

**REPORT ON THE EXTRACTION OF
INFORMATION**

RELATING TO THE MINERAL LEASES OF

MINERAL HOLDINGS AUSTRALIA Pty Ltd.

In the Specimen Hill Area
of the Mt Balfour Mineral Field.
North Western Tasmania,

from copies of the
Broken Hill Pty Co. Ltd
and of
McPhar Geophysics Ltd

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REPORT ON THE EXTRACTION OF INFORMATION RELATING TO THE
MINERAL LEASES OF MINERAL HOLDINGS AUSTRALIA PTY. LTD. IN
THE SPECIMEN HILL AREA OF THE MOUNT BALFOUR MINERAL FIELD,
NORTH-WESTERN TASMANIA, FROM COPIES OF REPORTS OF THE
BROKEN HILL PROPRIETARY CO. LTD. AND OF MCPHAR GEOPHYSICS LTD.

I INTRODUCTION

In late August 1969, copies of the following reports and maps were made available by Mineral Holdings Australia Pty. Ltd. (hereafter referred to as M.H.A.), and a request made that all information in them relating to the leases of M.H.A. in the Specimen Hill Area should be extracted from them.

- i) Four reports and four maps prepared by the Broken Hill Proprietary Co. Ltd. (hereafter referred to as the B.H.P. Co.). Two of the reports (444 and 455B) were short ones and complete as regards the text. The other two reports were larger ones, but the greater part of the texts were missing and only such sections as Summary, Introduction, Location and Access and Conclusions and Recommendations were contained in them. The only text figures supplied were Locality Maps, the other figures being missing.

Copies of four maps were supplied and these represented some of the plates that illustrated the reports.

- ii) A bound report complete with plates as prepared by McPhar Geophysics Ltd. (hereafter referred to as McPhar) on an Induced Polarisation and Resistivity Survey made by that company in the Mount Balfour field.
- iii) A copy of the mineral chart of the Mount Balfour Field as prepared by the Department of Mines of Tasmania, and showing the leases in which the M.H.A. company was interested.

Normally such a task would be a comparatively easy one, but as the investigation of the reports, maps, etc. progressed, it became clear that the task would be a difficult one for the reasons that will be described in section IV. This resulted in the investigation being a lengthy one.

II LOCATION AND ACCESS (See Plate 1.)

The Specimen Hill tin-bearing area is situated about 33 miles by air-line from Smithton, a township on the north-western coast of Tasmania. The area lies immediately to the south-west of the Balfour township site, and forms part of the Mount Balfour mineral field.

Access is gained by road from Smithton via Marrawah, the mouth of the Arthur River, Temma and Balfour, a total distance of 70 miles. The Arthur River was formerly crossed by a punt, but it is understood that a bridge was completed recently across the river. The last 20 miles of the road are negotiable only by a four-wheeled drive vehicle.

An airstrip suitable for light aircraft has been constructed recently near the Specimen Hill area.

002 III MINING LEASES (See Plates 2, 3 and 4)

Mineral Holdings Australia Pty. Ltd. holds the following mineral lease:

101M/67 of 40 acres.

and has options over the following leases:

- 62M/68 of 28 acres held by H.J. and H.W. Griffiths
- 58M/68 of 10 acres held by E.J. Bayley
- 63M-59M/68 of 20 acres held by E.J. Bayley.

IV DIFFICULTIES IN TRANSFERRING INFORMATION FROM THE B.H.P. AND MCPHAR MAPS ETC. TO THE M.H.A. LEASES

It is clear that if a mining tenement was shown on the B.H.P. and McPhar maps, etc., and its position could be established in relation to the M.H.A. leases on the mineral chart, the transference of information would have been easily done. There was a mining tenement on the B.H.P. maps, etc. It was a 320 acre option area based on a consolidated lease of 320 acres that was composed of four leases of 80 acres each. This option area was marked on the B.H.P. geological map but was not its true size because either of inaccurate drafting in the first place or of excessive shrinkage of the paper on which the map appeared (the map was a copy reproduced from an original). Moreover, the map was drawn on an approximate scale of 1 inch to 2200 feet having been based on aerial photos; the scale of a map obtained by tracing from aerial photos is always approximate. Because of the incorrect size of the option area and the approximate scale of the map, it was not possible to use this area (as it appeared) to transfer information.

The option area appeared also on a text figure (actually a locality map) in B.H.P. report 444. The scale of the figure was given as 1 inch to 20 chains (the scale of the mineral chart), and the option area was drawn accurately at that scale. Unfortunately all the other information (topographical details, geophysical traverses, etc.) was drawn at a scale of 1 inch to 1000 feet so that it was impossible to use the option area on that figure.

Only one plan or map was included in the McPhar report, and it was a copy of appropriate parts of a B.H.P. map. The option area was shown but its size and position were inaccurate because they were copied from an inaccurate B.H.P. map. The map was on the approximate scale of 1 inch to 2200feet. Moreover, there was no information to indicate how the McPhar traverse lines had been put on the map, and it seems possible that they were put on diagrammatically rather than accurately.

Another difficulty that became known through correspondence with the Department of Mines, was that the B.H.P. parties may not have known the true position of the option area on the ground. Inquiries to the Department of Mines revealed that neither the 320 acre consolidated lease nor the four 80 acre leases of which it was composed, had been surveyed. The B.H.P. party may have been shown pegs in the ground, but apart from one datum peg none of the pegs would have been accurately in position.

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IV DIFFICULTIES IN TRANSFERRING INFORMATION (Cont.)

It is clear from the above that the option area could not be used to transfer information from the B.H.P. and McPhar maps, etc. because of its inaccurate placings on those maps. The only other features common to the B.H.P. and McPhar maps and to the mineral chart were topographical ones such as rivers, creeks, roads, etc., and these were used largely to assist the transference of information. They were not used alone but in conjunction with the option area after it had been fixed as accurately as possible on the different maps.

The option area was so used because most of the land included in M.H.A. leases was included in it and it was easier to use for enlargement of the various maps. Correspondence with the Department of Mines resulted ultimately in the marking on a mineral chart of the location of the four 80 acre leases (comprising the option area) as far as was known to the Department of Mines. Using this location and the topographical features of the mineral chart and other maps, the position of the option area was transferred to the other maps.

Another difficulty in comparing maps, charts, etc., or transferring information from one map to another, was that all the maps, charts, were copies prepared by various means (printing, etc.) and on different types of paper. The papers alter in size and thus the maps, etc., are not really on the scales marked on the map, etc. This meant that their existing scales had to be determined in relation to the other maps. The mineral chart was assumed to have retained its original scale of 1 inch to 20 chains and by comparison with it, the scales of other maps, etc. were determined relatively to it.

Although the streams and roads were used to compare maps and transfer information from one map to another, they did not agree with one another in detail although they did agree generally. This non-agreement is caused by several factors. Firstly, the whole length of streams and roads are not always surveyed for the mineral chart. Their intersections with lease boundaries are accurate, but between intersections the courses are generally sketched. The intersections however, provide a general control over the courses. Roads are, of course, in many cases, surveyed for other purposes and are therefore shown accurately on the mineral charts. The streams and roads on B.H.P. maps were taken from aerial photos and were therefore in general a fairly good picture of their courses was obtained. The streams and roads shown on the plates accompanying this report are based on both sets of maps, the general courses being taken from the B.H.P. maps but controlled by those shown on the mineral chart.

V PERIOD OF PREPARATION OF REPORT AND MAPS

The long period necessary to prepare this report and the accompanying plates was caused by several factors.

- 1) the main factor was the necessity of examining the maps and endeavouring to compare them and realising all the difficulties described above and devising methods to make possible the accurate comparison of maps and transference of information from one to the other, and carrying out that work.

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PERIOD OF PREPARATION OF REPORT AND MAPS (Cont.)

- ii) time occupied in getting desired information from the Mines Department.
- iii) the reports and maps were recalled by Mr. N.M. Thomas about six times and the periods ranged from 2 days to 3 weeks.
- iv) the actual drafting work involved in transferring information from one map to another and in enlarging some of the maps.
- v) the necessity of dealing with many matters other than Balfour for M.H.A. and Tomic Exploration.
- vi) my work is on a part-time basis.

VI GEOLOGY (See Plate 2)

The following descriptions are based on information in earlier reports on the Mount Balfour mineral field and especially those the B.H.P. Co. on the tin-bearing area around Specimen Hill in that field.

The country on, and around, Specimen Hill was apparently covered by button grass and the accompanying party soil in which it grows. This covering means that there are few outcrops of rock and that the elucidation of the bedrock geology was difficult.

Alluvial tin ore was found in the secondary deposits along Tin Creek and on the lower slopes of Specimen Hill, and particularly on the northern and western slopes. On the hill slopes, the tin ore was apparently contained in detrital deposits ranging up to several feet in thickness. At the bottoms of the slopes, these deposits probably merged into the alluvial deposits along Tin Creek and other streams. Along Tin Creek, the alluvial deposits ranged in depth up to 7 feet and at many a few places exceeded that depth. The alluvial deposits consisted of sand, drift, etc. overlying coarse gravels (the tin "wash"). The gravels ranged up to about 2 feet, and consisted of boulders (up to 2 feet in diameter) and fine gravels.

The alluvial tin workings exposed the bedrock of quartzites, slates, etc. and also numerous narrow and short quartz veins in the bedrock. The quartz veins contained cassiterite, and it was these veins that shed the cassiterite (or tin ore) into the detrital and alluvial deposits.

The following description of the geology of the bedrock in the Specimen Hill area is based on the geological map and reports of the Broken Hill Prop. Co. Excepting for a zone along the eastern side, the area is occupied by quartzites and sandstones with interbedded siltstones. Few strikes and dips were measured in the area, but strikes and dips in the country to the west indicate a general northerly strike and a general dip to the west at moderate to high angles. Along the eastern side of the area, and immediately to the east of the eastern boundary of lease 101M/67, a narrow band of carbonaceous shales trends slightly west of north, and continues to the north of the lease. To the east of the shales, siltstones are present.

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VI GEOLOGY (Cont.)

The above rocks are referred to in the B.H.P. reports and maps as the Balfour sequence. A short distance north of the north-east corner of lease 101M/67, a small area is mapped as an old conglomerate surface. This surface is present at a few other places in the district, and, at some of them, conglomerates rest on it. Between these places, erosion has apparently removed the conglomerates and the surface on which they lie.

(The rocks around Balfour are now regarded as belonging to the younger Pre-Cambrian, and the Balfour sequence would be of this age).

In the Specimen Hill area, two closely spaced and parallel faults traverse the quartzites, etc, and have a general north-westerly strike. A zone of shearing with a general northerly strike traverses the eastern part of the area in close proximity to the eastern boundaries of leases 101M/67 and 62M/68. Another zone of shearing generally parallel to the above one occurs about 1000 feet to the east. Both zones traverse the siltstones. Trend lines inferred from aerial photographs cross the area with sinuous courses but a general north-north-easterly trend.

In B.H.P. report 452B, it is stated that a faulted plunging anticline is exposed on Specimen Hill and that this structure is one of the possible controls of the tin mineralisation on Specimen Hill, and that the control is possibly a function of either jointing, compression or tension cracks or minor shear planes. In report 444 it is stated that the tin-bearing quartz veins appear to have a preferred orientation along the strike of quartzites but that there were many exceptions to this. It was stated also that the veins dipped at flat angles to the south.

The tin-bearing quartz veins are narrow and short at the surface. The B.H.P. geological map (G.4928) shows only three major quartz veins. One to the west of the summit of Specimen Hill strikes north-north-easterly and dips to the east-south-east. Its thickness is apparently 8 inches. Another vein occurs near the summit of Specimen Hill has an easterly strike and dips to the south. The third vein crops out in the south-eastern corner, and strikes north-north-westerly and dips easterly. The first two veins are to the west of M.H.A. leases, but the third one is near the boundary between leases 62M/68 and 58M/68.

The following information about quartz veins cut in drill holes was obtained from the B.H.P. reports.

- D.D.B.1 Vein cut at about 160 feet was 0.3 feet thick and assayed 10.12% tin.
- D.D.B.3 Vein cut at depth up to 100 feet was 0.85 feet thick and assayed 1.41% tin.
- D.D.B.4 Vein (same as that cut in D.D.B.3) cut at a depth of up to 549 feet was 1.25 feet thick.

Tin ore was present also in formations of altered country rock (silicified and chloritised) especially in positions adjacent to the quartz veins.

VI GEOLOGY (Cont.)

Reference has been made above to the faulted, plunging anticline on Specimen Hill, but no information was given about it. The reason for this omission is that the anticline was not shown on the B.H.P. geological map available, and neither its position or other details were given in the B.H.P. reports. However, some information appeared in B.H.P. report 452B in connection with a proposed drill hole. It was stated that a drill hole near E.2/S17 was considered necessary to test mineralisation along the axis of the fold, near the Southern gravity anomaly. The probable position of that hole is in the western part of lease 62M/68.

VII B.H.P. CO'S. GROUND MAGNETIC AND GRAVITY SURVEYS (See Plate 3).

These surveys covered most of the option area of 320 acres, the parts not covered being a strip along the western side and a narrower strip along the northern side.

The layout included 11 east-west traverse lines ranging in length from 1500 to 2900 feet, and a special traverse of about 400 feet on the northern side of the road near the western end of traverse line 1 (the northernmost line). The traverses were at either 250 or 500 feet intervals and readings were made at stations 100 feet apart along each traverse or line. The layout is shown on a locality map in one of the B.H.P. reports (444), but no plans showing the anomalies obtained and the drill holes to test these anomalies and other features accompanied the reports (as made available to M.H.A.). The start of the surveys is given in terms of the co-ordinate system of the option area, but this system is not shown on any available map, and it is more or less impossible to ascertain where the zero or datum point is situated. The positions of drill holes and other features are given in terms of a co-ordinate system, but it is difficult to know whether they refer to the system of the option area, or to the geophysical layout.

The fixing of the positions of the drill holes, anomalies and other features was therefore difficult and could not be done with any accuracy. The positions shown are the nearest that could be determined after taking all factors into consideration, but it cannot be claimed that they are accurate or nearly so.

Magnetic Survey. In B.H.P. report 444, it is stated that two distinct magnetic anomalies were found. The anomalies were termed the northern and southern magnetic anomalies.

The Northern anomaly is situated in the north-western portion of option area, and was probably found on at least two traverses (line 2 and the special traverse near the western end of line 1). Its axis had a north-westerly strike, and is parallel to the inferred faults shown on B.H.P. map G.4928 with a similar strike. As far as the position of the Northern anomaly can be fixed, it appears to correspond closely in plan position with these faults. It is stated in B.H.P. report 452B that drill holes D.D.B.1 and 2 were drilled near the southern and eastern margins respectively of the anomaly. In B.H.P. report 452B it was considered that a hole was necessary near N1/W3. This hole would have been to the north-west of the above two holes and near the special traverse along the road.

B.H.P. CO'S. GROUND MAGNETIC AND GRAVITY SURVEYS (Cont.)

The Southern anomaly is at the southern end of the layout and was possibly located on one or more of lines 7, 8, 9, and 10. It is centred south of S.25/00 (probably south of line 10) and its axis strikes north-north-east. In B.H.P. report 452B a drill hole was suggested at W.O./S.26, or further south, to test this anomaly, but was apparently not drilled. Drill hole D.D.B. 5 is situated about 1000 feet to the south-east of this position.

In B.H.P. report 444 it was stated that on the surface there appeared to be no rocks or minerals that could have been expected to produce the anomalies. The drill holes (D.D.B.1 to D.D.B.4) did not yield any information to clarify the matter, although B.H.P. report 452B refers to small amounts of pyrrhotite in the cores.

Further magnetic traverses were surveyed later in the areas to the north and/or south of the option area, but little information is available about the results. It appears however, that some magnetic anomalies were obtained and that one was found on a traverse over which line MA/1 of McPhar's I.P. survey was made (see plate 4). While such places would be well outside M.H.A. leases, the results have a general bearing on the question of the cause of the magnetic anomalies. Two drill holes were drilled to test magnetic anomalies. These were probably D.D.B.5 and D.D.B.6. It is stated in the B.H.P. report of June, 1965, that the first hole (presumably D.D.B. 5) failed, for unknown reasons, to reach its target, and that the second hold (presumably) D.D.B.6) intersected a narrow zone of magnetic sulphide mineralisation carrying virtually no values of economic interest. Thus in at least one place, magnetic sulphide mineralisation is present and could be the feature giving rise to the magnetic anomalies.

Further ground magnetic traverses and two drill holes were proposed, but were apparently not carried out. These would have been for the testing of magnetic "highs" revealed by an airborne magnetometer survey.

Gravity Survey. The gravity survey on the option area revealed two anomalies but they were not as definite as the magnetic anomalies. On the surface there appeared to be no rocks or minerals which could have been expected to produce the anomalies (B.H.P. report 444). It is not possible to mark the position of the anomalies, because of lack of information. One anomaly appears to occur near drill hole D.D.B.1 because in B.H.P. report 444, it is stated that "This suggests that D.D.B.1 was well sited for ***, as it is near the intersection of pronounced gravity and magnetic highs". No information is available about the position of the other anomaly, except that, as stated in section VI that it is near E.2/S.17 (B.H.P. co-ordinate.)

As far as can be determined, the magnetic and gravity anomalies are outside the M.H.A. leases. However, if the Southern magnetic anomaly has an extension to the north-north-east it should enter lease 62M/68. Although the Northern magnetic anomaly is further from lease 62M/68, a south-eastern extension might reach that lease.

VIII AEROMAGNETIC SURVEY

The Commonwealth Bureau of Mineral Resources made an aeromagnetic survey for B.H.P., but no copy of the map with results accompanied the B.H.P. reports and very little information was contained in the reports. In B.H.P. report of June, 1965, a recommendation was made for detailed geological mapping of an area and it was stated that "This comprises a strip some 2 miles wide and should be continued to the north and south of Balfour along the line of the aeromagnetic anomalies". It was stated also that, from the aeromagnetic map, it is apparent that the copper mineralisation had no associated magnetic susceptibility. It is thus possible that the anomalies may have been associated with magnetic sulphides and/or magnetite; a reference to magnetic sulphide mineralisation was made in the previous section of this report.

IX DIAMOND DRILLING

Holes D.D.B.1 to 3 were drilled to test for tin mineralisation on the north-western side of Specimen Hill. Actually, hole D.D.B.3 and also hole D.D.B.4 tested at depth an outcropping major quartz vein about 8" thick and striking north-easterly and apparently dipping south-easterly. Besides the objective given above, holes D.D.B.1 and D.D.B.2 served also to test the southern and eastern margins respectively of the northern magnetic anomaly.

Hole D.D.B.5 may have been drilled to test the southern magnetic anomaly; this would mean that the position of this anomaly on plate 4 is not correct.

Hole D.D.B.6 was drilled to test a part of the northern magnetic anomaly and intersected a silicified zone with 5 to 10% sulphides. The core was strongly magnetic and it was inferred that it contained pyrrhotite (magnetic sulphide of iron).

The six holes are outside the M.H.A. leases and need not be considered further.

X RESULTS OF THE INDUCED POLARISATION AND RESISTIVITY SURVEYS BY MCPHAR GEOPHYSICS (See Plate 4)

The traverse lines and the results (anomalous zones) along these lines for Areas 1, 2, 5 and MA are shown on Plate 4. The results shown are not taken from McPhar's general map (drawing 2683) but are taken from the individual data plots shown separately for each line and shown on separate drawings, and also from the text of the report.

In This section of the Report however, reference is made only to results that appear to be present on the leases of M.H.A. However in cases where results outside the leases may have some application to the lease areas, then some reference will be made to those results.

Area 2, Line 2/3. A definite shallow anomaly occurs between 12W and 15W, and is situated slightly to the north of the north-western corner of lease 101M/67. An area of tin diggings (probably alluvial) is shown in the same place, but it is not known if the anomaly has any association with these diggings.

X

RESULTS OF THE INDUCED POLARISATION AND RESISTIVITY SURVEYS BY MCPHAR GEOPHYSICS (Cont.)

Area 2, Line 2/2. A probable weak anomaly arising from a deep source occurs between 6W and 8W on lease 101M/67 and near its northern boundary. A similar anomaly is present at 0 to 4W just easterly from the north-eastern corner of the same lease; its easterly end is close to some of the old workings of the Balfour Central mine.

Area 2, Line 2/1. A possible anomaly occurs between 4W and 9W and is situated in, and near, the eastern boundary 101M/67. McPhar's report stated that it probably corresponded to a change in rock type.

Area 1, Line 1/3. An incomplete anomaly occurs between 8W and 11W and it is situated in the south-eastern part of lease 101M/67.

Area 1, Line 1/2. Between 6W and 8W and situated on the southern boundary of lease 101M/67 there is a possible anomaly, but the McPhar report states that it represents a start of high background values suggesting a change in rock type. The high background values continue to the western end of the line. Extending westerly from the western boundary of lease 62M/68, there is a deep anomaly between 16W and 18W. The McPhar report states that it can be correlated with some tin workings existing there. These workings are situated near a major quartz vein that strikes easterly and dips southerly, but could be alluvial workings in the valley of Tin Creek.

Area 1, Line 1/1. The western end of this line extends 300 feet westerly into lease 62M/68, but there are no anomalies on that portion. About 300 feet to the east of the lease, there is an incomplete probable anomaly at 6W. This anomaly is situated in and along the valley of Tin Creek.

Area 5. The three lines on this Area have a general northerly direction. The northern ends of Lines 5/2 and 5/3 extend about 300 feet into the southern part of lease 62M/68, but there are no anomalies on these short portions of the lines. Line 5/1 is slightly east of, and more or less parallels the western boundary of lease 53M/68. There is no anomaly within the lease, but southwards from the southern boundary there is a probable anomaly between 3N and 6N.

In regard to this Area, the McPhar report states:

Line 5/1. Anomalous effect were measured throughout the traverse, suggesting a broad band of sediments with minor amounts of sulphides. There is some variation in the Metal Factor values which could be caused by narrow concentrated sources.

Line 5/2. The results are similar (to those of Line 5/1) except there is a more definite increase in the Metal Factor values at 0 to 2N in the vicinity of the drill hole (i.e. D.D.B. No. 5 put down by B.H.P.).

Line 5/3. Above background effects were encountered from 6N to 4S; the values are quite uniform and suggest minor dispersed metallics rather than narrow concentrated bands.

X RESULTS OF THE INDUCED POLARISATION AND RESISTIVITY SURVEYS BY MCPHAR GEOPHYSICS (Cont.)

The broad band of sediments suggested by the results of Area 5 would appear from the geological map (Plate 2) to represent the eastern margin of the quartzites, etc. that occur in the greater part of the B.H.P. reserve and probably a narrow strip of the siltstones as far as, and probably including any southern extension of the shear zone on leases 101M/67 and 62M/68. It cannot be stated whether this band has the general northerly strike of the quartzites, but it is most likely that it has that strike. The band apparently contains disseminated sulphides with possibly some narrow but more concentrated zones.

The anomalies on Lines 2/2, 2/1 and 1/3 and situated in lease 101M/67 have a similar relation with the junction of the quartzites and the siltstones and the shear zone just west of that junction. It may well be that the band containing these four anomalies is a northerly continuation of the band suggested from the results of Area 5. Any sulphide mineralisation in the band may be associated with the shear zone on, or near, the eastern side of the band.

Area MA, Line MA/1. This line is 300 to 500 feet north of the B.H.P. reserve. It was surveyed across a magnetic anomaly. A strong and shallow I.P. anomaly was obtained at 4W to 6W, but it did not agree in plan position with the magnetic anomaly (apparently centred at 0).

XI COPPER MINERALISATION

A zone of copper mineralisation is present to the east of the M.H.A. leases and extends long distances to the north and south of those leases. The main shaft of the old Murray Reward mine is situated about 700 feet east of lease 101M/67, and that of the old Balfour Central mineralisation is situated about 100 feet east of the corner of the lease referred to above.

There is very little information about the dip of the copper lodes, but in general, it is a very high dip to the west. If the lode continued at that dip, it would enter the M.H.A. leases at depth probably of a few hundred feet.

XII INFORMATION FROM B.H.P. AND MCPHAR REPORTS AND MAPS THAT APPLIES TO M.H.A. LEASES AND IS EITHER IN, OR NEAR, THEM.

The information from the geological surveys, magnetic and gravity surveys and the McPhar survey will be discussed separately below.

Geological. The anticline and any mineralisation associated with it, probably passes through the western part of lease 62M/68. The eastern-most of the two inferred faults also passes through that part of lease 62M/68.

A shear zone passes through the eastern portions of leases 101M/67 and 62M/68.

Magnetic and Gravity Surveys. Any northerly extension of the southern magnetic anomaly would probably pass through the western part of lease 62M/68. Any south-eastern extension of the Northern magnetic anomaly would also probably pass through the western part of lease 62/68. Part of the southern gravity anomaly is probably near the same part of that lease.

XII INFORMATION FROM B.H.P. AND MCPHAR REPORTS (Cont.)

McPhar Survey. The following mine anomalies occur in or near M.H.A. leases as indicated below

<u>Lease</u>	<u>Position</u>	<u>Line</u>	<u>Description</u>
101M/67	Outside N.W. Corner	2/3	Definite & shallow
"	On Lease	2/2	Probably, weak & deep
"	Outside N.E. Corner	2/2	" " "
"	In eastern side	2/1	Possible
"	In S.E. Corner	1/3	Incomplete
"	Near southern boundary	1/2	Possible
62M/68	Outside W. boundary	1/2	Deep
"	Outside E. boundary	1/1	Probable, incomplete
53M/	Outside S. boundary	5/1	Probable.

The survey in Area 5 suggested a band of rocks containing possibly sulphide disseminations with some narrow concentrations. Any northerly extension of this band would enter leases 53M/68, 62M/68 and 58M/68.

XIII CONCLUSIONS AND RECOMMENDATIONS

The information in the B.H.P. and McPhar reports and maps have been put on maps showing the M.H.A. leases as accurately as possible under the difficult conditions associated with these reports and maps. It is not contended that the transferred information on those maps is necessarily in its correct position, but it is the best that can be done under the circumstances. Detailed surveys on the ground would be the only means of siting all features and information accurately.

Most of the B.H.P. surveys and testing were conducted on the western part of the option area and not on M.H.A. leases, but several of the McPhar traverses crossed the leases. The information applicable to the M.H.A. leases has been summarised in the previous section of this report. The places where information is available and some testing is apparently justified are given below, together with the reasons for, and objectives of, the testing.

Western Part of Lease 62M/68. The anticlinal axis, south-eastern of the northern magnetic anomaly, northern extension of the southern magnetic anomaly, and the southern gravity anomaly apparently pass through this place. Mineralisation may be associated with one or more of these features and, if so, should be tested.

Eastern side of leases 62M/68 and 101M/67 and possibly leases 53M/68 and 58M/68. The McPhar surveys suggest that a band of rocks with disseminated sulphides and perhaps narrow sulphide concentrations exists south of the above leases. The band probably extends onto the above leases and some testing may be justified. The extension of this band to lease 101M/67 would include the shear zone in the eastern part of that lease, unless the band includes only quartzites, in which case the band would pass to the west of the shear zone.

Lease 101M/67 and northern part of Lease 62M/68. Six anomalies revealed by the McPhar survey are situated in or just outside lease 101M/67, and two are situated outside the eastern and western boundary of lease 62M/68. The localities of these anomalies should be investigated in detail, in order to ascertain in conjunction with the McPhar report, which ones are the more likely to have arisen from sulphide bodies at depth. Testing of such anomalies would

XIII CONCLUSIONS AND RECOMMENDATIONS (Cont.)

be justified and could be considered in connection with the testing referred to in the previous paragraph, in order to make any testing serve two purposes.

Copper Mineralisation at Depth in Lease 101M/67.

This might justify some testing, but it would have a low priority, unless it could be regarded as a part of the testing dealt within the previous two paragraphs.

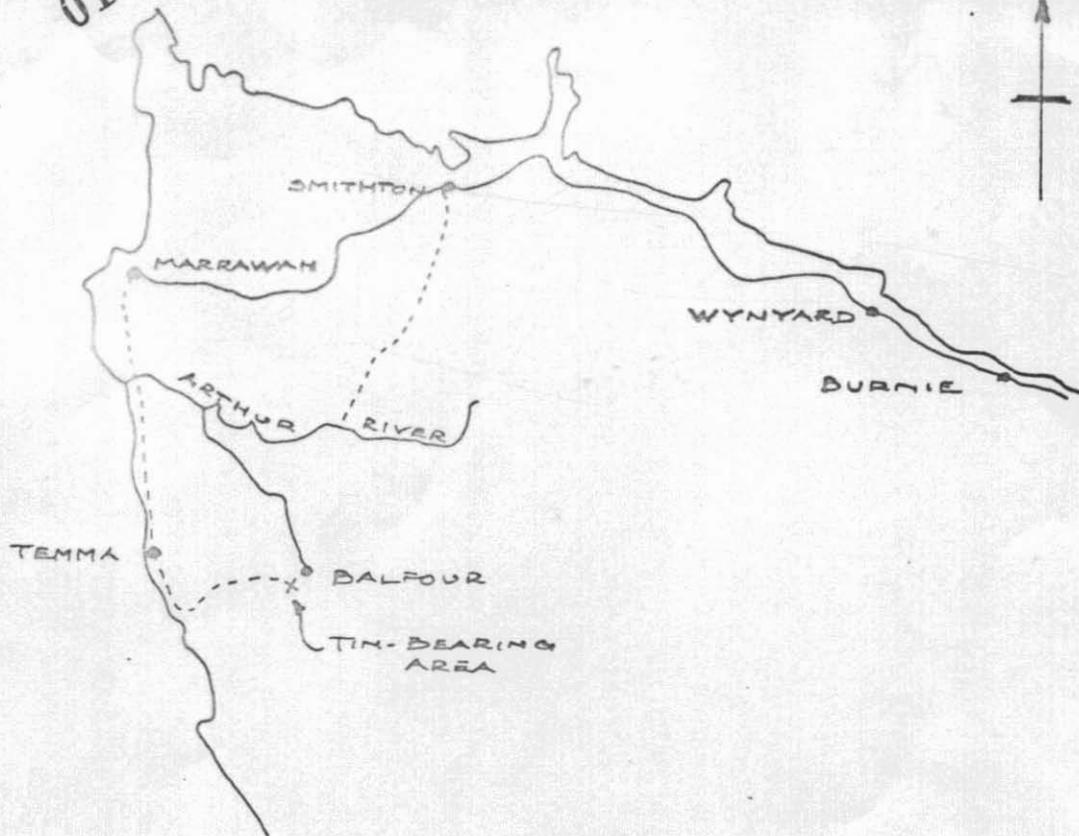
The ultimate form of the testing referred to above would be drill holes. It is recommended, however, that no drilling should be done until the leases have been geologically surveyed in detail. Such a survey would give information about what mineralisation, if any, occurs at the surface in the places recommended for testing, and what features with which mineralisation may be associated, are present. The recommendation arising from the survey might include some surface testing (trenching, shaft-sinking, etc.) and some further geophysical surveys. The results of the geological survey and any other surveys and surface testing would finally determine the order in which the different places would be tested, and the selection of suitable sites for drill holes.

P.B. NYE

Melbourne
2nd May, 1970.

013

006015



5 cm

LOCATION PLAN
BALFOUR TIN AREA
N.W. TASMANIA

Scale: 1" to 15 ml. appr.

Engineering Surveys
166 Albert Road
Melbourne 6.5.70
Drg. 132/1 Plate 1

13. No. 2.

014

GEOLOGICAL MAP OF SPECIMEN HILL AREA

SCALE 1" = CHAINS (330')

(ALL GEOLOGICAL INFORMATION FROM B.H.P. MAP G.4928)

BALFOUR SEQUENCE

- SILTSTONES
- CARBONACEOUS SHALES
- QUARTZITES (& SANDSTONES)
WITH INTERBEDDED SILTSTONES



- INFERRED FAULTS ——— F
- SHEARING
- TREND LINES (FROM AERIAL PHOTOS)
- MAJOR QUARTZ VEINS
- STRIKE & DIP
- GEOLOGICAL BOUNDARIES - - - - -

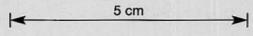
- OPTION AREA
- MINERAL LEASES

BALFOUR

N



5 cm



TIN CREEK

ROAD FROM TEMMA TO BALFOUR

SPECIMEN HILL

SPECIMEN HILL

101 M 67
40 ACRES

62 M 68
28 ACRES

58 M 68
10 ACRES

52 M 68
20 ACRES

63 M 68

SHAFT

DAM SITE

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166 ALBERT ROAD SOUTH MELBOURNE

DATE : 7-5-70

DRG. NO. 132/2

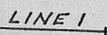
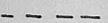
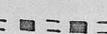
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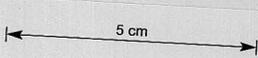
MAP SHOWING: GROUND MAGNETIC & GRAVITY SURVEY LAYOUT, SOME RESULTS & DRILL HOLES

(BASED ON PLAN IN B.H.P. REPORT 444)

POSITIONS OF ANOMALIES & DRILL HOLES ARE INFERED AND ARE NOT NECESSARILY ACCURATE

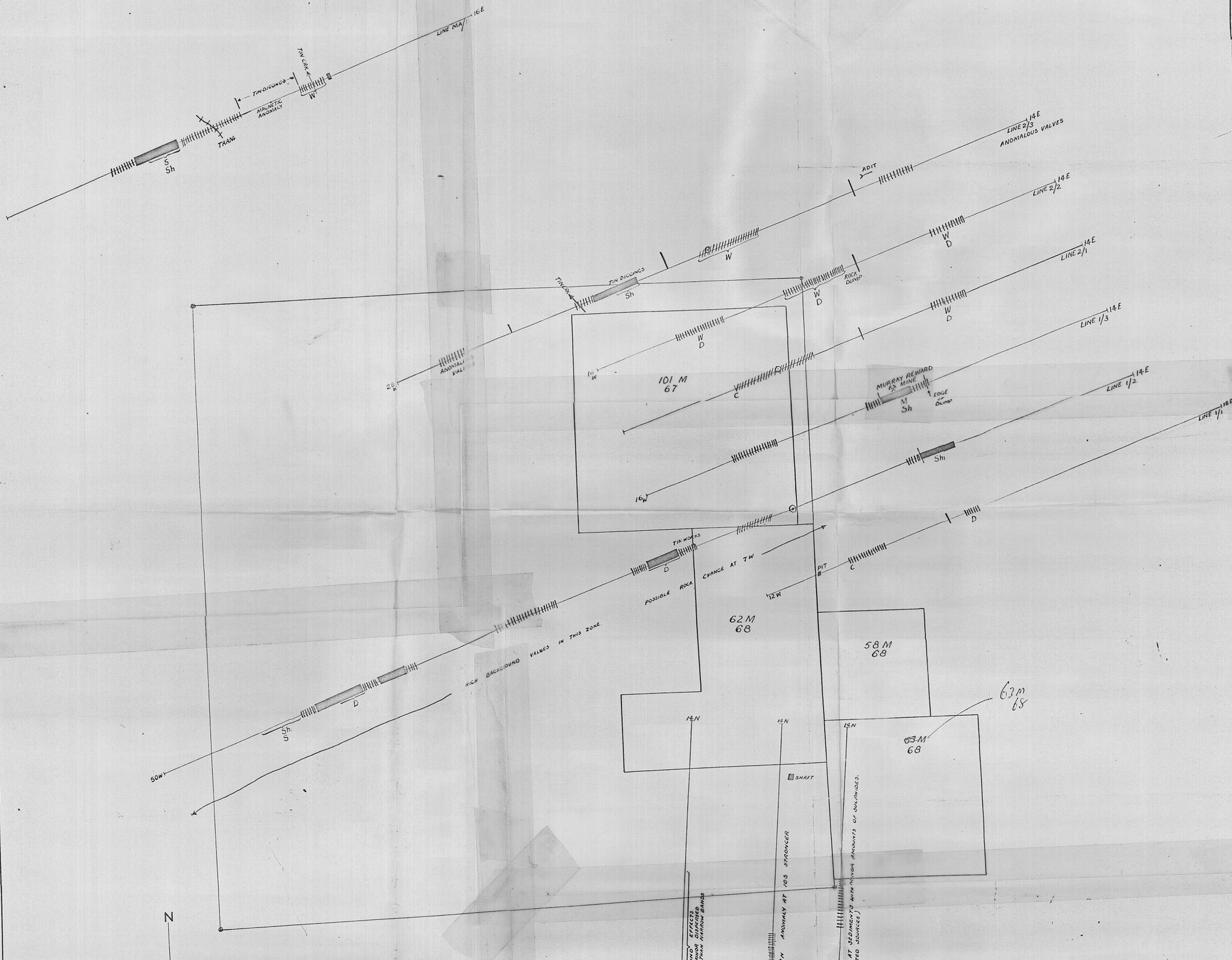
SCALE 1" = 5 CHAINS

LEGEND: TRAVERSE LINES  OPTION AREA 
 ANOMALIES  MINERAL LEASES 
 DRILL HOLES  MAJOR QUARTZ VEIN 



BALFOUR 



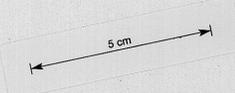


RESULTS
OF
M^cPHARS I.P. SURVEY
SCALE 1" = 5 CHAINS

- TRAVERSE LINE 1/3
- OPTION AREA
- MINERAL LEASE

- SURFACE PROJECTION OF ANOMALOUS ZONES
- STRENGTH OF ANOMALIES
- PROBABLE DEPTHS OF SOURCES
- ANOMALY INCOMPLETE C

DEFINITE	
PROBABLE	
POSSIBLE	
STRONG	S
MODERATE	M
WEAK	W
DEEP	D
SHALLOW	Sh



ROCK DRILLING TESTS
PROBABLY FROM MINOR DISPERSED
METALLIC MINERALS THAN NARROW BANDS

D.D.B. NO 5

IS FOR LINE 5/1 STRONGER AT 0 TO 2M ANOMALY AT 103 STRONGER

(ANOMALOUS EFFECTS PROBABLY FROM MINOR AMOUNTS OF MINERALS
HIGHER VALUES SHOWN POSSIBLY DUE TO MINOR CONCENTRATED SOURCES)

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006018

(Signature)