P861/69: TS24038.

Microcline-quartz-sillimanite-andalusite-biotite-muscovite gneiss.

A medium grained, light coloured, weakly foliated rock.

Thin Section:

An optical estimate of the constituents gives the following:

	%
Quartz	40
Microline	20
Albite	2
Biotite	12
Muscovite	18
Sillimanite	4
Andalusite	2
Zircon	1
Chlorite	Trace
Rutile	1

It consists of elongated grains of quartz and microline, and lesser amounts of orientated flakes of biotite and muscovite. Andalusite occurs in two small clusters and there are aggregates of fine, pale bronw, fibrous sillimanite crystals.

Two micas are present; the muscovite is in two generations. The older muscovite and the biotite occurs in well formed sub idioblastic flakes. The later muscovite appears to have replaced andalusite, for it occurs in finer more wispy flakes similar to the existing andausite.

Conclusions: A complex high-grade (amphibolite facies) regionally metamorphised rock which may have been slightly metasomatised (introduction of potassium) and probably had a pelitic sediment as a parent.

APPENDIX II

Commonwealth mine geochemical survey.

AMDEL REPORTS 1800/70 and 2129/70.

Assay results for Mo, W, Cu, Sn and Bi, in soil.

G.11135/69 to G.11355/69

See plan 70-31 for sample location points with relation to G. Numbers.

G. Number	Grid	Co-ord	Size Fraction	Mo(3)	W(50)	Cu(05)	Sn(1)	Bi(1)
G11135/69	00N	1400W	-80	x	x	30	3	1
36/69		"	+ 80 - 60	"	"	60	6	1
37		"	+ 60 - 32	"	"	50	6	1
38		"	+ 32 - 16	"	"	60	6	1
39		"	+ 16 - 9	"	"	60	3	1
G11140/69	100N	1400W	- 80	"	"	80	4	1
41		"	+ 80 - 60	"	"	80	4	1
42		"	+ 60 - 32	"	"	80	4	1
43		"	+ 32 - 16	"	"	150	4	1
44		"	+ 16 - 9	3	"	150	4	1
G11145/69	200N	1400W	- 80	3	"	150	3	1
46		"	+ 80 - 60	x	"	150	4	1
47		"	+ 60 - 32	"	"	150	4	1
48		"	+ 32 - 16	"	"	150	4	1
49		"	+ 16 - 9	"	"	150	4	1
G11150/69	300N	1400W	- 80	"	"	2000	4	1
51		"	+ 80 - 60	3	"	3000	8	1
52		"	+ 60 - 32	x	"	2500	6	1
53		"	+ 32 - 16	"	"	2500	6	1
54		"	+ 16 - 9	"	"	2500	8	1
G11155/69	400N	1400W	- 80	10	"	3000	6	1
56		"	+ 80 - 60	3	"	3000	8	1
57		"	+ 60 - 32	5	"	3000	6	1
58		"	+ 32 - 16	10	"	2000	4	1
59		"	+ 16 - 9	3	"	2000	6	1
G11160/69	500N	1400W	- 80	x	"	150	1	1
61		"	+ 80 - 60	5	"	150	3	1
62		"	+ 60 - 32	5	"	150	3	1
63		"	+ 32 - 16	x	"	80	2	1
64		"	+ 16 - 9	3	"	150	2	1
G11165/69	600N	1400W	- 80	x	"	250	3	1
66		"	+ 80 - 60	"	"	30	3	1
67		"	+ 60 - 32	"	"	30	4	1

G. Number	Grid	Co-ord	Size Fraction	Mo(3)	W(50)	Cu(05)	Sn(1)	Bi(1)
G11168/69	600N	1400W	+ 32 - 16	x	x	250	4	10
69		"	+ 16 - 9	3	"	250	4	1
G11170/69	700N	1400W	- 80	x	"	250	4	1
71		"	+ 80 - 60	3	"	250	4	1
72		"	+ 60 - 32	x	"	250	6	1
73		"	+ 32 - 16	3	"	250	8	1
74		"	+ 16 - 9	3	"	300	10	1
G11175/69	800N	1400W	- 80	10	"	300	1	1
76		"	+ 80 - 60	5	"	400	4	1
77		"	+ 60 - 32	3	"	400	4	1
78		"	+ 32 - 16	3	"	250	4	1
79		"	+ 16 - 9	3	"	400	4	1
G11180/69	00N	1800W	- 80	x	"	250	3	1
81		"	+ 80 - 60	"	"	400	6	1
82		"	+ 60 - 32	"	"	400	6	1
83		"	+ 32 - 16	x	x	250	6	1
84		"	+ 16 - 9	5	80	250	6	1
G11185/69	100N	1800W	- 80	x	x	400	3	1
86		"	+ 80 - 60	3	"	400	6	1
87		"	+ 60 - 32	3	"	400	8	1
88		"	+ 32 - 16	3	50	400	6	1
89		"	+ 16 - 9	3	50	400	8	1
G11190/69	200N	1800W	- 80	x	x	40	3	1
91		"	+ 80 - 60	"	"	80	4	1
92		"	+ 60 - 32	3	"	80	4	1
93		"	+ 32 - 16	3	"	60	4	1
94		"	+ 16 - 9	3	"	60	4	1
G11195/69	300N	1800W	- 80	x	"	60	4	1
96		"	+ 80 - 60	"	"	80	4	1
97		"	+ 60 - 32	3	"	150	6	1
98		"	+ 32 - 16	3	"	150	4	1
99		"	+ 16 - 9	5	"	30	3	1
G11200/69	400N	1800W	- 80	x	"	60	3	1

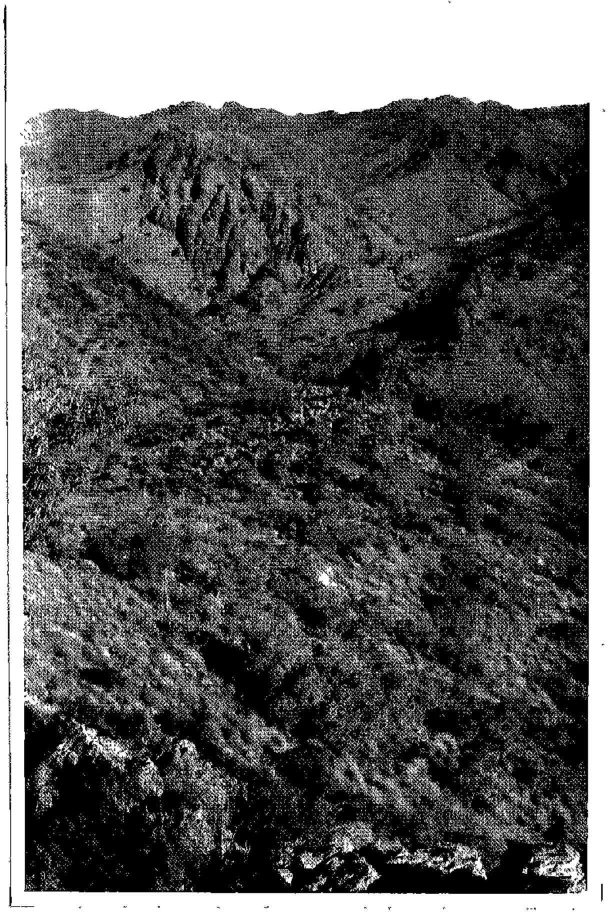
G. Number	Grid	Co-ord	Size Fraction	Mo(3)	W(50)	Cu(05)	Sn(1)	Bi(1)
G11201/69	400N	1800W	+80 - 60	3	x	100	8	1
02		"	+ 60 - 32	5	"	60	3	1
03		"	+ 32 - 16	8	"	100	4	1
04		"	+ 16 - 9	8	"	50	3	1
G11205/69	500N	1800W	- 80	3	x	150	3	1
06		"	+ 80 - 60	x	"	200	3	1
07		"	+ 60 - 32	"	"	200	4	1
08		"	+ 32 - 16	"	"	250	3	1
09		"	+ 16 - 9	"	"	250	3	1
G11210/69	600N	1800W	- 80	"	"	2500	10	1
11		"	+ 80 - 60	"	"	2500	15	1
12		"	+ 60 - 32	"	"	3000	30	1
13		"	+ 32 - 16	"	"	2500	15	1
14		"	+ 16 - 9	"	"	3000	15	2
G11215/69	700N	1800W	- 80	"	"	400	10	1
16		"	+ 80 - 60	"	"	400	15	1
17		"	+ 60 - 32	"	"	400	15	1
18		"	+ 32 - 16	"	"	400	15	1
19		"	+ 16 - 9	3	"	400	10	1
G11220/69	800N	1800W	- 80	x	"	15	6	x
21		"	+ 80 - 60	"	"	50	10	"
22		"	+ 60 - 32	"	"	30	4	"
23		"	+ 32 - 16	"	"	30	3	"
24		"	+ 16 - 9	"	"	100	4	"
G11276/69	00N	00W	+ 60 - 32	x	x	10	8	1
77	100N	00W	"	3	"	30	10	1
78	200N	00W	"	5	"	80	20	1
79	00N	200W	"	x	"	20	10	1
G11280/69	100N	200W	"	5	"	400	20	1
81	200N	200W	"	5	"	100	15	1
82	300N	200W	"	5	"	100	15	1
83	400N	200W	"	5	"	50	6	1

G. Number	Grid Co-ord		Size Fraction	Mo(3)	W(50)	Cu(05)	Sn(1)	Bi(1)
G11284/69	500N	200W	+ 60 - 32	5	x	80	8	x
85	00N	400W	"	3	"	30	10	6
86	100N	"	"	3	"	10	4	1
87	200N	"	"	3	"	40	10	1
88	300N	"	"	5	"	150	10	1
89	400N	"	"	x	"	40	3	x
G11290/69	500N	400W	"	"	"	200	10	1
91	600N	"	"	3	50	100	10	1
92	700N	"	"	5	x	150	10	1
93	00N	600W	"	3	50	80	15	1
94	100N	"	"	x	x	150	15	1
95	200N	"	"	"	"	250	20	2
96	300N	"	"	5	"	400	10	2
97	400N	"	"	x	"	150	5	1
98	500N	"	"	"	"	150	5	1
99	600N	"	"	5	"	250	8	1
G11300/69	700N	"	"	x	"	250	8	1
01	800N	"	"	8	"	150	8	1
02	00N	800W	"	x	"	30	15	1
03	100N	"	"	"	100	100	20	1
04	200N	"	"	"	50	150	15	1
05	300N	"	"	"	x	800	20	1
06	400N	"	"	"	"	200	8	1
07	500N	"	"	3	"	300	10	1
08	600N	"	"	x	"	80	8	1
09	700N	"	"	3	"	500	5	1
G11310/69	800N	"	"	x	"	80	10	1
11	00N	1000W	"	3	"	50	8	1
12	100N	"	"	3	"	50	8	1
13	200N	"	"	x	"	150	5	1
14	300N	"	"	3	"	150	8	1
15	400N	"	"	x	"	150	8	1
16	500N	"	"	3	"	30	5	1

G. Number	Grid Co-ord		Size Fraction	Mo(3)	W(50)	Cu(05)	Sn(1)	Bi(1)
G11317/69	600N	100W	+ 60 - 32	x	x	30	5	1
18	700N	"	"	"	"	100	1	1
19	800N	"	"	"	"	100	10	1
G11320/69	00N	1200W	"	"	"	50	20	1
21	100N	"	"	"	"	50	30	1
22	200N	"	"	"	"	100	20	1
23	300N	"	"	"	"	100	10	1
24	400N	"	"	3	"	150	20	1
25	500N	"	"	20	"	50	20	1
26	600N	"	"	10	"	150	30	1
27	700N	"	"	30	"	150	10	1
28	800N	"	"	"	"	300	30	1
29	00N	1600W	"	"	"	100	4	1
G11330/69	100N	"	"	x	"	50	3	1
31	200N	"	"	3	"	250	8	1
32	300N	"	"	5	50	500	5	2
33	400N	"	"	5	50	500	10	2
34	500N	"	"	3	x	500	3	1
35	600N	"	"	8	"	100	2	1
36	700N	"	"	x	"	200	10	1
37	800N	"	"	"	"	100	3	1
38	00N	2000W	"	3	"	100	6	1
39	100N	"	"	x	"	10	6	1
G11340/69	200N	"	"	3	"	30	3	1
41	300N	"	"	x	"	15	3	1
42	400N	"	"	3	"	30	3	1
43	500N	"	"	3	"	150	15	1
44	600N	"	"	3	"	150	10	1
45	700N	"	"	10	"	250	2	1
46	800N	"	"	x	"	50	10	1
47	00N	2200W	"	5	"	100	8	1
48	100N	"	"	5	50	50	4	1
49	200N	"	"	3	x	40	4	1

G. Number	Grid Co-ord		Size Fraction		Mo(3)	W(50)	Cu(05)	Sn(1)	Bi(1)
G11350/69	300N	2200W	+ 60	- 32	3	x	40	4	1
51	400N	"	"		5	"	150	4	1
52	500N	"	"		x	"	400	20	1
53	600N	"	"		15	"	120	6	1
54	700N	"	"		x	"	100	3	1
55	800N	"	"		5	"	300	8	1

PLATE 12



Roll 132
20451

Oct. 1969
M.G. Mason.

YUDNAMUTANA MINING FIELD — COMMONWEALTH MINE
Looking south east from the Commonwealth Mine showing Hamilton Fault and a younger granite mass.

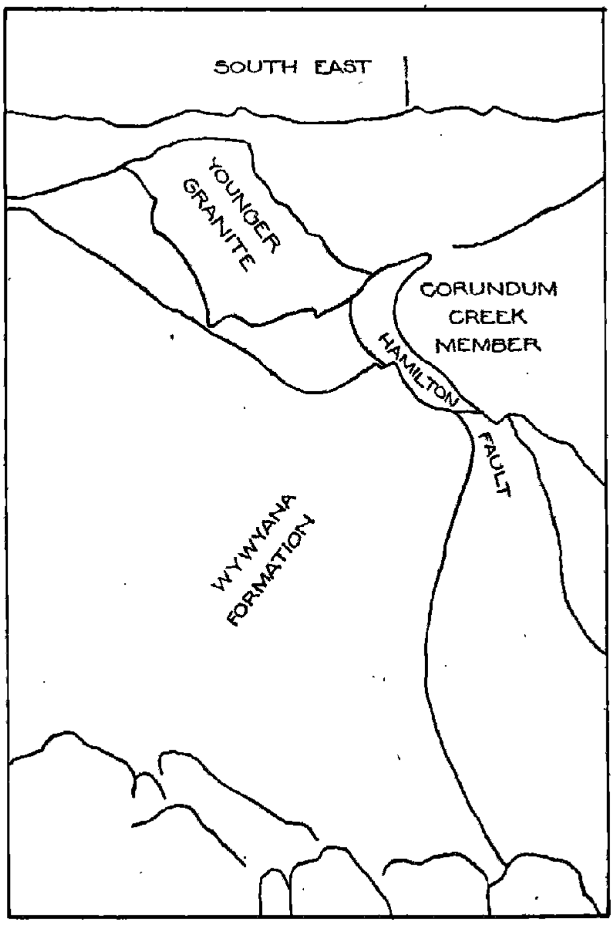


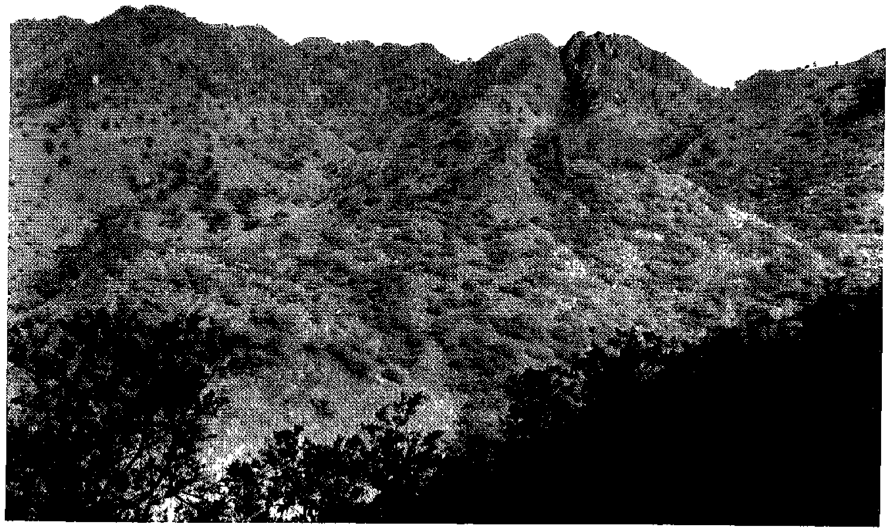
PLATE 13

Roll 132
20452

Oct. 1969
M.G. Mason

YUDNAMUTANA MINING FIELD — COMMONWEALTH MINE
Crenulated schist of the Corundum Creek Member.

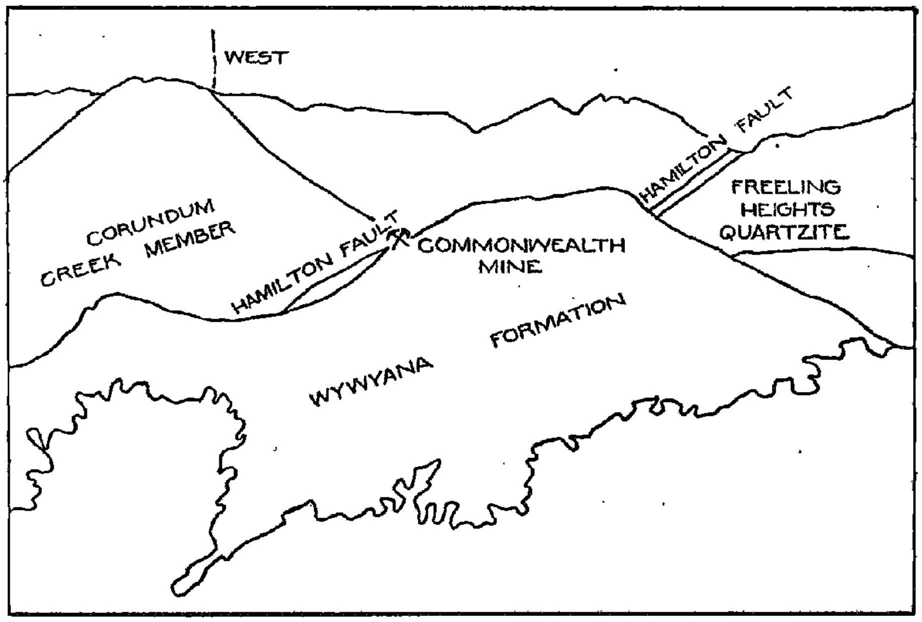
PLATE 14

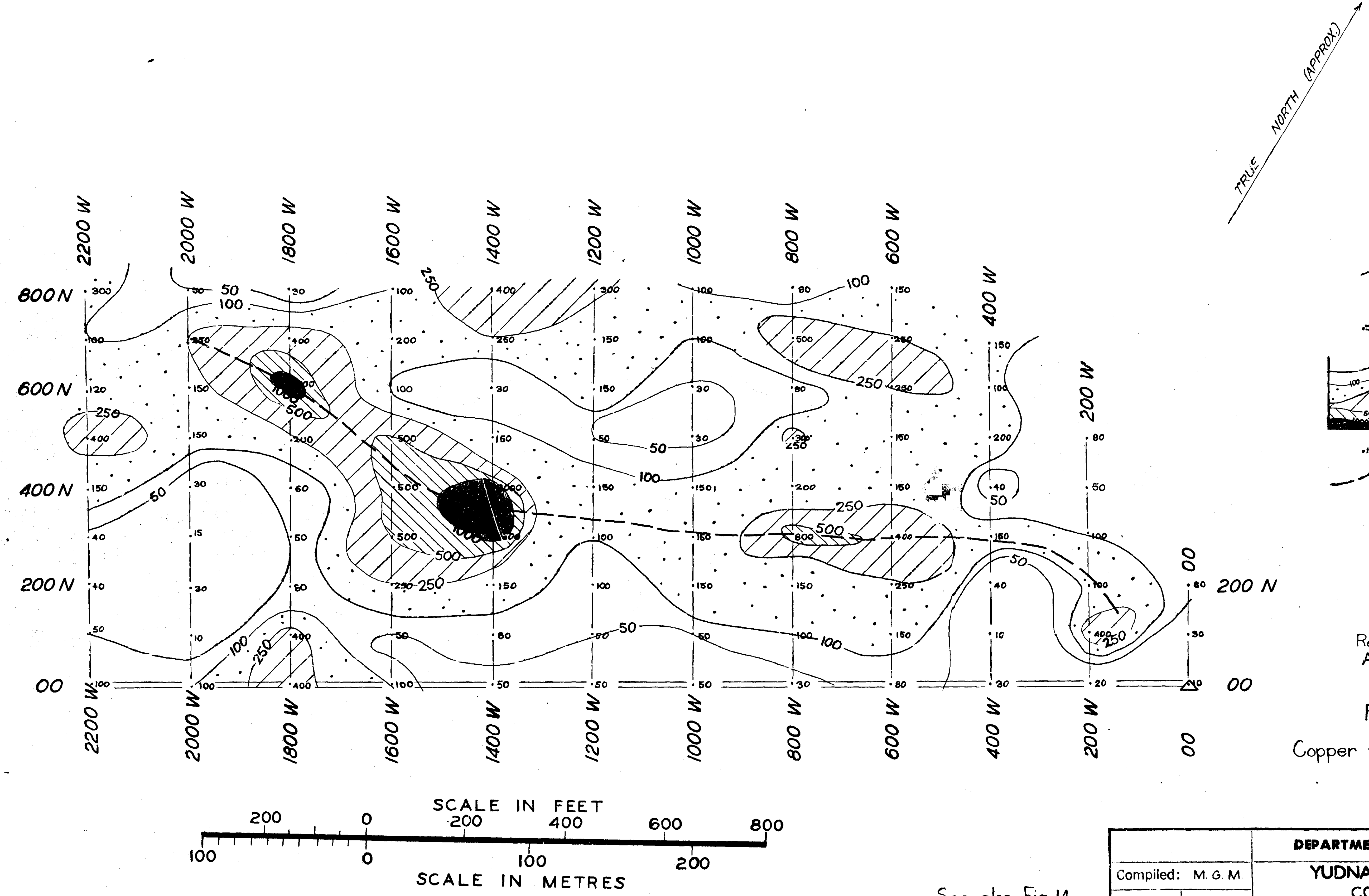


Roll 132
20453

Oct. 1969
M.G.Mason

YUDNAMUTANA MINING FIELD — COMMONWEALTH MINE
View of the Commonwealth Mine looking west. Wywyana Formation faulted against Corundum Creek Member on the south west.





Legend
· Sample point
Surveyed grid line (tape and compass)
Base Cairn
Base line
Contours (in p.p.m.) Copper values
·150 Sample location copper results
Trace of Hamilton Fault

References:
AMDEL Reports AN 1800/70 Robinson R.R.
AN 2129/70 Robinson R.R.

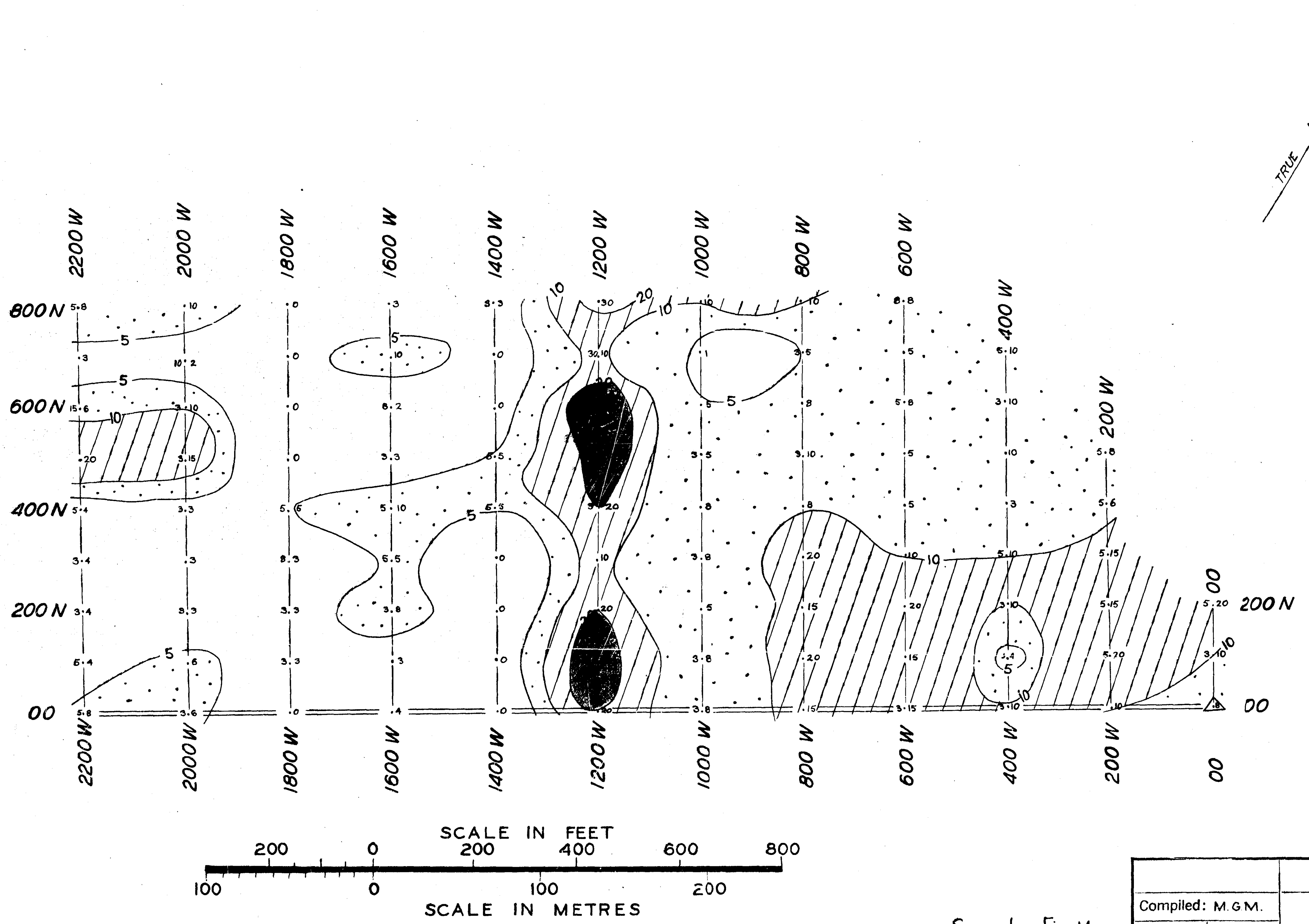
Fig. 19 70-222

Copper results using -32 to +60 fraction.

See also Fig. 14
70-34

Fig. 16

	DEPARTMENT OF MINES – SOUTH AUSTRALIA	Scale: 1 inch = 200 ft.
Compiled: M. G. M.	YUDNAMUTANA MINING FIELD	Date OCT. 1969
Drn. S. J. C. Ckd.	COMMONWEALTH MINE 65 MILES E.N.E. COPLEY GEOCHEMICAL SOIL SURVEY	Drg. No. 70-228 Cd



Legend

- Sample point
- Surveyed grid line (tape and compass)
- Base Cairn
- Base line
- Contours (in p.p.m.) Tin values: 0-5, 5-10, 10-20, above 20
- Sample location: Molybenum values, Tin values

References:
AMDEL Reports AN 1800/70 Robinson R.R.
AN 2129/70 Robinson R.R.

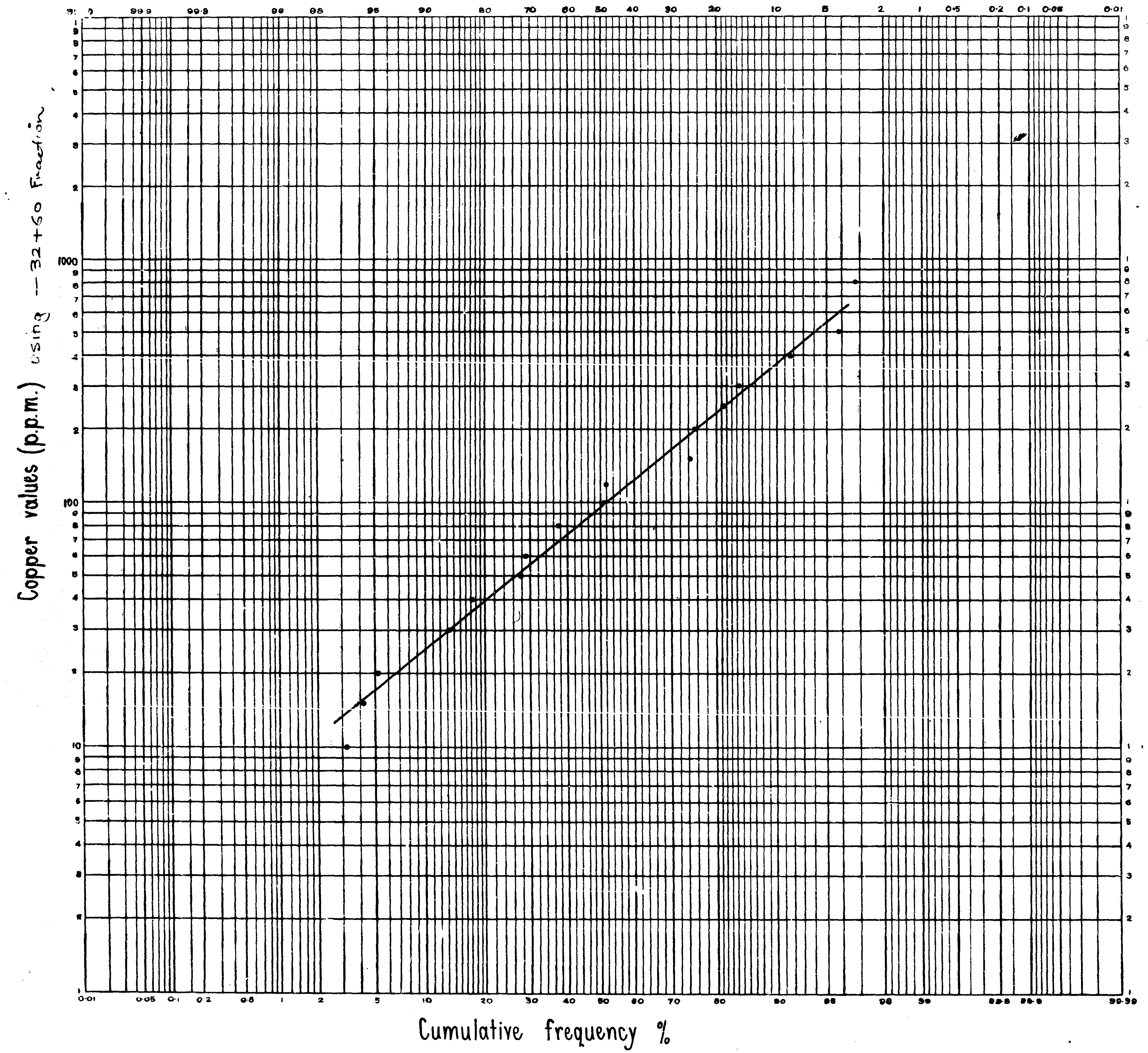
Fig. 20 70-221

Tin and molybdenum values using -32 to +60 fraction

Fig 17

See also Fig. 14
70-34

Compiled: M.G.M.	DEPARTMENT OF MINES – SOUTH AUSTRALIA	Scale: 1 inch = 200 ft.
Drn. S.J.C. | Ckd.	YUDNAMUTANA MINING FIELD COMMONWEALTH MINE 65 MILES E.N.E. COPLEY GEOCHEMICAL SOIL SURVEY	Date: OCT. 1969 Drg. No. 70-227 Cd



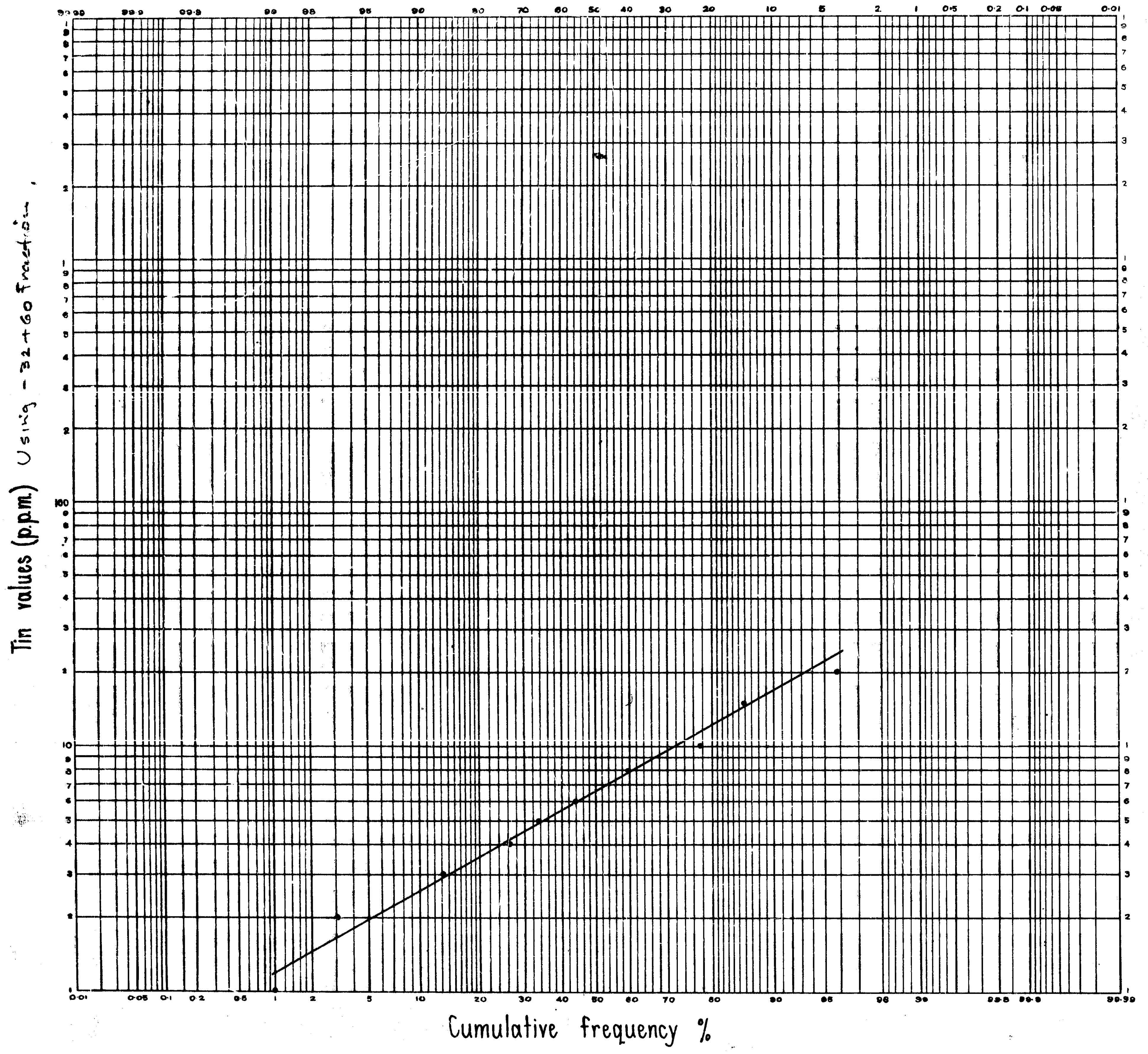
See also AMDEL Reports AN 1800/70
AN 2129/70

Fig. 16 70-228

Fig. 19

	DEPARTMENT OF MINES – SOUTH AUSTRALIA	Scale: As shown
Compiled: M.G.M.	YUDNAMUTANA MINING FIELD COMMONWEALTH MINE	Date: 1 April 1970
Drn. R.H. | Ckd.	GEOCHEMICAL SOIL SURVEY CUMULATIVE FREQUENCY OF COPPER VALUES	Drg. No. 70-~~222~~/6 Cd

PF Nº. 70-215 MD



See also AMDEL Reports AN 1800/70
AN 2129/70
Fig. 17 70-227

Fig. 20

	DEPARTMENT OF MINES – SOUTH AUSTRALIA	Scale: As shown
Compiled: M.G.M.	YUDNAMUTANA MINING FIELD COMMONWEALTH MINE	Date: 1 April 1970
Drn. R.H. | Ckd.	GEOCHEMICAL SOIL SURVEY CUMULATIVE FREQUENCY OF TIN VALUES	Dig. No. 70-221/6 Cd

PF Nº. 70-215 MD

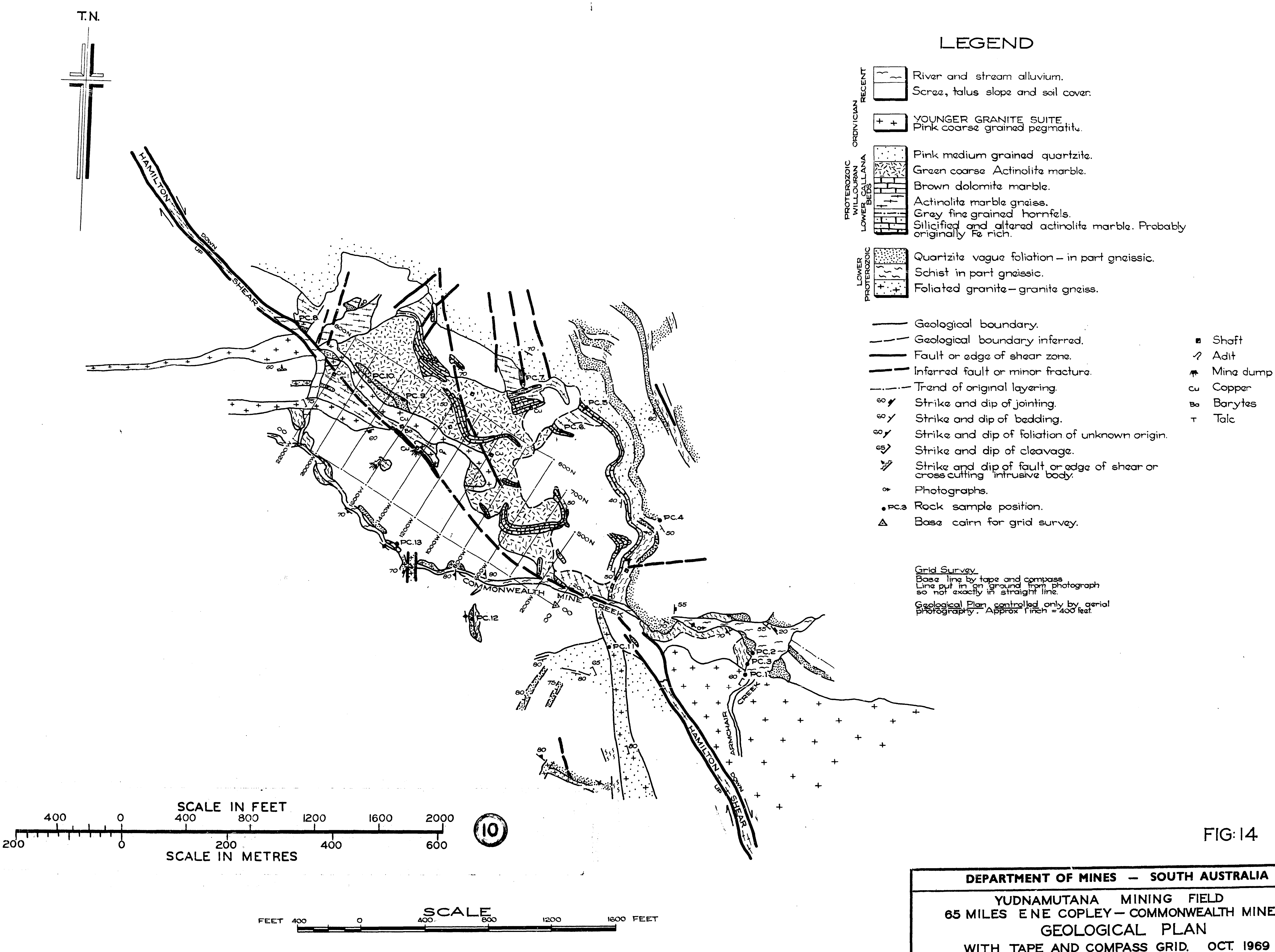


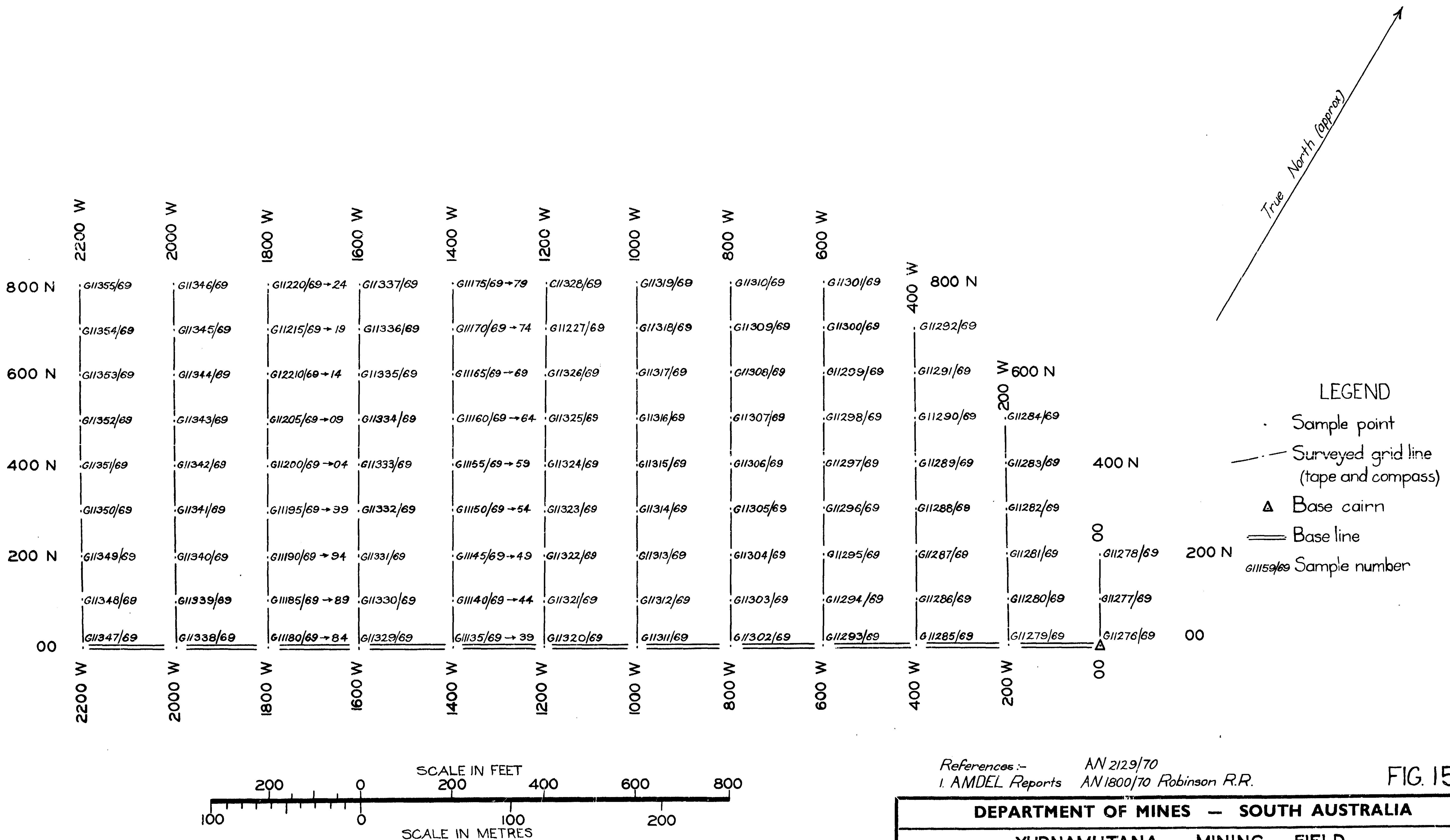
FIG: 14

DEPARTMENT OF MINES — SOUTH AUSTRALIA

YUDNAMUTANA MINING FIELD
65 MILES E N E COPLEY — COMMONWEALTH MINE
GEOLOGICAL PLAN
WITH TAPE AND COMPASS GRID. OCT. 1969

METALLIC MINERAL SECTION	GEOLOGIST	Drn. M.G.M	SCALE: 1 INCH = 400 FEET
		Tcd. AMcD	70-34 Cd
		Ckd. E.B.T.	
Director of Mines	SEN. GEOLOGIST	Exd.	DATE: 15 JAN. 70

See Also: Fig 2. No.
" 15. " 70-31
" 16. " 70-228
" 17. " 70-227



References :-
1. AMDEL Reports AN 2129/70 AN 1800/70 Robinson R.R.

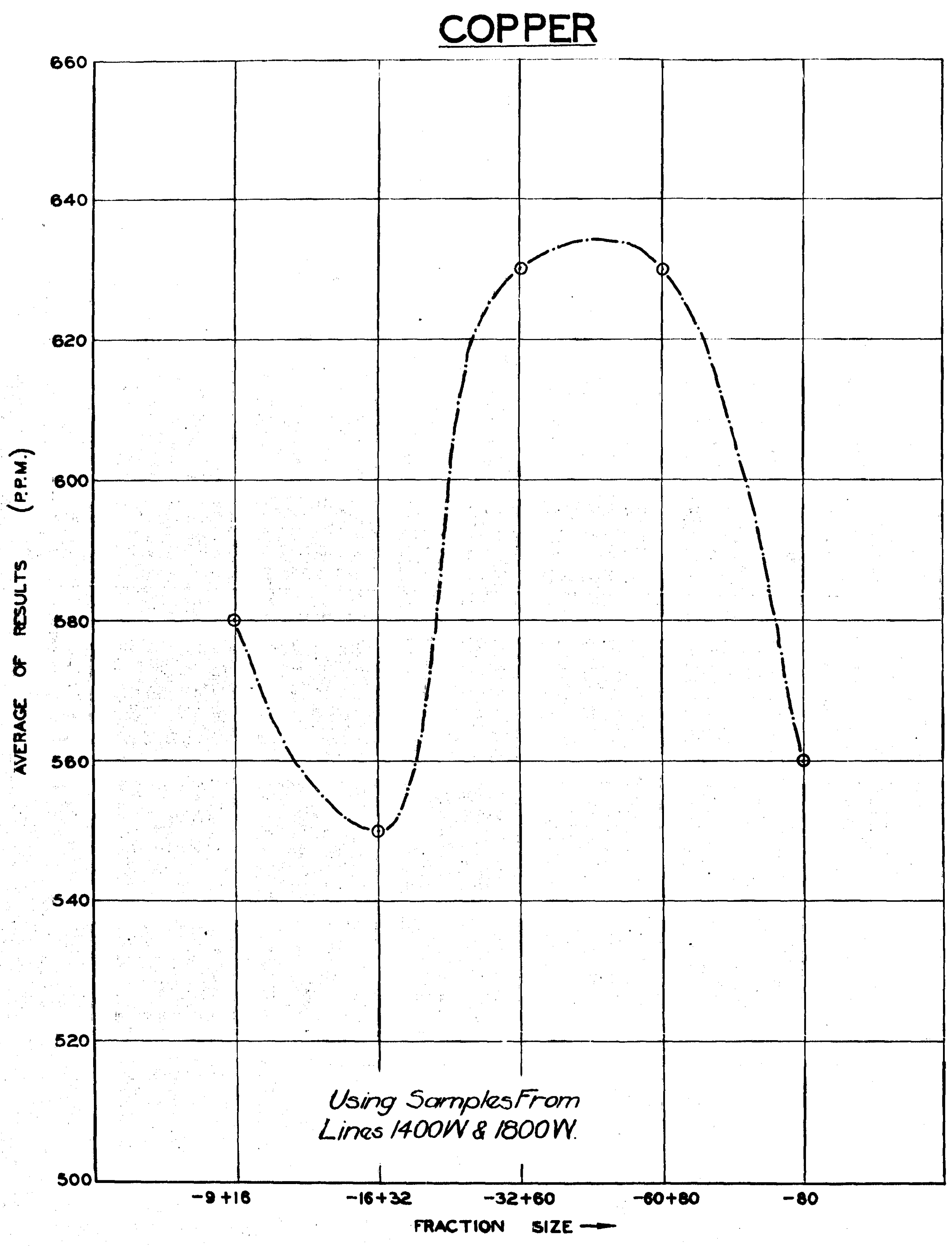
FIG. 15

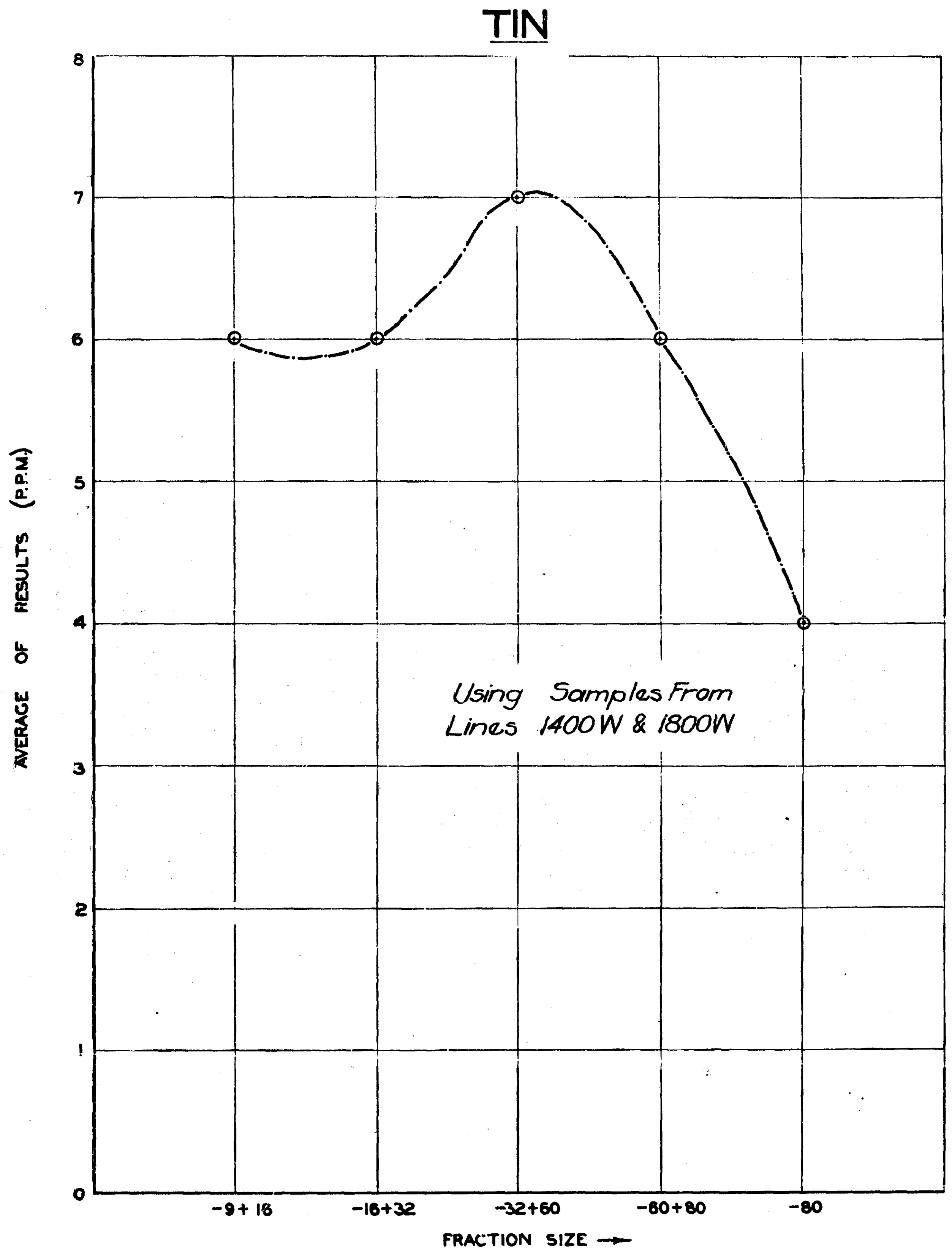
DEPARTMENT OF MINES — SOUTH AUSTRALIA

YUDNAMUTANA MINING FIELD
65 MILES E.N.E. COPLEY — COMMONWEALTH MINE
GEOCHEMICAL SOIL SURVEY
SAMPLE LOCATIONS & NUMBERS

	GEOLOGIST	Drn. MGM.	SCALE : 1 INCH = 200 FEET
		Tcd. S.J.C.	70-31 Cd
		Ckd. E.B.T.	
Director of Mines	SEN. GEOLOGIST	Exd.	DATE: 14 JAN. 1970

See also fig 14 70-34
fig 17 70-227





GRAPHS SHOWING VARIATION OF AVERAGE COPPER AND TIN RESULTS WITH FRACTION SIZES

FIG.18

REFERENCES : AMDEL REPORT AN 1800/70
ROBINSON, R.R.
SEE ALSO FIG. 16 & 17

	DEPARTMENT OF MINES – SOUTH AUSTRALIA	Scale: AS SHOWN
Compiled: M.G.M.	YUDNAMUTANA MINING FIELD	Date: OCT. 1969
Drn. A.G.R. Ckd.	COMMONWEALTH MINE 65 MILES E.N.E. COPLEY GEOCHEMICAL SOIL SURVEY	Drg. No. 70-237 Cd