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THE MARANBOY TIN-FIELD PROGRESS REPORT.

by

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(I) INTRODUCTION.

(a) General.

A geological investigation of the Maranboy Tin Field was commenced by officers of the Bureau of Mineral Resources in May, 1951. The investigation followed a reconnaissance of the field by K.W.B.Iten and J. Sleis of the Bureau of Mineral Resources towards the end of the 1950 field season, and is being carried out under the supervision of C.J.Sullivan, Supervising Geologist.

The object of the survey is, primarily, to obtain a detailed preliminary assessment of the potential ore reserves of the field. Geological mapping and sampling of the major lode lines has been carried out in an attempt to determine the features which control ore deposition and to enable estimates to be prepared of the grade and tonnage of ore per vertical foot, which may be expected from these lode lines. The main emphasis of this work during the 1951 field season was on the major producing lines in what has been called the Southern Field (Gray, 1914), the Main Lode and part of the Stannum King lode. In addition to this programme, an area of approximately nine square miles was mapped in detail using aerial photographs enlarged to a scale of 1 inch = 1,000 feet. Approximately 1,000 square miles of the area surrounding Maranboy was mapped on a regional basis.

Actual field work, to date, has occupied six months, from May to November, of the 1951 field season. Personnel comprising the geological party were B.P.Walpole (leader) and J.Sleis. N. J. McKay replaced J.Sleis in September.

The survey is to be continued for part of the 1952 field season. Plans accompanying this report are copies of working plans only.

(b) Situation and Access.

The Maranboy Tin Field is situated approximately 40 miles south east of Katherine township in the Northern Territory of Australia, and at latitude 14° 32', longitude 132°47'.

It is connected with Darwin-Birdum railway line and with a first class bitumen highway, the Stuart Highway, which connects the Northern Territory Administration centres of Alice Springs and Darwin, by an all-weather formed gravel road. This road runs in a westerly direction from Maranboy Battery to Maranboy Siding, a distance of 14 miles.

Darwin, the nearest seaport, is approximately 260 miles north-west of Maranboy. Access within the field itself to the various workings is by a network of fireplough and partly formed roads, which centre on the Government Battery. Most of these are all-weather tracks.

(c) Climate and Vegetation

The climate of Maranboy is typical of the Katherine region of the Northern Territory; semi-tropical with a winter "dry" season and a short "wet" season marked by monsoonal rains in the months from November to February. The type of vegetation found in the area is largely a function of local environment. The surrounding tableland country is generally savannah woodland or is covered with wattle scrub.

The edges of the tableland are marked by numerous

stands of lancewood, an excellent timber for mining purposes, which is readily available at short distances from the field. Clumps of pandanas palms are found at the edges of billabongs, creek banks and soakages in the higher reaches of the creeks and rivers.

(d) Water Supply.

The field is situated between the headwaters of the Beswick and Roper Creeks. The Beswick Creek, 4 miles east of Maranboy, is fed by a number of springs, and a permanent water supply, sufficient to satisfy any foreseeable demand, is available from two large billabongs along its course. All underground water on the field is fresh, and on most leases, water for domestic purposes is obtained from abandoned shafts. Water used at the Government Battery is obtained from a spring-fed billabong approximately 1½ miles north-west of the battery site, and is also pumped from the Beswick Creek during the dry season.

On the field itself the water table, during the dry season, is approximately 50 feet below the surface.

(2) HISTORY OF MINING.

The early history of the field is adequately covered by Gray (1915) and Jensen (1915).

The field was discovered about 40 years ago. Mines Department records indicate that the total production from the field has been approximately 47,000 tons of ore with an average grade, based on recovery, of 2.68 per cent. of concentrates estimated to contain approximately 63 per cent of metallic tin.

For the year ended December, 1951, the total production from the field was 28 tons of concentrates containing an average 59 per cent. of metallic tin.

Production from the field has been maintained, in a spasmodic fashion, since 1914, and has been largely dependent on the price of tin on the world market. In the early days of the field prospectors sought only rich outcropping shoots of ore which could be easily worked, and this fact together with the distinctive blue grey colour of the lode material, allowed the limits of the field to be quickly defined.

The construction of a government battery was completed in 1917(?). Essentially the mill consisted of ten head of stamps, grinding pans, classifiers and vanner tables, and was powered by wood fired boilers. With the exception of the replacement of the vanners by Wilfley tables, and the recent installation of a diesel power unit, the mill is much the same today as when it was first erected.

Even though the lodes are easily mined and the main shoots are so wide (from 8 to 20') that all development is in ore, no attempt has been made to work any ore shoot on the field in a systematic manner. In the past, mining has been by a haphazard type of open cutting or by sinking and benching. Until the end of the World War II native labour was employed underground, but this practice was stopped in 1946.

The deepest opening on the Main Lode is the "Tiger" shaft, on the Kay Lease, which has a depth of approximately 140'.

(3) GENERAL GEOLOGY. (See Plate 9).

(a) General.

The sediments outcropping on the field from part of the Brocks Creek Group (Noakes, 1949) of Lower Proterozoic age. They are unconformably overlain to the south by sediments and

volcanics of probable Cambrian age and which form part of the Daly River Group. To the north, east and west, the Pre-Cambrian rocks are overlain by lower Cretaceous sandstone of the Mullaman Group (Noakes, 1949). Erosion of the flat lying lower Cretaceous sandstone (referred to locally as Tableland Sandstone) by the headwaters of the Maranboy, Beswick and Roper Creeks and by the King River, has exposed the lower Porterozoic rocks in which the tin-bearing lodes occur.

The lower Proterozoic sediments are generally tuffaceous in character. In the Maranboy area they may, for convenience, be divided into two formations, neither of which warrants definition by a formal name. They have been folded into a major anticline plunging to the south-east. This structure was outlined by Gray (1916). The axial zone is strongly crenulated and strikes at 340-350° magnetic. The angle of plunge ranges from 10° to 40°. In the north-western section of the field some evidence exists of a reversal of plunge to the north-west, with the development of minor domes and basins in the sediments on the north-eastern flank of the major structure.

The core of the anticline is occupied by a formation of competent rock, dominantly acid tuff, medium grained sandstone and coarse to medium grained tuffaceous sandstone, in which the shears which form the ore channels are weak or non-existent. The limbs of the structure are occupied by a relatively incompetent formation composed of tuffaceous sandstones, shales, and sandstones, in which the lode shears are well developed.

The tin-bearing lodes represent infillings of a conjugate system of shear fractures which strike in two directions on bearings of approximately 110° and 160° magnetic. These two directions are remarkably constant. In general the 110° direction is more strongly developed and the lines of lode which follow this direction have a greater lateral extent and have been more productive, though not necessarily of higher grade, than the lodes striking in the 160° direction. The 160° direction is parallel to the strike of the axial zone of the major fold structure and also to the regional trend of the lower Proterozoic rocks in the Maranboy, Youralba and Maude Creek areas. Lodes which strike in this direction are numerous, particularly in the northern section of the field, but individually are limited in width and lateral extent.

Gray (1916) has indicated 20 main lines of lode striking in the 110° direction. Detailed mapping of the field by the present party has shown however, that the majority of these features consist of numbers of small en echelon lode-filled breaks. Only Line 2 (of Gray), Line 7 (Stannum King) and Line 8 (Main lode) are actually continuous features in plan.

The attitude of the lodes striking in the 110° direction is remarkably constant. In all cases studied, the lodes dip to the north at angles ranging from 65° to 85°. Shearing stress as the causal factor in the development of these breaks, is indicated by strong brecciation within the lodes and pronounced grooving on the hanging walls of openings in the Main Lode and Stannum King lode. The movement which initiated the formation of this system of shears was post folding in age or may possibly have developed as a culmination of the folding movement with a change in the direction adopted by the shearing couple. There is some evidence to support this latter assumption as the axial zone direction of the major anticline in the Maranboy area is sigmoidal in character.

The lodes have been displaced laterally by a large number of faults, many of which are now marked by prominent quartz veins. This movement is possibly post lower Cambrian in age, as some of the faults are known to continue through rocks assigned to the Daly River Group.

(b) Igneous Rocks.

The closest known outcrop of granite to the Maranboy field is at Yeuralba, approximately 30 miles north of Maranboy. This granite is acid in composition and associated with it are tin-bearing lodes similar in type to the Maranboy lodes, as well as wolfram- and copper-bearing lodes. On the Maranboy field, no true granite was noted by the present survey, although Gray (1916) refers to "Red Granites" in the southern field. These are, in fact, Cambrian volvanics overlying porphyry. Porphyry crops out in the southern and northern sections of the field but is apparently pre-lode in age.

The footwall of a porphyry dyke on the Ibis lease has formed the lode channel for this section of the Stannum King Lode.

Quartz-mica greisen, which is in some places tin-bearing, and in many places contains abundant tourmaline, outcrops in the north field and also at Yeuralla.

(4) MARANBOY LODES.

(a) General.

The Maranboy lodes are uniform in character and show little variation in mineralogical composition. Stillwell (1952) describes the lode material as hornfels in which the silicates of the original sediments have been replaced by tourmaline, producing a dense, dark coloured, fine-grained quartz tourmaline rock.

Further recrystallization has led to the introduction of coarser quartz and tourmaline which occurs as small leases along fractures. Small amounts of hematite, fine scaly mica and bismutite occur as accessory minerals; the mica in some cases is altered to chlorite. Stillwell reports a rare occurrence of minute inclusions of chalcopyrite and pyrrhotite in the cassiterite.

Field work has indicated two distinct phases of mineralization: firstly a lode phase which consisted essentially of alteration of the walls of the lode channels by the introduction of quartz and tourmaline - tourmaline was possibly the principal mineral introduced during this phase; secondly, an increase in the degree of stress apparently led to reopening of the lode channels and the introduction of further quartz and associated cassiterite, together with more tourmaline and accessory minerals. In some places marked brecciation of the pre-existing lode material with infillings of quartz, cassiterite and coarse tourmaline around the breccia fragments was noted. This second phase, which is here referred to as the "ore phase" of mineralization, apparently took place concurrently with greisenization. In the area referred to by Gray (1915) as North Field, quartz-mica greisen stringers and apophyses cut sharply across barren quartz tourmaline lodes.

Cassiterite occurs as crystals generally associated with quartz, in veinlets within quartz- tourmaline lode material, interstitial to breccia fragments in lode; as disseminations; as infillings of joint cracks; as small stringers intersecting country rock forming the footwall of the main lode, and associated with quartz; and as miniature stockworks in lode material. Cassiterite also occurs, on the Alma lease in the North Field, in the quartz mica greisen. The cassiterite ranges in size from very fine grains to crystals up to ¼ inch in diameter.

(b) Individual Lodes.

The more important lodes on the Maranboy Tin Field, in what is considered to be their order of importance as potential tin producers, are:

(1) Main Lode
(2) Stannum King Lode
(3) Cosmopolitan Lode (North Field)
(4) Other lodes.

Incorrectly numbered. No page 5 in record 1952/31.

of these lodes detailed information is available only for the Stannum King Lode and the Main Lode.

(1) The Main Lode. The Main Lode is approximately 2½ miles in length and most of the ore won from the field to date has come from workings along the line. This line of lode was surveyed and mapped over a length of 6,000 ft. by the present party, using a scale of 1 inch = 40 feet. A 1 inch = 100 feet reduction of this work is shown on Plate 1 accompanying this report. Longitudinal sections showing the positions of sample channels cut and assay results, have been compiled for the individual leases in the Star of the West-Eureka section of the lode. Sampling to date has not been extended east beyond the eastern boundary of the Eureka base. The main object of the sampling has been to indicate whether the shoots were in fact limited to the main openings on the line of lode, and to give some indication as to whether or not tin could be obtained from the unworked sections of the lode between the known ore shoots.

Gray (1915) suggested that the ore occurs in pipes at the intersections of two sets of fractures, the 110 degrees and the 340-350 degrees directiosn. Detailed mapping of the Main Lode, however, did not disclose any evidence to support this theory. Lewis (1937) suggested that the ore occurrences are controlled by the distribution of competent sandstone (favourable) and incompetent slates (unfavourable). Whilst this theory cannot be entirely discounted, it is difficult to see from the outcro ps available, how Lewis' ideas can be substantiated.

A broad control of lode distribution by the rock types intersected is apparent from the fact that the lode shears die out or lose their identity in the "barren formation" of competent rock which occupies the core of the major anticline. No true slates were found to be intersected by the productive section of the Main Lode. The sedimentary types present are lenticular in character.

The main ore-bearing sections are in many cases coincident with, but not necessarily confined to, the wider sections of the lode.

It is suggested that the main controlling factor in the distribution of the richer sections, was the original character of the opposing faces of the place of movement. Dislocation of irregularities on these faces has resulted in wider makes of lode where an "embayment" has coincided with an "embayment". The reverse is the case where "ribs" have coincided. Marked brecciation is evident along the line of lode, but dragging of the wall rocks is negligible. Well defined sub-horizontal grooving on the hanging wall is suggestive of a lateral rather than a vertical component.

The hanging wall is generally well defined. The footwall tends to be irregular with tongues of lode material projecting out into the wall rock along joints and bedding planes.

In the richer shoots, the higher grade ore occurs mainly as small individual, en echelon shoots, ranging up to a maximum of one foot in width as many as three of these shoots have been noted across a width of 10 feet on the Osman lease; such a distribution of cassiterite within the main ore-shoots indicates that sampling of the total width of the lode is essential if a true estimate of the grade of a complete block of ore is to be obtained. Unfortunately, this was not possible in most cases and the samples lengths should in each case be compared with the width of lode indicated on the surface plan.

A preliminary assessment of the tonnage per vertical foot and of grade which may be expected from the Star of the West Eureka section of the Main Lode is given in Table 1. The tonnage per vertical foot shown is probably reasonably accurate.

The grades indicated, however, whilst based on all the evidence available to date, may require revision as more information is accumulated.

The figures indicated for the brade of the blocks between the major workings are based on the assay results of samples cut during the present survey. The samples were necessarily confined to suitable faces in old and present workings and the sampling interval is not regular.

The bottoms of the main open cuts and stopes could not be sampled. The grades given for these sections is the average grade for the particular lease on which they are situated. In some cases a different grade from the average for the lease is given for certain sections where the grade recovery of extracted ore is known. However, mill records are incomplete and mill recoveries, even where known, do not always give a reliable indication of the grade of the ore, as recoveries have been subject to considerable variations according to the type of ore treated and to the operating conditions at the time. Assays are not available for either heads or tailings of the crushings of which records have been kept. A limited amount of head and tailing sampling carried out during the present survey indicates that mill recoveries are usually not more than 50 per cent.

Where the average grade shown for a block is based on crushing returns it is shown as per cent. of SnO_2 concentrates. Averages based on sampling, and the averages for the lease as whole, based on a combinat on of sampling and crushing results, are given as per cent. Sn. In converting the results of crushings to content of metallic tin in the ore, it has been assumed that the mill recoveries averaged 60 per cent. and that the average grade of the concentrates obtained was 60 per cent. Sn. Consequently the figures for tin content of the ore by assay are interchangeable with the figure for recovery of SnO_2 concentrates by the mill. From the information available about mill recoveries, it is considered that this basis of conversion is reasonably conservative.

"Reported" grades are indicated only where the source of the information was considered to be reliable and could be cross-checked with other and independent reports. In each case where grade is based on reported information, this fact is noted in the remarks column.

The term "ore" is used for material of grade indicated by sampling to average 0.5 per cent. Sn. or higher. The conversion factor used in calculating tonnages is 13 cubic feet per ton.

TABLE I.

(Showing tonnage per vertical foot of lode and average grade and tonnage per vertical foot of indicated ore)

Main Lode.

Star of the West - Eureka Section.

Lease	Situation Co-ordinates.	Length (feet)	Average Width (feet)	Tonnage per vertical foot	No. of Samples.	Average % Grade Sn. (Sampling)	Average Grade SnO_2 (mill recovery and reported) %	Average Grade (all information) %	Remarks.	Average for Lease of ind. ore Sn. (Weighted for T'age)
Star of the West (Main Lode)	2500W/1600N to 2256W/1480N.	250	18	346					No information yet available Probably low grade.	
	2256W to 2214W	50	17	65			2	2		
	2214W to 2186W	62	12	57	15	0.52	1.25	0.75	Samples cut in position - considered to be off enriched zne on footwall side.	1.85%
	2186W to 2154W.	38	10	30			8	8	Reported	
	2154W to 2056W	134	9	93					No information yet available.	
	2056W to 1980W.	60	7	32			2.5	2.5	From personal records of lease holder and reports.	
	1980W to 1870W.	130	5	50				0.5	Estimated from 3 assays & 6 pan samples. Letter from random chips and not plotted on assay plan.	
	1870W to 1734W	164	8	101	13	1.04		1.04		
				Total tons of lode per vertical foot - 774 tons " " " indicated ore per vertical foot - 335 tons.						
Star of the West (Little Lode)	2290W/1340N to 2034W/1140N	340	3	78			2.5			
Osman	1734W to 1674W.	64	22	108	5	1.48	1.5	1.5	Sampled only on west wall of this block. Grade of remainder reported andfrom old records.	
	1664W to 1616W.	55	8	34					In quartz impregnated post lode crush zone.	
	1616W to 1520W.	100	10	77			3			
	1520W to 1456W.	60	13	60	8	1.13	1.75	1.44	Mill recovery and sampling	1.68%Sn
	1456W to 1374W.	94	10	72	8	0.95	1.75	1.64	Reported in part	
	1374W to 1300W.	100	7	54	1	0.54	0.5	0.5	Based on pan assays, reports and chemical assay of one sample only.	
	1300W to 950W.	370							No information.	
				Total tons of lode per vertical foot - 405 " " " indicated ore per vertical foot - 317.						

Lease	Situation Co-ordinates.	Length (feet)	Average Width (feet).	Tonnage per vertical foot.	No. of samples.	Average Grade. Sn. (sampling)	Average Grade SnO_2 (mill recovery)	Average Grade (all in Formation)	Remarks.	Average for lease of indicated ore Sn. Weighted for T'age.
Anaconda.	950W to 770W.	200	6	92	2	0.48		0.5	Average grade based on two chemical assays, and 5 pan assays of random samples.	
	770W to 730W.	46	13	46	25	0.88		0.88	Samples on eastern end only. (See long section Plate 4).	
	730W to 698W.	31	20	48			2.0	2.0	No.1 open cut.	
	698W to 680W.	18	15	20	6	0.57		0.57	Samples on west end of block only. Samples cut mainly on footwall side of face.	
	680W to 560W.	126	10	97	4	1.41	2.0	1.99	Includes No. 1 Shaft and No. 2 Open cut.	1.28%
	640W to 534W.	120	8	74	3	1.56	2.3	2.0	Includes No. 3 and No. 4 open cuts. (Final average grade of 2% is estimated).	
	534W to 480W.	64	6	29	-	-	-	-	No information.	
	480W to 304W.	96	7	54	10	1.14		1.14	Includes No. 5 and No. 6 open cuts.	
	394W to 212W.	202	5	77	2	0.57		0.5	Grade based on 4 random pan assays (not plotted) and 2 chemical assays. This block strongly faulted.	
	212W to 112W.	100	5	38	3	1.05	2.0	1.5	Includes No. 7 Open Cut. (average grade SnO_2 reported only). This block possibly contains part of shoot in No.1 Open Cut of Ray lease.	
									Total tonnage of lode per vertical foot - 574.	
									" " of indicated ore per vertical foot - 545.	
Ray	112W to 22W	100	13	100			2.2	2.2	Reported	
	22W to 14W	20	15	20	17	1.72		1.72	Samples on east face only.	
	14W to 8E	20	22	23			2.0	2.0	Average of 33 samples from east and west faces thin section 1.58%.	1.93% Sn
	8E to 104E	106	5	41	21	1.14		1.14		
	104E to 156E	60	5	23			2.5	2.5	Reported (approx. only).	
	156E to 310E	174	2	90					No information.	
	310E to 360E	56	5	22	4	1.47	2.0	1.73		
									Total tons of lode per vertical foot - 319	
									" " " indicated ore per vertical foot - 229	

Lease	Situation Co-ordinates.	Length (feet)	Average Width (feet)	Tonnage per vertical foot	No. of Samples.	Average % Grade SnO_2 (Sampling)	Average Grade SnO_2 (mill recovery and reported) %	Average Grade (all information) %	Remarks	Average for lease of ind. ore Sn.(Weighted for T'onage)
Eureka West	200E to 454E.	270	6	124			3.5		Little work done on this lease. Lode is non-outcropping partly exposed in shallow costeans and by one shaft. Only 177 tons recorded all of which were from "Fortines" Shaft. Average grade for lease assumed as average of remainder of Main Lode - Star of West Eureka Section.	1.58%.
Eureka	454E to 618E	160	6	74	5	0.84	1.5	1.05	Includes No. 1 open cut (Grade SnO_2 reported only). Lode non-outcropping - no information yet available. (possible ore)	1.5%
	618E to 720E	110								
	720E to 904E	196	12	181	7	1.71	2.2	1.95	Includes No. 1 Shaft. No. 2 and No. 3 Open-cuts.	
	904E to 1024E	124	6	57	3	0.68		0.68	Insufficient information.	
	1024E to 1250E	240								

Total tons of lode per vertical foot - 312
" " " indicated ore per vertical foot - 312

SUMMARY.

Main Lode.

Star of the West - Eureka Section.

Co-ordinates 250E to 1024E (see plate 1)

Total length - 4,120 feet.

Total tons lode per vertical foot - 2,508 tons

Total tons indicated ore per vertical foot - 1,862 tons.

Average grade of indicated ore - 1.58% Sn.

(ii) Stannum King Lode. Sampling and geological mapping of this line of lode has not yet been completed. On the Stannum King lease, the average width of the lode is to the order of 15 feet and in two places ore has been mined across the full width. A total length of 1,260 feet has been surveyed to date, and 1,266 tons of lode per vertical foot were measured. Irregular open cuts and five shafts, one of which is reported to be 130 feet in depth, are situated in the central section of the lease over a length of 440 ft. along the line of lode. (Plate No. 8).

The average grade (recovery) of ore extracted from this lease to date is approximately 3 per cent. SnO_2.

No ore has been mined from the lease for a number of years but preliminary sampling and reliable reports indicate that the bottoms and walls of all openings are still in ore.

Evidence available to date suggests that the potential tonnage of ore per vertical foot is much greater for this lease than for any comparable lease on the Main Lode.

Other leases situated on the Stannum King Lode are the Klondyke and Red Cross leases to the east of the Stannum King lease, and the Ibis lease to the west. Sampling and geological mapping of these leases is to be carried out as part of the programme for the 1952 season.

(iii) Cosmopolitan Lode. This lode is situated in the North Field. The lode is covered by a thin scale of Cretaceous sandstone for most of its length. Approximately 150 feet length of the lode is exposed near the present workings. The average width of this section is approximately 9 feet giving a tonnage per vertical foot of 104 tons for this section. The last crushing recorded from this lease was for 210 tons, averaging 1.42 per cent. recovery (68.5 per cent. concentrates). Reliable reports indicate that the average grade of ore extracted from the lease in the past has been to the order of 2.5 per cent. Sn.

The lease has not yet been surveyed in detail but the width and continuity of the exposed section of the lode suggests that it may extend both east and west for some distance beneath the cover of Cretaceous sandstone, and hence a greater tonnage per vertical foot of ore may be available.

(iv) Other Lodes. Other lodes on the Maranboy Tin Field which warrant investigation are the Southern Lode (Grays Lode Mine No. 2). Bartons Lode, Annieffs Lode in the North Field and Burns Lode. Production has been recorded from Bartons, Annieffs and Burns Lodes but the figures are not complete and are not yet compiled.

(5) CONCLUSIONS AND RECOMMENDATIONS.

The present mining practices of haphazard open cutting and sinking and benching are necessarily limited to relatively shallow depths, and it is apparent that most of the easily won high grade ore above a general level of 70 ft. has been extracted. The present lease holders must therefore be satisfied with a grade of ore well below the average for past years, or be prepared to mine ore at greater depths than at present. Only one operator on the field has equipment installed which is capable of efficient mining below 100 feet. It is doubtful whether the milling facilities on the field could cope with the ore output if all present operators were producing at the maximum rate even with the mining plant available at present.

The potential tonnage and grade of ore per vertical foot shown in Table (1) includes blocks of ore with an average grade of 0.5 per cent. It is extremely unlikely that blocks of this grade of ore could be economically extracted and treated under present conditions, but the average grade shown for the Main Lode suggests that they could be combined with blocks of ore of higher grade and economically mined by a larger scale operation.

The measured tonnage per vertical foot and calculated average grade of ore for the Star of the West-Eureka section of the Main Lode suggests that a large scale mining operation may be possible on the Maranboy Tin field. It is considered that a considerable quantity of additional ore may be proved to be available when the investigation of the south eastern section of the Main Lode, the Stannum King Lode, Cosmopolitan Lode and Southern Lode, is completed.

It is recommended that sampling and geological mapping of the Main Lode and Stannum King Lodes be continued and that the Cosmpolitan Lode and Southern Lode be further investigated. It is further recommended that the probable extension in depth of the Main Lode and Stannum King lodes be tested by diamond drilling and that a number of short diamond drill holes be put down to determine the width and possible grade of the non-outcropping sections of the Main Lode and of those sections where only limited information is available on the surface.

(6) ACKNOWLEDGMENTS.

The writer wishes to thank the residents and miners on the Maranboy field and Messrs. Ralph Foster and Ken Mader, Manager and Foreman of the Maranboy Government Battery for their generous co-operation and hospitality during the 1952 field season. Thanks are also due to Dr. Junner of Selection Trust, London, for many helpful suggestions and to the officers of the Bureau of Mineral Resources for their assistance in preparing this report.

The geological investigations carried out prior to the present survey have provided much useful information and have greatly assisted the present work.

(7) BIBLIOGRAPHY.

The following is a list of the publications that have been consulted. An asterisk denotes publications to which no specific reference has been made in the text.

Gray, G.J., and Jensen, H.I., 1915 - Report on the Maranboy Tin Field, Northern Territory Bull.11.

Iten, K.W.B., 1950 - Maranboy Tin Field Reconnaissance Survey. Comwlth. of Aust. Bur. Miner. Res. Geol. & Geophys. Rep. 1950/40 (unpublished).

Lewis, T.V., 1937 - The Maranboy Tinfield, Pine Creek District. Aer.Geol. and Geophys.Surv. N.Aust. Rep. N. Terr. No. 35 (unpublished).

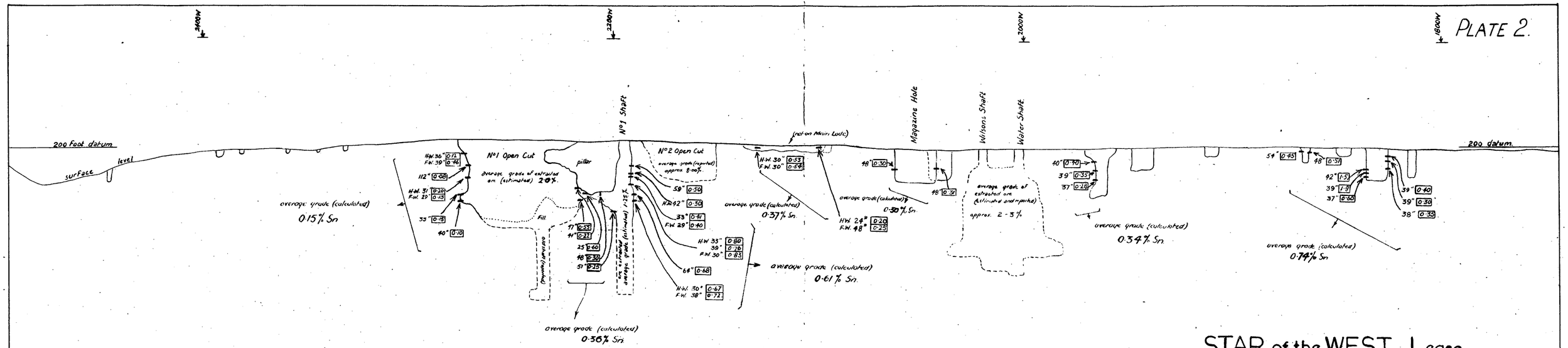
Noakes, L.C., 1949 - Geological Reconnaissance of the Katherine-Darwin Region, Northern Territory with Notes on Mineral Deposits. Comwlth. of Aust. Bur. Miner. Res.Geol. & Geophys. Bull. 16.

Stillwell, F.L.,1952 - Tin Ore from Maranboy Northern Territory, C.S.I.R.O. Mineragraphic Investigations. Rept. No. 495.

* Thyer, R.J., and Rayner, J.M., 1937 - Geophysical Report on the Maranboy Tinfield, Pine Creek District. Aer. Geol. & Geophys. Surv. N. Aust. Rep. N. Terr. No. 36.


Plate 1
Geological Map
MAIN LODE
MARANBOY TIN-FIELD
Star of the West, Anaconda, Osman, Ray, West Eureka, Eureka, Bull, Southern Claim Leases.
Scale
0 20 40 60 80 100 200 300 400 500 Feet
quartz tourmaline lode
mined ore (by open cutting)
dip and strike
quartz filled fault
road
contour line
alluvium
Plane Table and Telescopic Alidade Survey and Geological mapping
by B.P. Walpole, G. Sleis, N.J. MacKay
1951
Bureau of Mineral Resources
Star of the West
Osman
Anaconda
Ray
West Eureka
Eureka
Bull
Southern Claims

PLATE 2.



STAR of the WEST Lease
Maranboy Tin-Field

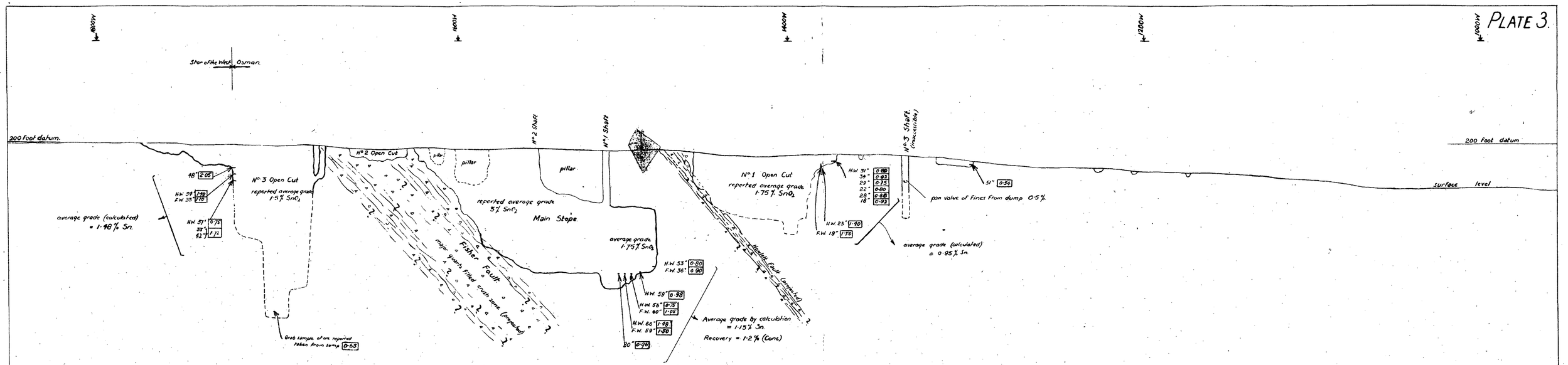
Longitudinal projection in plane of Main Lode showing assay figures for metallic tin and grade of ore extracted from old workings.

SCALE

0 10 20 30 40 80 120 Feet

Bureau of Mineral Resources.

PLATE 3.



OSMAN Lease

Maranboy Tin-Field

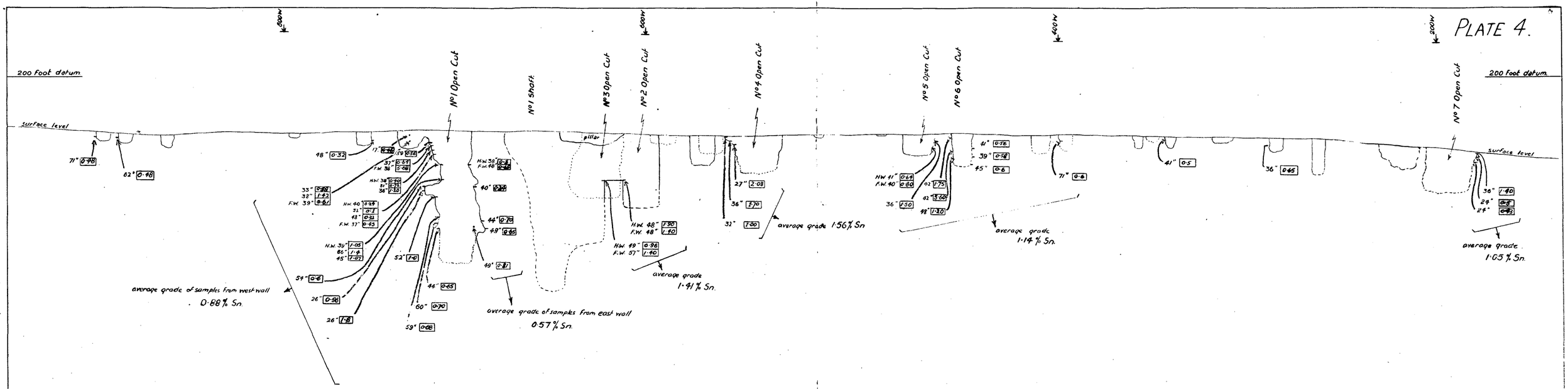
Longitudinal projection in plane of Main Lode showing assay figures for metallic tin content.

Scale

0 10 20 30 40 80 120 Feet

Bureau of Mineral Resources

PLATE 4.



ANACONDA Lease

Maranboy Tin-Field

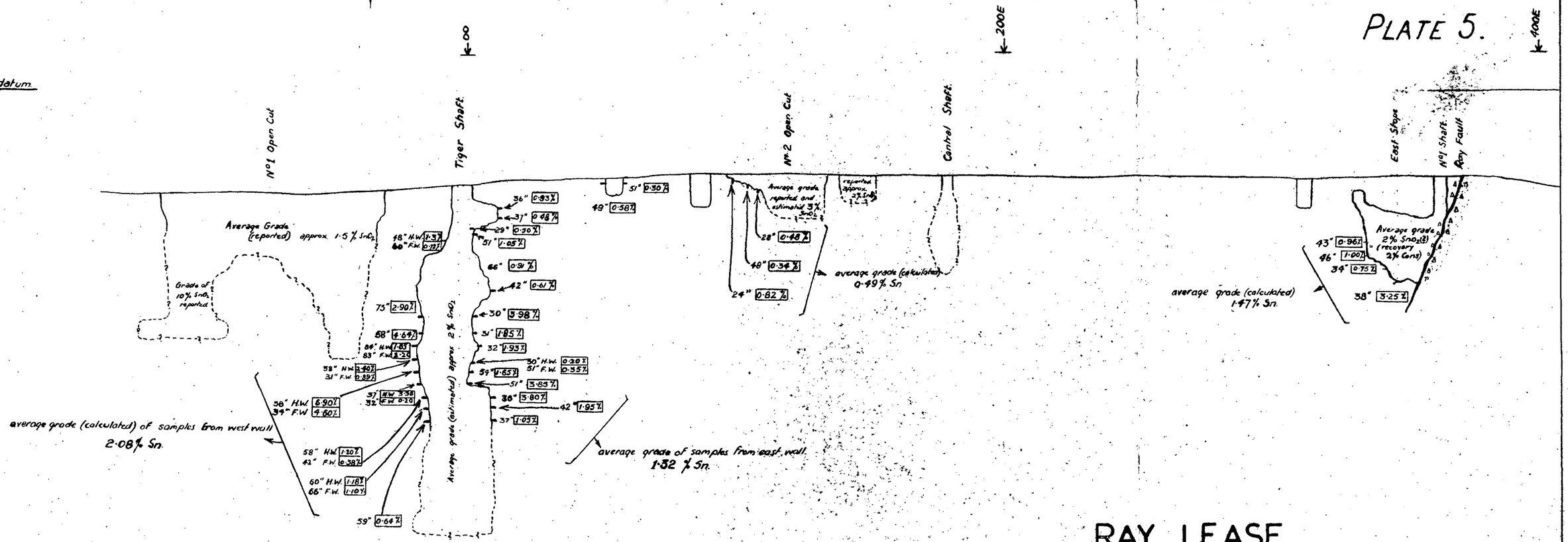
Longitudinal projection in plane of Main Lode showing sample widths and assay results for metallic tin.

Scale

0 10 20 30 40 60 120 Feet

Bureau of Mineral Resources.

PLATE 5.



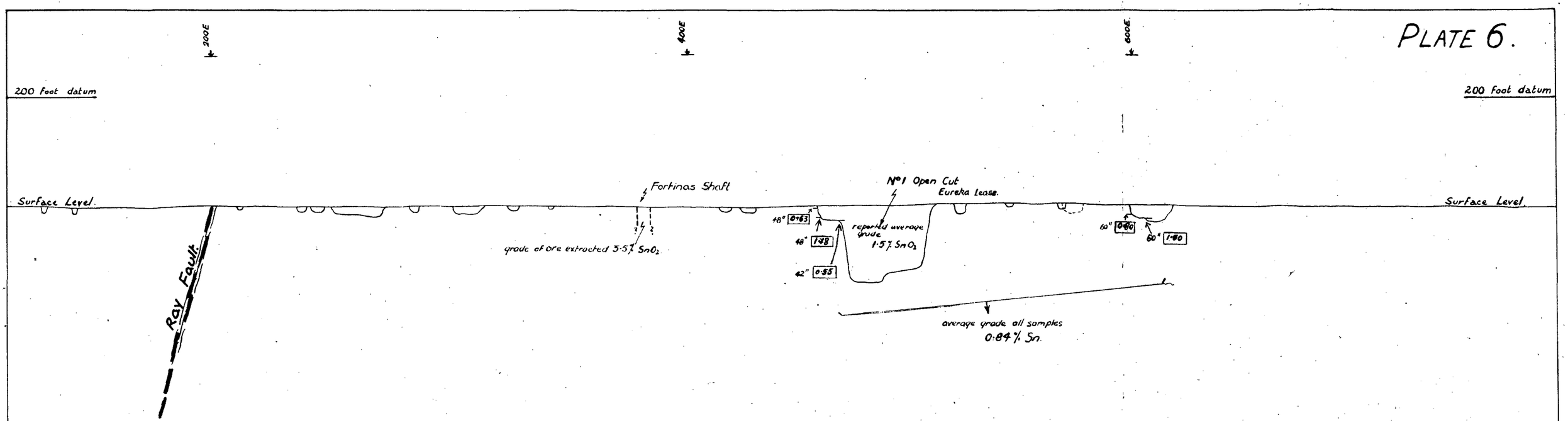
calculated average grade all samples from Tiger Shaft = 1·72% Sn.
" " " " " " Ray Lease = 1·58 % Sn.

RAY LEASE
Maranboy Tinfield
Longitudinal Projection in Plane of Lode
showing Assay results and grade of Ore extracted from old workings

Scale
0 10 20 30 40 80. 120 Feet.

Bureau of Mineral Resources

PLATE 6.



EUREKA - West EUREKA Leases
Maranboy Tin-Field

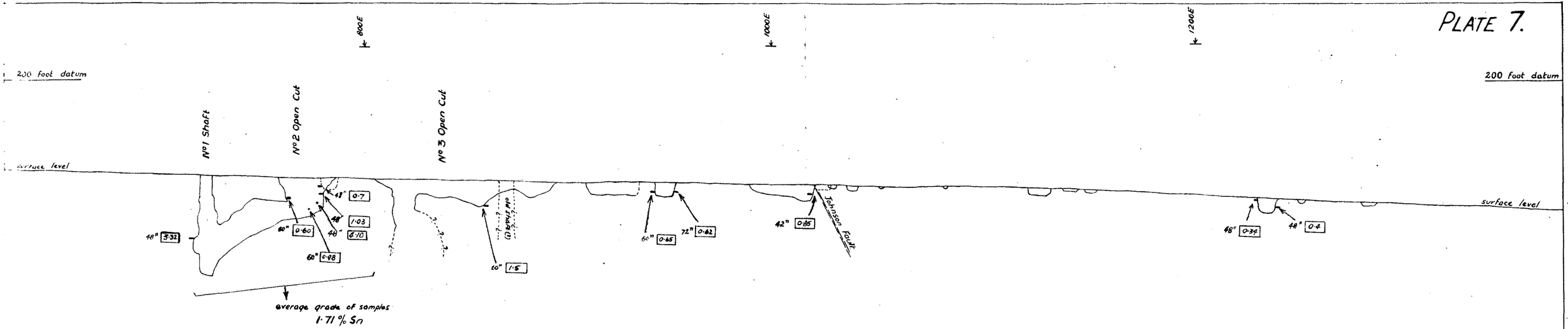
Longitudinal projection in plane of Main Lode showing sample widths and assay results for metallic tin

Scale

0 10 20 30 40 80 120 Feet.

Bureau of Mineral Resources.

PLATE 7.



EUREKA Lease

Maranboy Tin-Field

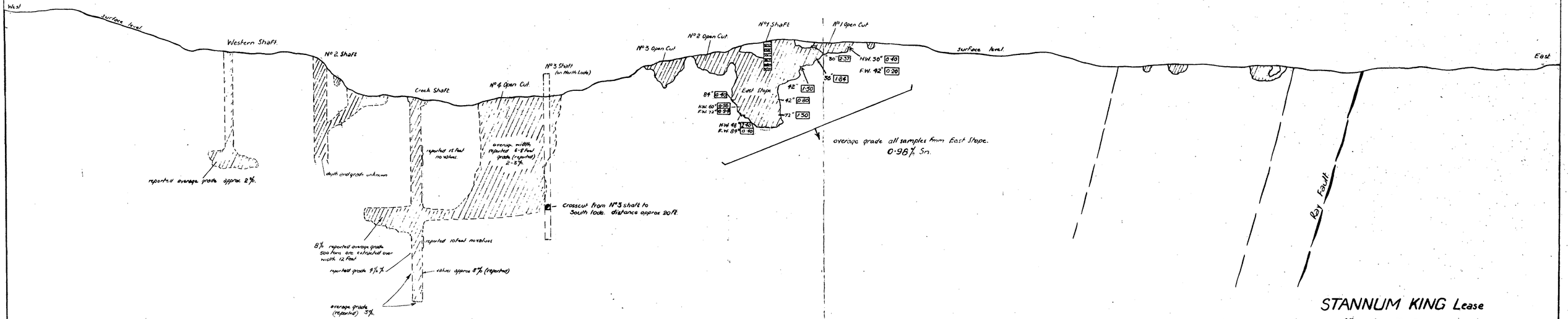
Longitudinal projection in plane of Main Lode showing assay results for metallic tin.

Scale

0 10 20 30 40 80 100 feet

Bureau of Mineral Resources

Plate 8



STANNUM KING Lease

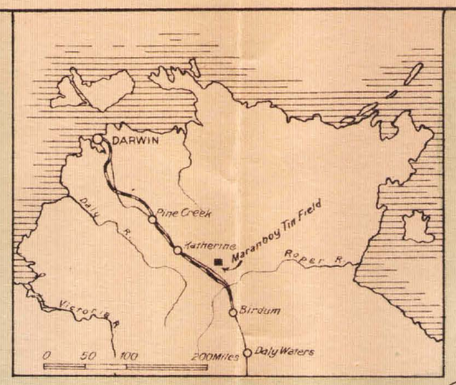
Maranboy Tinfield

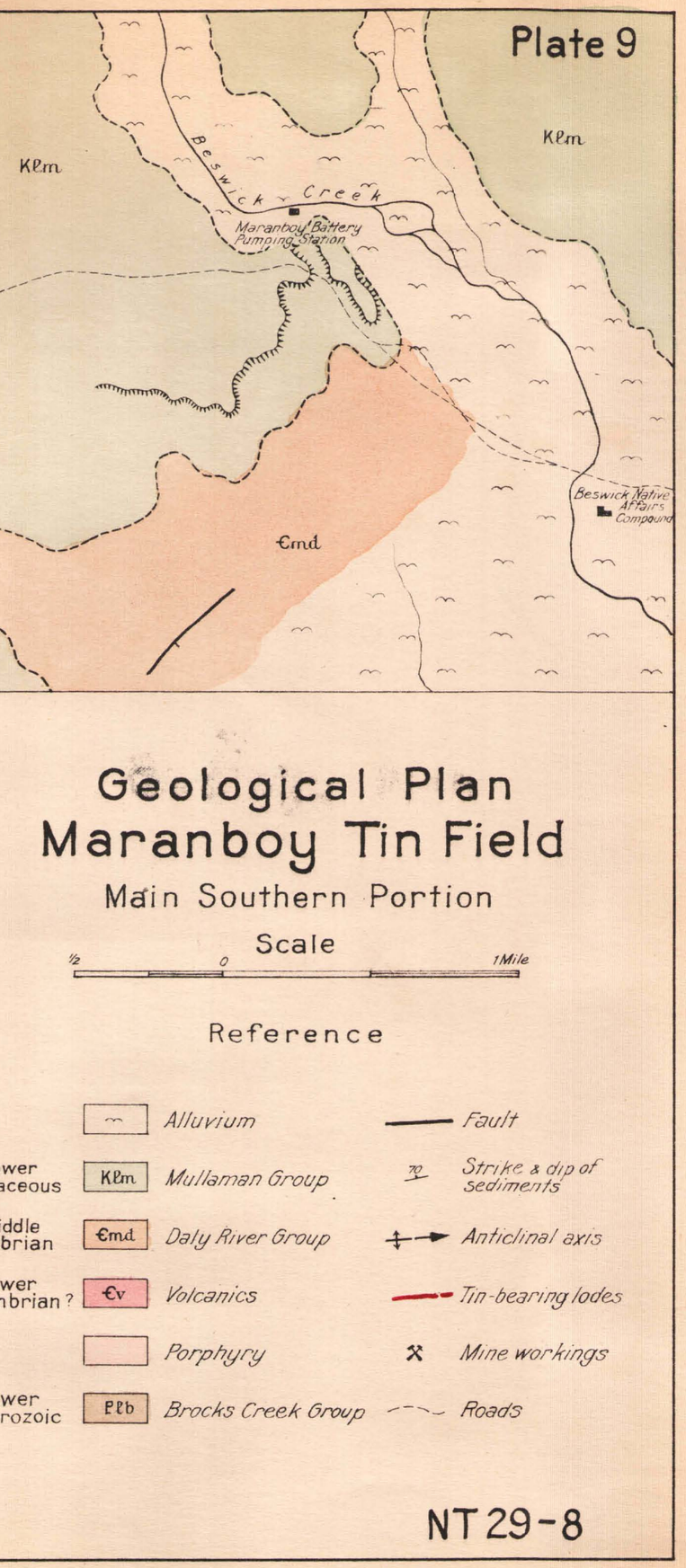
Longitudinal Projection in plane of South Lode.

Scale

0 10 20 30 40 80 120 feet

Plate 9





Geological Plan
Maranboy Tin Field
Main Southern Portion

Scale

½ 0 1 Mile

Reference

		Alluvium	Fault
Lower Cretaceous	Klm	Mullaman Group	70 Strike & dip of sediments
Middle Cambrian	€md	Daly River Group	Anticlinal axis
Lower Cambrian ?	€v	Volcanics	Tin-bearing lodes
		Porphyry	Mine workings
Lower Proterozoic	Plb	Brocks Creek Group	Roads

NT 29-8