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THE BLUE SPEC MINE, NULLAGINE, WESTERN AUSTRALIA

by

C.J. Sullivan

CJS:EJD.

2nd October, 1947.

MEMORANDUM to -

The Chief Geologist,
Bureau of Mineral Resources,
CANBERRA, A.C.T.

THE BLUE SPEC MINE, NULLAGINE, WESTERN AUSTRALIA.

The Blue Spec Mine, Nullagine, was visited from 20th to 24th September, 1947. An inspection was made of the mine, No. 3 level (depth 450 feet) was mapped and the antimony-gold occurrences occurred on lease 196, and on the property known as "Blacks", were also briefly inspected.

The present position regarding water supply was investigated, and recommendations were made with which Mr. A.V. Rowe, of Bewick Moreing, Pty. Ltd., Perth, is conversant, and with which he agrees.

ORE RESERVES.

Above No. 2 level.

All stoping has been stopped, but the stopes above No. 2 level have been filled, the passes are in good condition and stoping could be recommenced within a very short time. Mr. Rowe estimates that 15,200 tons of ore, assaying 14.1 dwt. Au remain to be stoped allowing for a pillar to be left below No. 1 level.

No. 3 level.

The eastern and western winzes have been extended to the 450 foot level, and the driving shown on the accompanying plan has been carried out from the bottom of these winzes. Driving on the east lode has revealed unusually high-grade gold stibnite ore which, over a length of 113 feet and a width of 48 inches (width of drive) averaged 49.17 dwt. Au per ton and 9.0 percent Sb. At the eastern end of the drive, the ore

has weakened in grade, but at the western end, high-grade ore is still showing on the face.

It was intended to drive from the west winze to co-ordinate 00 to intersect the proposed cross-cut from the main shaft. However, as shown on the plan, the drive has developed into a cross-cut which has intersected two lode channels carrying relatively high values in gold, but little antimony. A copy of the plan showing this position was left with the mine staff and a further copy was given to Mr. Rowe in Perth. Mr. Rowe has telegraphed the Manager to commence driving along the mineralised zone from a point 80.8 and 105.W. There seems to be quite a chance that minable ore will be found in this section.

It appears likely that 20,000 to 30,000 tons of ore will be available between No. 3 and No. 2 levels. As estimated by Mr. Rowe, it should be possible to break sufficient ore above Nos. 2 and 3 levels to maintain an output of 1,200 to 1,400 tons a month and also to maintain a fairly even grade of ore to the mill.

The main shaft has been extended to No. 3 level and the sump is now being completed. It is intended to start the cross-cut to the lode within the near future. The Manager, and also Mr. Rowe stated that they were quite satisfied with the progress made by the present shaft sinking team.

WORKINGS TO THE WEST OF THE BLUE SPEC.

Seven samples were recently taken more or less at random from the workings on lease 196, approximately one mile west of the Blue Spec shaft, and on "Blacks" lease approximately $\frac{1}{2}$ mile west of lease 196. The results were as follows -

<u>Sample No.</u>	<u>Locality.</u>	<u>Width.</u> <u>Inches</u>	<u>Au.</u> <u>dwt</u>	<u>Sb.</u> <u>%</u>
D.108.	Dump Blacks shaft.		6.3	Trace.
D.107.	West face Blacks shaft Depth 36 feet.	24	17.2	Trace.

D.106.	East face Blacks shaft Depth 36 feet.	36	9.2	1.0
D.105.	Blacks lease. 36 feet below surface. 10 feet east of 107.	28	12.5	3.5
D.104.	230 yards west of 196 shaft. Face of open- cut.	24	8.8	Trace.
D.103.	Same open-cut.	24	12.0	Trace.
D.102.	Main shaft, 106. Dump.		12.2	

The Management stated that a short cross-cut was to be extended from the bottom of the shaft on 196 (depth, 95 feet), to intersect the lode. Mr. C.W. Ball should be able to inspect this exposure when he visits the mine towards the end of October.

Antimony ore has been found in a number of other localities along the Blue Spec line and it is considered that, should staff be available, this line should be mapped and perhaps drilled to a shallow depth, with a view to determining the quantity of ore available per unit depth. The ore occurs in a very well defined structural feature, which can be traced for some miles and it seems desirable to assess the potentialities of the district, which may be considerable.

ECONOMICS.

Although the metal content of the Blue Spec ore, particularly that exposed on No. 3 level, has a high monetary value, the total cost of mining and treatment is commensurately high.

It was estimated by the Mill Superintendent, that at the present price of £220 per ton for antimony, and taking into account the new charges by O.T. Lempriere and Company, Pty. Ltd., a throughput of 1,250 tons of ore, assaying 2.5 percent Sb and 13.7 dwt. Au, which should give a recovery of 2.2 percent Sb and 11.6 dwt. Au, would return a nett income at the mine of approximately £8,770 per 4 weekly period. This is allowing for transport, refining and realisation of antimony concentrates at the rate of £46 per ton and of pyrite concentrates

at £25 per ton.

Thus, for the undertaking to show a profit, the total costs up to the stage at which the concentrate is produced should not exceed about £7 per ton of ore, or approximately 14 dwt. Mr. F.G. Foreman, Chief Engineer, Australian Mines Management Secretariat, Ltd., who supervised operations on the Comet Mine, indicated that overall costs on that mine amounted to about £6 per ton of ore.

Most of the mining timber is now being obtained locally. Until recently, it was brought overland from Southern Cross which almost constitutes a scandal.

The present labour force is 46, but the Manager states he needs 50 men to carry out his program. This compares with a labour force of 60 men for a similar output at Ora Banda.

The total cost for August was £5,400 and the loss was £1,937.

It appears likely that the cost of timber and of water supply will be reduced, but the type of labour available is not first-class and many other factors contribute to permanently high costs. The General Manager and his staff appear to be making every effort to make a success of the mine.

WATER SUPPLY.

Requirements.

The Management estimates that to mine and treat 1,250 tons per 4 weekly period and to supply domestic needs, 30,000 gallons of water per day will be required.

Present Supply.

<u>Bore or Well.</u>	<u>Depth. Feet.</u>	<u>Supply. Gallons per day.</u>	
Branchi Well.	127	5,000	
No. 3 Bore.	150	2,000	
No. 4 Bore and Well.	76	14,000	
No. 5 Bore.	159	Untested	} In slightly sheared slate. A diviner's choice.
		21,000	

Branchi Well, No. 3 Bore, and No. 5 Bore ($\frac{1}{2}$ mile south of Branchi Well) are in slates, and the sites have not been well selected. No. 4 Bore is in a sandy slate.

The Management has been requested by myself (and instructed by Mr. Rowe), to drill No. 6 Bore on a site selected by Mr. Ellis and Dr. Fisher, approximately 2 miles south of Branchi Well. This site is in a relatively porous sandstone. A 2 inch pipe-line already exists between the site and the main pumping station near Branchi Well. A pumping plant is available at the mine. It is considered that with the water which may be obtained from No. 5 Bore, No. 6 Bore may supply sufficient to provide a total of 30,000 gallons per day or more.

General.

Boring is at present being carried out with the Company's plant on a contract basis of 12/6 per foot for the first 50 feet, with an increase of 2/6 per foot for each 50 feet. The contractors supply fuel oil and stores, but do not pay hire for the Company's plant.

With the localisation of all pumping near the Branchi Well, one man should be able to maintain the plant and keep the water flowing. He is paid £10 per week for a 7 day week, and is given a petrol allowance of 4 gallons per week as he has to drive to the mine to report any break-down in the pumping plant. A small field telephone connecting the pumping plant at Branchi to the mine (distance, 4 miles) should not be expensive and would probably lead to a saving of time and money. The type used at Mount Painter, South Australia, would be suitable.

It is intended to abandon "Salt Bore", 3 miles south of the mine, which supplies only 3,500 gallons per day and requires costly supervision and maintenance, and a separate pipe-line. The pumping plant from here could be used to pump the water from No. 6 Bore to the main pumping station at

Branchi Well.

The pipe-line from Branchi to the mine is 3 inches in diameter and it is estimated to have a capacity of 2,500 gallons per hour.

The present cost of the water supply is estimated at 8/- per thousand gallons, but this estimate is stated to be fairly approximate.

With the present water supply, gardening is virtually impossible and lawns and trees have been allowed to die. This is bad from the point of view of morale which is quite important in this district. For example, on the Comet Mine, near Marble Bar, about one dozen houses have good lawns, ornamental trees and numerous river gums, which are restful to the eye. A brief inspection was made of Sandy Creek, on which "Domestic Well" is situated. This well is 0.75 miles south of the main shaft, is equipped with pipe-line and pumping unit, and is connected by electric cable with the main power house. The well supplies only 1,500 gallons per day of high quality water from a depth of 210 feet. Further down-stream, this creek appears to cross beds of relatively sandy rock which would possibly yield 3,000 to 5,000 gallons per day of high quality water which could perhaps be used for gardening and for domestic purposes. Mr. C.W. Ball has been requested to make a closer examination of this area and it is suggested that if his report is favourable, the site should be drilled with a view to providing a domestic water supply. The pipe-line and power-line are already extended to this vicinity and additional cost would not be high. The work would not be carried out until the requirements of the mine and mill had been met from the Branchi Bores.

C. J. Sullivan
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Acting Supt. Metallif. Geologist

APPENDIX I.

Methods of Cutting Samples at Blue Spec Mine as
used by Bewick Moreing, Pty. Ltd.

(The assays shown on the plan of No. 3 level have been cut in accordance with this system which is said to give a result approximating to the head value of the ore.)

<u>Assay.</u> <u>dwt.</u>	<u>Cut to</u> <u>dwt</u>
over 200	75
150 - 200	60
100 - 150	50
90 - 100	45
80 - 90	40
70 - 80	35
60 - 70	30
50 - 60	40
40 - 50	35
30 - 40	30
20 - 30	20
15 - 20	15