COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF SUPPLY AND SHIPPING.

MINERAL RESOURCES SURVEY.

REPORT No. 1946/20 .

Plans Nos. 1401-3.

PROSPECTING CAMPAIGN FOR MOUNT BISCHOFF TIN MINE.

by

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INTRODUCTION

Several reports have already been submitted by the author (1944/27, 1944/47, 1945/33 and 1945/65), on the geology, ore reserves and possibilities of the Mount Bischoff Tin Mine. In writing the present report it has been assumed that the reader has access to the earlier reports, particularly No. 1945/33, and is acquainted with the interpretations and views expressed therein. Details of geology will not be discussed here; only a generalised picture will be presented which must be appreciated to reach an understanding of the basis on which the prospecting scheme is being formulated.

Plans which accompany this report are:-

Generalised Geological Plan of the Southern Portion of the Open Cut Workings showing Proposed Drilling Sites; scale 50 feet to an inch.

Structure Contours on Top of Footwall Shales; scale 50 feet to an inch.

Geological Sections D, F, I, K, O and T, showing Proposed Drillhole sites; scale 50 feet to an inch.

GENERAL CONSIDERATIONS.

A total of some 59,000 tons of tin (metal) has been produced from the Mount Bischoff tin field. The leases held by the Mount Bischoff Tin Mining Company (which were taken over during the war by the Commonwealth Government) have been easily the most productive. The only other producer of any importance was the Mount Bischoff Extended Company which operated on the Giblin reef for a total output of some 2,000 tons of tin.

On the Mount Bischoff Tin Mining Company's leases 56,000 tons of tin have been won from replacement orebodies, fissure fillings (reefs), veinlets in porphyry, and alluvial deposits. Figures for the output from individual orebodies etc. have not been kept by the Company, but there is no doubt of the overwhelming importance of the replacement orebodies. Production from them is estimated at some 50,000 tons of tin.

It is considered that the future of the Mount Bischoff field depends on the success or failure attending efforts to find additional payable ore of this type.

The possibility of locating further ore in fissure-fillings, such as the Queen, Slaughteryard, North Valley and North east reefs, is admitted but is regarded as of minor importance only.

The problem then is to locate large tonnages of replacement ore either as extensions of known orebodies or as new orebodies. The results of the campaign outlined in this report will

be of paramount importance to the maintenance and development of the field, and the campaign should be conducted energetically by diamond (and probably percussion) drilling, supplemented by underground exploratory work.

GEOLOGICAL INTERPRETATION

All known replacement orebodies are located within the limits of the open cut. This is a complex opening with maximum dimensions of 2,000 feet by 1,400 feet and a maximum depth of 220 feet.

The ore in the northern half of the open cut has been practically worked out. It is a well authenticated fact that the ore in this part resulted from mineralisation of beds overlying gray shales and quartzites. The replaced beds were, in part, dolomite. The top of the shales and quartzites (herein referred to as the footwall shales) constitutes the base of mineralisation.

The footwall shales appear along the northern and western boundaries of the southern half of the open cut, but are nowhere else exposed within the cut. Along the northern edge, in this southern part, mineralisation from 70 to 200 feet thick, containing such orebodies as Pig Flat and Greisen, plunges underfoot immediately south of the shales. It is this basal section of the beds, immediately overlying the footwall shales, which was so abundantly mineralised in the northern half of the cut.

The beds above the shales forming the western margin of the cut are also mineralised, although not so strongly.

Broadly speaking, then, it is envisaged that the beds immediately above the footwall shales, which must underlie the southern half of the cut, may be mineralised in this half as in the northern half and may contain large tonnages of ore. Extension of mineralisation in this manner to the south affords the only chance of developing large tonnages of ore at Mount Bischoff.

Replacement ore has been formed also by the mineralisation of rocks well above the basal section in the southern half of the cut. The orebodies so formed, however, appear to be relatively small and low in grade.

The relationship of the shales, which comprise the eastern and southern boundaries of the open cut, to the other formations has not been satisfactorily defined. The most probable explanation is that they were brought into their present position by over-thrust faulting. If this is shown to be the case there is a prospect of locating ore underneath a cover of shale to the south and east of the open cut workings.

OBJECTIVES OF THE DRILLING

The main difficulty met with in the designing of a drilling campaign is the lack of any assay data whatsoever on orebodies worked in the past. This information is available only for the recently developed Pig Flat cut. It is known that the huge Brown Face orebody, which occupied a deep synclinal basin, was highly profitable. The smaller Slaughteryard syncline south of the Brown Face also apparently contained profitable ore. The White Face contained a substantial tonnage of very rich ore.

We can go no farther on the data available than to say that the bulk of the mineralisation in two main synclines in the northern half of the open cut constituted payable ore. Whether payable ore occurred over the anticlines is an open question.

The general objectives aimed at are (a) to determine grades and structure a short distance south of, or in, outcropping basal mineralisation; (b) to determine grade of ore, and position of footwall, between the Pig Flat and Greisen orebodies; and (c) to test three probable synclinal structures west of Pig Flat.

PROPOSED DRILLING CAMPAIGN.

Sites. The area to be tested is large and the necessary information cannot be obtained by a few holes. Altogether seven sites have been selected for drilling as the first stage of the campaign. They are plotted on the plans and sections accompanying this report.

It is deemed best not to select sites for further holes until the information from part of the first stage is available.

It must be emphasised that even if the first seven holes do not locate payable ore, drilling should not be abandoned until several more holes have been put down.

The total footage involved in these first seven holes cannot be estimated accurately, but is probably of the order of 800 feet.

General. All holes are to be vertical. Several of the holes probably can be drilled by diamond drill, although trouble may be experienced in the soft, mear-surface, oxidised material. Some holes may have to be drilled by a percussion boring plant. In this event the diamond drill holes should be drilled first, before any decision is made to obtain a percussion boring plant.

Drilling should continue until unmineralised gray shale has been pierced to a depth of 10 feet. In the Pig Flat site, the White Face porphyry dyke may be encountered before the footwall shales, in which event drilling should be stopped after 10 feet of porphyry has been drilled. Porphyry encountered in other holes should be drilled through.

Long core trays should be provided to store all core drilled. Sections of the core which must be sampled should be split by a core splitter and half the core stored.

Logging of the core must be carried out by a geologist.

C.L. KNIGHT.
Geologist.

CANBERRA, A.C.T.
24/5/46.

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GENERALISED GEOLOGICAL PLAN
– OF –
OPEN CUT WORKINGS
MOUNT BISCHOFF TIN MINE
SOUTHERN PORTION

0 50 100 150 FT.

REFERENCE

- SHALE, SANDSTONE, ETC. UNMINERALISED
- MINERALISED MATERIAL
- GEOLOGICAL BOUNDARY MAPPED IN DETAIL
- DO DO INFERRED
- CONTOUR LINES 10 FOOT INTERVALS INSIDE OPEN CUTS & 50' INTERVALS OUTSIDE
- DOLOMITE, DOLOMITE BRECCIA
- PORPHYRY
- BENCH & FACE LIMITS
- 1170 REDUCED LEVEL OF BENCH
- G3 PERCUSSION BORE 1943
- B3 AUGER BORE 1943
- PROPOSED DIAMOND DRILL SITES

SURVEYED BY C.L. KNIGHT & L. DEVLIN BY PLANE TABLE, MINE TRIG. STATIONS USED TO ORIENT SURVEY ON MINE COORDINATE GRID, FIX REDUCED LEVELS, AND CHECK SURVEY.
GEOLOGY BY C.L. KNIGHT

C. L. Knight

1500 N
1000 N
500 N
1500 W
1000 W
500 W
1500
1450
1400
1350
1300
1250
1200
1150
1100
1050
1300'
1250'
1200'
1150'
1100'
1050'
1000'
950'

1417
1402
1340
1307
1340
1307
1276
1250
1260
1238
1227
1208
1295
1210
1154
1137
1205
1164
1150
1320
1207
1185
1170
1173
1162
1186
1170
1170
1150
1139
1139
1136
1147
1078
1039
1059

GREY CORNER
WHITE FACE ?
OREBODY
GREISEN
NO. 4 BENCH
PIG FLAT
NO. 5 BENCH
MAGAZINE CUT
HAPPY VALLEY
White & brown-stained soft rock, not mineralised
ROAD TO BISCHOFF EXTENDED, WHEAL AND SILVER CLIFF
OLD WHEAL TRAMWAY
ROAD TO NORTH VALLEY WORKINGS
ROAD TO THOMPSONS WORKINGS
WATER RACE

WESTERN DYKE

WHITE FACE DYKE

1500N

1000N

500N

1500W

1000W

500W

1450'
1400'
1350'
1300'
1250'
1200'
1150'
1100'
1050'
1000'
1300'
1350'
1300'
1250'
1350'
1310'
1170'
1110'
1160'
1125'
1130'
1220'
1100'
1150'
1140'
1130'
1140'

PLOTTED AT SURFACE

CUT OPEN

OF EAST AND SOUTH ON SHALE

BOUNDARY OF

STRUCTURE CONTOURS
TOP OF FOOTWALL SHALES
OPEN CUT WORKINGS
MOUNT BISCHOFF TIN MINE

SOUTHERN PORTION

0 50 100 150 FT

REFERENCE

CONTOURS MAPPED OR KNOWN FROM BOREHOLES

DO INFERRED

CONTOUR INTERVAL 10 FEET

PROPOSED DRILL HOLE SITES

1402

GEOLOGICAL CROSS SECTIONS
MOUNT BISCHOFF TIN MINE

SHOWING LOCATION OF PROPOSED DRILL
- HOLE SITES -

0 50 15 150 FT.

SEE GEOLOGICAL PLAN FOR REFERENCE

Abbrevations :- d - dolomite; min. - mineralised; brec. - breccia; ℊ - ℊossan; sh - shale; py - pyrite; p - pyrrhotite; c - carbonate; o.m. - oxidised marcasite; t - talc.

Proposed drill holes shown thus :-

SECTION LINE D.

R.L. 1200

Shale etc. Dolomite Probably min over dol porp d breccia sh ℊ sh Py ℊ sh d c p m sh d m sh 1102 N / 1165 W p c. d c p Greisen Orebody t p t c. p t c.

SECTION LINE F.

R.L. 1200

porp mainly dolomite with some breccia min porp d etc breccia massive dolomite massive dolomite Main Tunnel min. dol dol min. min sh band 1154 N / 1075 W Greisen Orebody

SECTION LINE I

R.L. 1200

Shales etc porp: d 5' to 70' to west min sh G.1 30'E G.2 45'E G.3 45'E d. brec ·31 ·08 ·23 West Wing of Pig Flat Cut B 8 B 11 G 8 ·30 ·06 ·06 d brec min sh bl py sh t o m o m & sh 1217 N / 939 W o.m p & o.m. ℊ porp

SECTION LINE K

R.L. 1200

Shales etc soft ferruted rock porp porp min with d boulders PIG FLAT soft min mud mainly hard ore hard p-py-c etc hard p-py-c littled cherty sh ? F.W. Sh 1258 N / 849 W soft o m porp min min. sh

SECTION LINE T

R.L. 1200

Original surface Sh etc min brec. sh Good ore reported highly pyritic o m brown mud Soft o m porp 1446 N / 438 W

SECTION LINE O

R.L. 1200

Sh etc d d d brown & white material porp brown pyritised material porp min sh 992 N / 506 W

MINERAL RESOURCES SURVEY.

1403

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