

1953/18
Copy 1

COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS

RECORDS

1953/18

Preliminary report on the
Mosquito Creek tungsten field
N.T.

by

A.D.M. Bell

CONFIDENTIAL.

Preliminary
INTERIM REPORT ON THE MOSQUITO CREEK SCHEELITE FIELD

SUMMARY.

To date the Mosquito Creek field appears primarily to be a good gouger's prospect. It could carry one Company operating a small plant but not as at present three or four Companies. However, the whole of the exposed granite rock has not been prospected, and the possibilities of the field not realised. It is possible that lodes of payable width, i.e. 3 ft or more, may be located in the future. The veins proved to date are thin but are numerous, persist over long distances and carry values at depth. Valuation of scheelite ground is by no means as simple as has been reported in the press. Wind and rain have concentrated the ore in the surface soil covering these numerous veins, over widths up to 20 feet. These areas of quartz-scheelite are easily located by the use of an ultra-violet lamp, and could be stripped by bulldozers.

The obvious action for any company interested in this field would be :-

- (1) To satisfy themselves by trial of the commercial value of the strippings.
- (2) To carry out active exploration and cover by mining lease large areas of scheelite veined granite.
- (3) To consider mining the thickest reefs so exposed at a later date.

The existing companies have not been alive to the possibilities of the field, have purchased at high cost small leases and exuded a great deal of hot air.

The further possibilities of the field are reasonably good and depend primarily on the recovery of scheelite by bull-dozing to shallow depth veined granite.

INTRODUCTION.

The value of the field for small miners is accerted. The possibility of it being able to support company operations depends, in my opinion, on :-

- (a) A reasonable tonnage of alluvials containing scheelite which can be cheaply worked by bulldozer and loaders.
- (b) The existence of lodes of workable width, i.e. at least 2 or 3 feet extending over a considerable distance, or, a large bulk of scheelite bearing granite.

With this in view a rapid investigation of the field using both compass traverse and examination under ultra violet ray was made.

* Note. The term alluvials is used to cover thin rock and soil cover not deep alluvium lying in the wide flats.

GENERAL GEOLOGY.

Deposits occur in a complex granite outcrop, only a small part of which is at present being mined. Scheelite with subordinate wolfram has been worked to date almost entirely from thin quartz reefs and associated alluvial material. The tungsten minerals occur as patches in the reefs and are usually disseminated into the granite walls for a distance of 1" or 2" only. Gougers and tributers ore is obtained by careful picking and the analysis taken from these cannot be accepted as average grades for the reef. An average grade over the better reefs would appear to be approximately 2% tungsten. The following is a synopsis of the type of reefs and lengths exposed on the main leases :-

Falcon Lease.

Main vein - 9" to 12". A total length of 600 feet plus. At least six smaller veins found.

Doria Lease.

Main reef average 4". Length - 500 ft.)

Territory Scheelite Lease.

3" to 4" vein. 400 ft. long)

Numerous
small
veins.

Central Territory Lease.

18" to 3 ft lode carrying 2 or 3 reefs 4" wide.
total length - 1000 ft plus.

Makinson's Lease.

Crushed quartz reef averaging 6" - 9",
500 ft in length.

Curtis Lease. (Now Sold).

2" to 4" quartz veins. 120 ft and 200 ft long.

All these veins can be expected to carry scheelite to several hundred feet in depth.

OCCURRENCE OF THE SCHEELITE.

The scheelite has been worked to date either from the thin quartz reefs or from re-sheddings along the surface. In most of the ground examined, scheelite was found in the country rock for an inch or so only. Both on the Falcon Lease and on Gough's Lease a crushed quartz and biotite granite rock was found carrying scheelite. Such material might obtain thicknesses of mineable proportions. At the moment this type of ore appears to be restricted to small areas only.

On the new Curtis Lease, scheelite rich biotite

granite has been found as yet unassociated with quartz veins. A grab sample assayed 1.7% WO_3 . However, insufficient work has been done to prove the width of this material. This type of ore body could provide large tonnages of mineable ore and the area will be thoroughly investigated as soon as more development has been carried out.

Near the quartz veins, shedding has occurred and scheelite can be seen extending over approximately 10 to 20 ft. on the surface. However, the removal of "bull-dust" by wind action concentrates the scheelite on the surface. It is doubtful whether this concentration would be found at any depth in the alluvial, i.e. the appearance of the surface under the scheelite lamp is misleading. Where, however, the surface soil is thin, it would repay removal by bulldozing. It is impossible to estimate what areas of the leases would yield therefore payable alluvial until careful bulk sampling has taken place. It is my opinion that alluvial material is only payable close to the reefs, but the aggregate tonnage would be large.

MINING POTENTIALITIES OF THE FIELD.

Mining potentialities of the field, if worked with more skill than shown to date, would appear to be reasonable. Large tonnages of alluvial or surface scraped scheelite bearing material occur when the whole field is taken into consideration. These could be economically recovered by the use of a bulldozer. However, the size of leases held by the individual companies are too small to make this method of ore recovery of great value to them. The only reef seen on the field which could be economically mined to depth is that on the Central Scheelite lease consisting of approximately one-third quartz vein material and two-thirds decomposed granite carrying disseminated scheelite. An average value of this reef might be 1 - 1½%. Unfortunately the shaft was not open for any samples to be taken at the time of my visit. Scheelite rich biotite granite if this is proved to occur, would of course, give valuable sources of ore but this has not been proved at any size to date.

SUMMARY.

The Mosquito Creek field is a good gougers field. Sufficient scheelite has been proved to date in small veins and in surface sheddings to justify say one Company with tributers operating on the field. The existing leases are too small to repay capital expenditure necessary to erect plant etc. The reserves of scheelite in the whole field are probably much larger than are realised. The granite rock extends 15 miles to the North, the small quartz veins are extremely numerous and a special type of biotite granite may contain payable scheelite. The prospects of the field would be good if either -

- (a) A good width of biotite granite or quartz granite lode can be found. (The more common quartz vein occurrences are too thin for Company working), or,
- (b) Large scale stripping of the rich but thin quartz veins by bulldozers is resorted to. Such operations would have to be carried out with more skill than is being shown by operations to date.

Surface stripping over the zones of thin quartz veins is in my estimation the best method for a company to operate on the field. Such stripping would uncover the quartz veins and these could then be allocated to company or tributer exploitation according to the thickness. Any sensible company should by now have carried out large scale prospecting through the whole field and covered likely areas by mining leases. Purchasing leases for high sums in this type of country is ridiculous.

(A. D. M. Bell)
RESIDENT GEOLOGIST. .

4/9/52.