RB 37/149

UNCLASSIFIED. D.M. 112/51.

DEPARTMENT OF MINES

SOUTH AUSTRALIA.

"TORRENS" BARITE MINE - HD. ONKAPARINGA.

INTRODUCTION. ASSOCIATED PLAN 54-113

In February 1951, South Australian Barytes Limited became interested in this mine, held under claim by Reginald John Alfred Larsson and requested an inspection by Department of Mines officers. This request was repeated, and endorsed by Larsson in January, 1954.

A topographical and geological survey was carried out in May, 1954 by C. J. R. Kingsbury and J. McCahon. The survey was done with theodolite by stadia traverse, but was not tied in to any fixed datum. The "section fence" on which the claim boundaries were based now appears to be away from the true section boundary by some hundreds of feet.

Alternative names which have been applied to this mine are, "Castambul Estate" and "Varcoes".

LOCATION.

The mine is situated partly in Section 5539, which is privat: property and partly in Block 331, in which the mineral rights are held by the Crown. Mineral claim No.1598 is pegged mainly in block 331. It appears that Tunnel "B" and Shaft "C" are in block 331, but the quarry and small cuts in location "A" are probably in section 5539. The exact location of the section boundary is not known but is tentatively placed parallel to the fence and some 300 feet south of it. A Lands Department survey would be required if any dispute arose between the miners and the property owner.

Access to the mine is by a very steep track which leaves the Gorge Road at a point about a mile east of Athlestone. Only a four-wheel-drive vehicle can use this track and in winter difficulty is experienced in descending even in such a vehicle. An alternative outlet could possibly be constructed direct to the Gorge Road at a point some 3 miles east of Athlestone. This will be dealt with later in this report.

HISTORY.

There are many old workings, some fairly extensive, in quartz lodes showing secondary copper minerals. None of these mines appears to have been very successful. (Ref. Mining Reviews Nos. 19 and 24 - "David Copperfield" and "Hermanns" Mines).

The barite lodes in area "A" were first prospected in 1927, the stone broken being mostly first grade; however, no production has been recorded.

Tunnel "B" was driven about 1940 when 108 tons of barite of apparently first grade was sold for £354. Work appears to have ceased after 1940.

The following claims have been registered during the life of the mine:-

M.C. 5452.	J. Heier & F. Kloppor	14/3/04 -	?
" 10255.	A. E. J. Foster	29/10/15 -	31/7/16
" 10255	Prince Albert Synd.	31/7/16 -	?
" 12514	J. Symonds	9/9/27 -	6/2/30
" 15966	J. A. Larsson	20/7/38 -	14/7/39
" 16273	E. J. W. Robinson	20/4/40 -	17/4/43
" 1106	J. A. Larsson	10/6/47 -	17/6/48
" 1598	R. J. A. Larsson	10/1/51 -	

GENERAL GEOLOGY

The lodes occur within the Adelaide System of metasediments, here represented by shale, green talc schist and "jasper". In the vicinity of the lodes there has been extensive silicification, producing a dense white "jaspor" which shows only disjointed traces of bedding. Quartz veinlets are very abundant and some contain small quantities of secondary copper minerals. In the small cuts near the top of area "A", and in the entrance to tunnel "B" a green talcose "schist" is visible, much decomposed. The apparent schistosity may be merely bedding. It is not uniform in strike or dip, and so is suggestive of folding.

THE LODES

The quarry in area "A" lies wholly in jasper and the barite lode is not conformable with the bedding. The strikes of lode and country are similar, but the dip of the lode is steeply east, that of the country being flatly east.

The width and persistency of the lode is unpredictable and may vary from 5 feet to 6 inches within a short distance (see Mining Review No. 72, P.92). Average width is estimated now to be 24 inches. No serious iron-staining was noticed, but much inter-fingering of barite and jasper occurs, necessitating hand-picking. Final product should be of first grade.

The other cuts higher up the slope in area "A" expose narrow seams of barite conformable with the bedding in green schist. Some possible extensions of these seams for 100-150 feet south were noted, but it is doubtful if much worthwhile production from them would be possible.

In tunnel "B" the hanging-wall is green schist and the footwall is jasper. The schistosity (or bedding) of the schist is truncated by the lode, but as no shearing is evident the lode is apparently not along a fault line but follows the junction between jasper and schist. The jasper is therefore assumed to be a replacement body the boundaries of which are independent of the bedding. If this is so, the lode is unlikely to be a regular, tabular body, and indeed within the short tunnel length of 40 feet the width varies from 30 inches to more than 72 inches. Average width is estimated at 48 inches.

Some patches of drusy calcite-haematite vein material are present in the lode (and in the country rock), and a bad patch of heavy iron-staining is showing in the face of the tunnel.

Some inter-fingering of barite and jasper is evident, but all these impurities could be removed by hand-picking, in which case the final product should be of first grade.

Shaft "C" at the crest of the hill exposes a very unusual lode in decomposed shale country. The lode is between 4 and 5 feet wide and has well-defined straight walls. It consists almost exclusively of coarse, loose barite crystals up to 1½ inches in diameter, the spaces between being filled with fine barite, clay and limonite which gives a strong over all iron-stained appearance. However, the softness of the ground and the easier accessibility should enable cheap mining, while a rough washing process should remove most of the stain from the broken barite. No exposures of barite are visible outside the shaft and it is unlikely that any great length of lode would be present.

A sample taken from the south wall of the shaft was tested with the following results:-

Specific Gravity 4.3

Analysis:	$BaSO_4$	97.6%
	Fe	0.22%
	SiO_2	1.5%

Reflectance (whiteness) was 90% of that of second Grade Barite.

It therefore appears that this lode would be quite suitable as a source of barite for drilling mud, and with beneficiation would, if necessary, provide a second grade barite for pigment use.

MINING.

Costs of mining will be high as all supplies inward and outward will need to be handled by expensive equipment. For a start, Mr. Larsson suggests the use of a tractor to operate a winch hauling a sledge or trolley between the tunnel and the crest of the ridge - a slope of 25 to 30°. Transport down to the main road near Athlestone would then be handled by the tractor with a trailer, or by a four-wheel-drive truck. In pre-war days the ore was carted by bullock-team, but such methods are doubtless too slow and expensive today.

An alternative route, applicable to both the quarry "A" and the tunnel, would be down the gully direct to the Gorge Road. A very crude pack animal track exists at present, but the major

obstacle is the "waterfall", an almost sheer drop of 90 feet. It is doubtful if a track could be cut around this to the bottom. If this route were adopted, barite could be handled in two stages, gravitating it down the waterfall into a bin. Construction of the necessary tracks would be highly expensive. It has been suggested that a flying fox be constructed. This would entail more capital than the mine warrants at present.

Barite from tunnel "B" could be handled by constructing a track along the 940 foot contour to the north-west of the tunnel, thence north from the lease-peg to a point where the barite could be gravitated via a chute to the Gorge Road. Further development below the present tunnel horizon could be carried out from a shaft in the usual way.

It is suggested that work on quarry "A" be deferred as all requirements could more easily be met from tunnel "B" or shaft "C". The quarry appears to be on Section 5539, which is private property, it is difficult of access and the country rock is too hard for hand mining.

The lode in tunnel "B" offers good prospects of extensions and should be carefully explored by costeens up and down the hill until the economic limits are reached. On present indications it continues about 150 feet down-hill and 100 feet up-hill but outcrops are mainly obscured by travertine and debris. On reaching the lower limit of the lode a tunnel should be driven into the hill to block out sufficient reserves to allow planned capital expenditure on plant. The introduction of capital at the present state of development would be subject to risk.

Reserves at tunnel "B" may be assessed as follows:- Probable length of lode 290 feet. Vertical range 140 feet. Average width 4 feet. Density 8.2 c.ft/ton (≡ S.G. of 4.4)

Triangular block: $\frac{290 \times 70 \times 4}{8.2}$

= 9904 tons.

Less 10% wastage = 9000 tons. Probably, most of which could be assumed to be of first grade.

If it is desired to produce only second-grade barite for use in drilling mud, the lode in shaft "C" would fulfil requirements and conserve stocks of first-grade. No estimate of reserves is justified until more prospecting is completed. Mining at shaft "C" would be cheaper than on the other lodes.

CONCLUSIONS AND RECOMMENDATIONS:

The Torrens Mine, Mineral Claim 1598 offers good possibilities as a producer of first and/or second grade barite in small quantities from two lodes. Reserves of first-grade barite are estimated at 9000 tons, Probable. No estimate of second-grade reserves is justified at present. More exploration by surface costeening and by underground mining is essential before capital outlay of any consequence is justified.

Costs of production will be high, due to difficulty of access and steepness of the terrain in the mine area itself. All supplies will need to be carted to the site by four-wheel-drive vehicles.

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Engineering Geology & Mineral Resources Section

17/6/54.
CJR/JEA

REFERENCES.

Mining Review No. 47 (1927) P.58
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" " " 76 (1942) " 97
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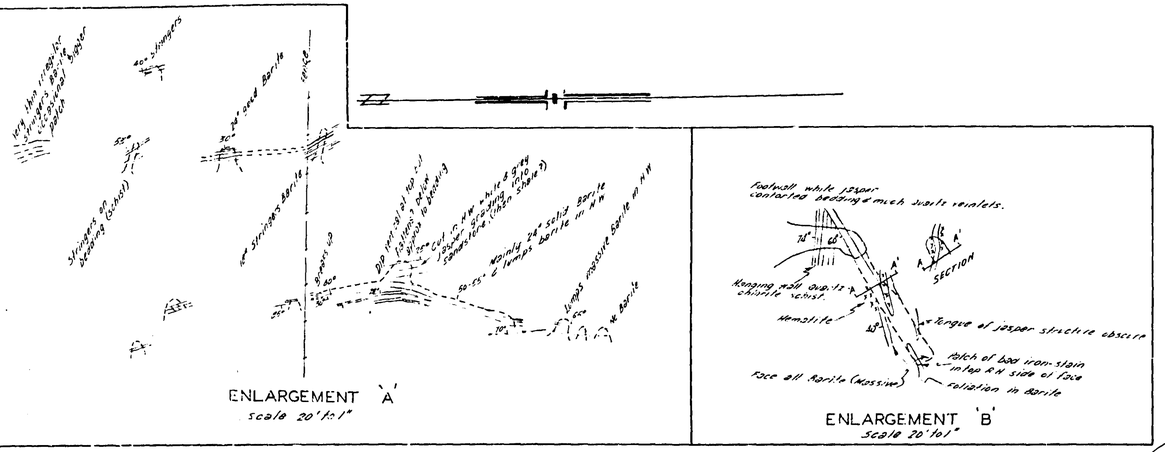
Record of Mines Summary Card, Barytes No.5.
Dockets: D.M. 1059/50
" 112/51
" 1536/53 (Testing sample)



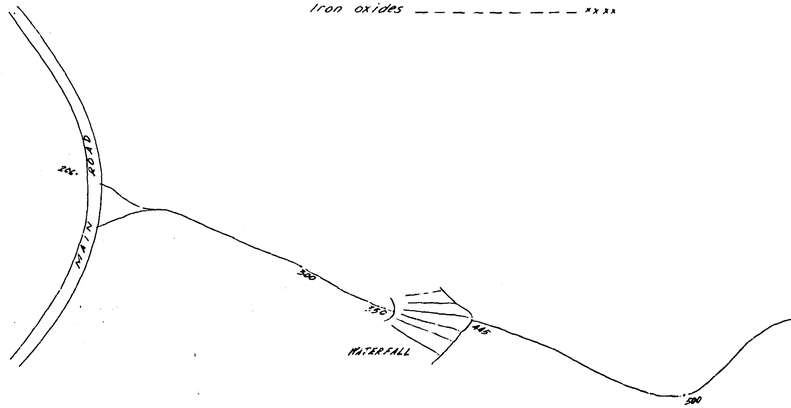
LEGEND

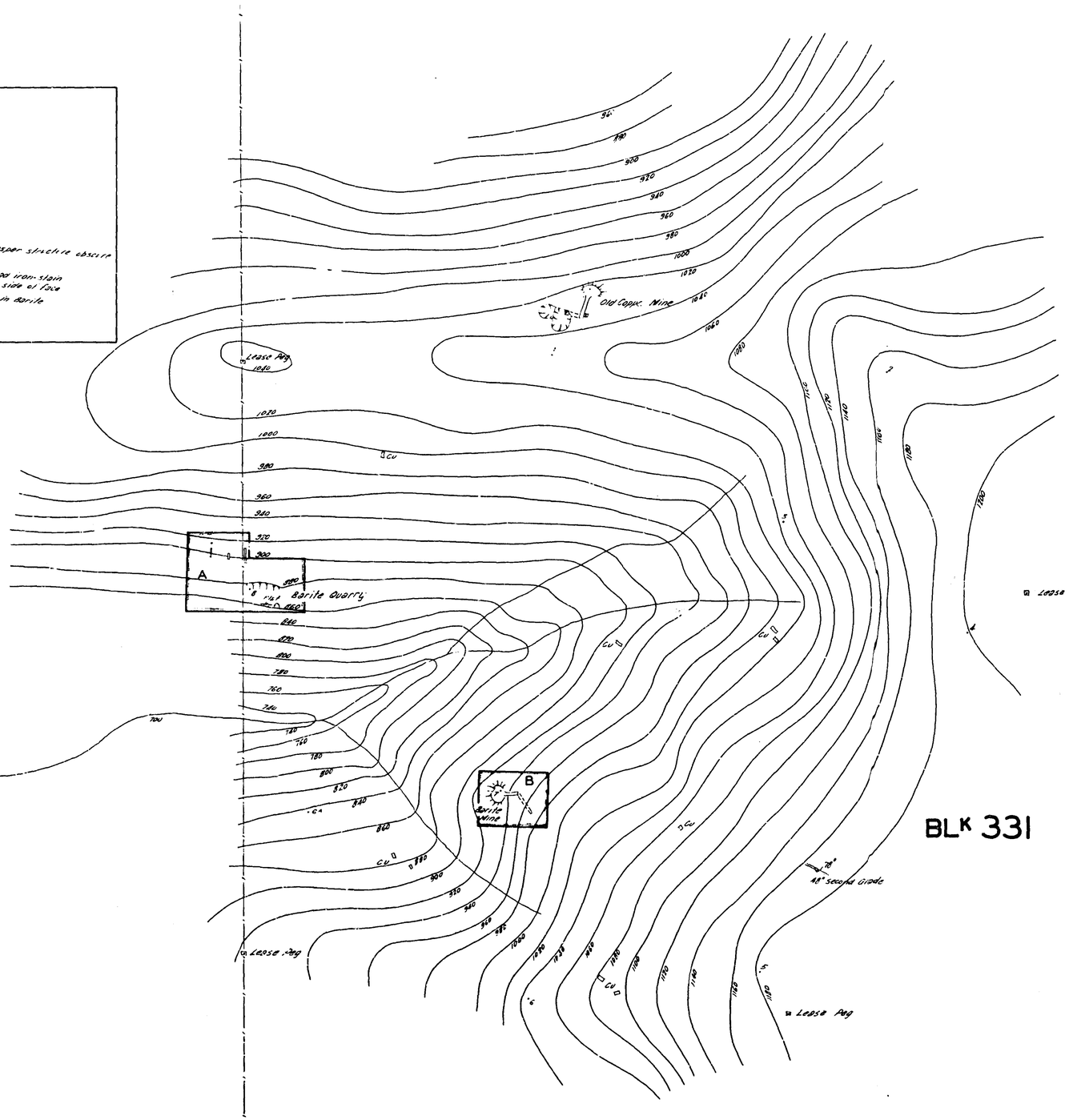
Barite _____ 60°

Jasper _____

Talc schist _____

Iron oxides _____ x x x





To accompany report by C.J. Kingsbury

S.A. DEPARTMENT OF MINES

Req. No. D.M. Compiled from	BARITE MINE BLK 331 HD. ONKAPARINGA	Approved	Passed	Drn. J.M.C. Tcd. Ckd. Extd. A.R.	scale 100 ft. to 1 inch 54-113 Ha 7 Date M. 5-34
		Director of Mines	a.b.		

Associated Drawing No. | No. | Amendment | Extd. | Date