BYNOE JOINT VENTURE

1988 ANNUAL REPORT
MLN 995

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1. **INTRODUCTION**

This report describes the results of exploration effort carried out within Bynoe Joint Venture Mining Lease 995 during the period 1 January 1988 - 31 December 1988. It is submitted to the Northern Territory Department of Mines and Energy and comprises an annual report pursuant to Section 79 of the Mining Act.

The 1988 exploration programme was aimed at expanding the "soft rock" alluvial and pegmatite hosted Sn-Ta reserves. This programme was implemented by Greenex the exploration division of Greenbushes Ltd on behalf of both Greenbushes Ltd and Barbara Mining Corporation Ltd, a subsidiary of Bayer AG of West Germany.

2. **LOCATION AND LEASING**

MLN 995 is located 17 km SSW of Darwin (Figure 1). The tenement was transferred to Greenbushes Ltd and Barbara Mining Corporation Ltd from G.B. Scrimegour in a transfer lodged at Darwin on 4 January 1988. Bynoe Joint Venture were advised on the 18 May 1988 that dealing D4637 Transfer from G.B. Scrimegour to Barbara Mining Corporation Ltd and Greenbushes Ltd was registered on 13 May 1988 against MLN 995.

The tenement was previously granted subject to the survey of the area being completed in the 12 months to 31 December 1988. This survey has been lodged and accepted.

3. **TOPOGRAPHY**

MLN 995 consists of a dissected peneplain of low relief, with upland parts capped with laterite caprock. Kings Table is the highest point. The lease area is fringed to the west, north and east by mangrove lined tidal creeks, and in the south an area of sloping country occurs before again giving way to a mangrove lined tidal creek. Access is from the southeast with the access road generally passing along the laterite capped ridge. Where this road enters lowlands it tends to become impassable in the wet season.
4. HISTORY

The area was explored by the Chinese at the turn of the century, and Kings Table the largest pegmatite was worked at that time, along with the other smaller deposits, Black Jade and Clarkes. Kings Table pegmatite was also worked at some later date (probably 1940's) by miners who set up the crude accommodation and concentrating equipment still visible on site. In 1981 Weka Pty Ltd dug a number of trenches at Kings Table to determine the width of the pegmatite. Later, Top End Mineral Ventures Pty Ltd had the tenement, which subsequently passed to G.B. Scrimgeour, and thence Bynoe Joint Venture.

5. REGIONAL GEOLOGY

MLN 995 is on the northern extremity of a swarm of complex zoned rare element (Ta, Nb, Sn) pegmatites which intrude the 55 km long and 10 km wide West Arm - Mt Finniss Belt or Finniss River Pegmatite Belt. The main pegmatites in this belt, e.g. Mt Finniss, Picketts, Hang Gong, Bells Mona and Grants are up to 300 m long and 50 m or more wide. These pegmatites are commonly steeply dipping dykes or flat plunging sills.

Zoned pegmatites of the Finniss River Pegmatite Belt often have a central milky white massive quartz core and a bladed intergrowth of quartz and muscovite in the marginal zone. Less common quartz feldspar and muscovite feldspar zones are apparent. Depth of weathering to produce laterite has varied from several metres to thirty-five metres. Surface inspection often gives a false impression of the quartz content as the clay fraction is washed out in the "wet" season.

The Finniss River Belt pegmatites have intruded early carpentarian shales, siltstones and schists of the Burrell Creek Formation which lies on the north-west margin of the Pine Creek Geosyncline. To the south and west are granitoid plutons and "pegmatitic" granite stocks of the Litchfield Complex. Cretaceous sandstone, siltstone and basal conglomerates unconformably overlie the Burrell Creek Formation. Kings Table is an example.

Tantalite and cassiterite mineralisation occurs in the Finniss River Pegmatite Belt as primary deposits within pegmatites and secondary deposits within alluvial and eluvial settings. Cretaceous sediments are also reputed to contain secondary concentrations. Cassiterite is the only tin mineral recorded and tantalite is the main tantalum-niobium mineral; tapiolite has been identified recently during microscopic examinations and future work will undoubtedly discover other tantalum minerals.
6. **1988 WORK**

During 1988 the main expenditure was on the completion of the survey, trenching of Kings Table pegmatite, ground reconnaissance and trenching of Clarkes pegmatite. Building of access roads also formed part of the 1988 work and this work was carried out in consultation with the Environmental Section of the Department of Mines and Energy, particularly in sensitive mangrove areas.

6.1 **Clarkes Pegmatite**

**LOCATION:**

This prospect is located in MLN 995, approximately 9.0 km north of Observation Hill, and 10.5 km due north of the all weather Mandorah Road (Figure 2). Access to the prospect from the Mandorah Road is on bush track accessible only in the dry season.

Clarkes Pegmatite is 10.5 km in a direct line from the Project Camp and Plantsite.

**TOPOGRAPHY:**

Clarkes pegmatite is situated on a gentle slope, which descends to the mangrove lined east edge of Kings Table. To the north, west and south are low rises capped with laterite. These rises are dissected in past by semi-mature drainages.

**HISTORY:**

There is no recorded production from the prospect nor is there any known record of its location. Old workings are comprised of a few small open pits, which were discovered by surveyor X. Clarke while conducting the MLN 995 survey. It would appear that the prospect was tested, but abandoned because of its small size.

No work appears to have occurred since the turn of the century, and Mines Department plans do not record the deposit.
1988 WORK:

The prospect was rediscovered in 1988. A total of 14 m of backhoe trenching was carried out in two trenches at the northern and southern extremities of the prospect. This work failed to locate any pegmatite extensions so samples were taken from pegmatite exposures in open pits. A total of 4 samples were collected from open pits and processed.

NUMBER, DIMENSIONS AND ATTITUDE OF PEGMATITE:

There is at least one and possibly two pegmatite veins present, with the maximum width being 2.5 m in the northern open pit; striklength appears to be 18 m. Vein(s) appear to be conformable, with a north-south orientation; contacts are obscured by general erosional collapse of open pit walls, however, vein(s) appear to be subvertical dykes.

GENERAL GEOLOGY:

Exposures of the pegmatite are restricted to the open pits. The pegmatite is kaolinised with quartz and kaolin generally dominant over mica in the broad mineral host assemblage.

Country rock is grey-green micaceous shale, which is lateritised in the southern and western parts of the prospect. The main foliation strikes north-south and dips 80 degrees east (Figure 3).

CASSITERITE AND TANTALITE MINERALISATION:

Both the cassiterite and tantalite grades are exceptional throughout the prospect (Figure 3). On the basis of the 4 samples collected the average $\text{SnO}_2: \text{Ta}_2\text{O}_5$ ratio was approximately 26.2:1; this includes the two outstanding cassiterite grades of 3.323 and 4.605 kg/tonne $\text{SnO}_2$. The $\text{Ta}_2\text{O}_5: \text{Nb}_2\text{O}_5$ ratio was approximately 2.6:1.

POTENTIAL RESERVES:

The prospect is too small to warrant a reserve estimate. Follow-up exploration in the local area to find possible higher grade extensions or other pegmatite of similar grade is, however, warranted.
GREENSEX
EXPLORATION DIVISION OF GREENBUSHES LTD.

BYNOE JOINT VENTURE - N.T.

CLARKES PROSPECT

GEOLGY

Grades

SnO2 / Ta2O5 Kg / LCM

FIGURE No. 5
DATE: December, 1988
ORIGINATOR: F.M.
DRAFTSPERSON: H.P.H.

SCALE: 1:500

10 20 30 40 50

DRG No. BJV-202
SHEET No.
PLATE No.
6.2 Kings Table Pegmatite

LOCATION:

This prospect is located in MLN 995, approximately 11.25 km north of Observation Hill (Figure 2). Access to the area is via the Bitumen Mandorah Road to near Observation Hill, thence along a bush track north to the prospect. The latter track is accessible only in the dry season, and becomes impassable after the first significant rains.

Kings Table Pegmatite is 12.5 km in a direct line from the Project Camp and Plantsite.

TOPOGRAPHY:

Kings Table pegmatite is located on the 100 m wide slope between the laterite capped peneplain in the east and the mangroves in the west on the NW side of Kings Table. In the NW the prospect carries on into the mangroves. The area is covered in quartz scree and remnants of the laterite caprock of the higher slopes.

HISTORY:

Kings Table appears to have been worked by the Chinese at the turn of the century, and at some later date (probably 1940's) by miners who set up the crude accommodation and concentrating equipment still visible on site. In 1981 Weka Pty Ltd dug a number of trenches on site, obviously to determine the width of pegmatite.

The prospect was mapped and sampled by Greenex in July 1984 with a view to possible acquisition, at which time it was reported that the reserves were unlikely to exceed 50,000 LCM (see Report NT-046).

1988 WORK:

The Bynoe Joint Venture survey grid was extended to the prospect utilising G.P.S. in early August, and backhoe trenching commenced as the prospect was gridded. A total of 195 m of backhoe trenching was completed. This work produced a total of 40 samples for processing.
NUMBER, DIMENSIONS AND ATTITUDE OF PEGMATITE:

Earlier field observation suggested three possible pegmatite veins over a strikelenlength of 250 m (see Report NT-046), however, trenching has confirmed the existence of two veins the northern most of which diverges into two subveins north of 41325N. The southern vein has a strikelenlength of 125 m and strikes 255 degrees, while the northern vein has a strikelenlength of 150 m and strikes 020 degrees (on average). Pegmatite contacts dip from 50 degrees west to 42 degrees east (Figure 4).

GENERAL GEOLOGY:

Exposures of pegmatite are restricted to old workings and trenches. The pegmatite is kaolinised and in the north consists of a milky-quartz core and a muscovite-quartz border zone, while in the south the quartz core is a lesser component. Near the southern end the pegmatite is quartz-muscovite with a bladed texture, and is quite hard at shallow depths; coarse mineralisation was picked from this area in 1984 and assayed 1.55% Sn, 0.12% Ta₂O₅ and 0.07% Nb₂O₅ (see Report NT-046).

Host rocks are micaceous shales, which are lateritised. The main foliation strikes north-south, while a second foliation parallels the pegmatite intrusion direction in some parts of the prospect. Dip of the foliation varies from 56 degrees west to 40 degrees east.

CASSITERITE AND TANTALITE MINERALISATION:

There are some exceptional tantalum grades from this prospect, but only 2 of the 40 cassiterite grades are significant (Figure 5). On the basis of the 40 samples collected the average Sn₀₂:Ta₀₂ ratio is approximately 1.18:1, and the Ta₀₂:Nb₀₂ ratio approximately 1.54:1.

MINERALISED RESERVES OUTLINED:

Excluding low grade material indicated in trenches 41150N, 41175N, 41325N and 41350N, a reserve of 25350 tonnes is estimated to be present at an average grade of 0.039 kg/tonne Sn₀₂ and 0.047 kg/tonne Ta₂O₅ to a depth of 10 m. The ore to waste ratio is 1.15:1.
POTENTIAL RESERVES:

Apart from the in situ pegmatite reserves indicated above an additional eluvial resource is likely to be present. A probable resource of 4 - 5,000 tonnes is not unlikely, and the areal extent of mineralisation may be somewhat enhanced due to the presence of this pegmatite on a slope.

7. ESTIMATED EXPENDITURE MLN 995

The Bynoe Joint Venture has a number of mining tenements on Cox Peninsula which were explored in 1988. The total amount spent in 1988 was $355,122 of which it is estimated that 10.3% was spent on MLN 995, i.e. $36,687.

8. CONCLUSIONS

The 1988 exploration programme for MLN 995 expanded project reserves. Tin and tantalum, the commodities under consideration have both had high points during the year, but for tin the rise was short-lived. Tantalum has continued to rise in price through the year and this continues to be the trend although there appears to be some tendency towards stabilisation in the $US45-50 per pound range.

During 1989 exploration will involve auger drilling of Kings Table pegmatite and commencement of work on Black Jade. Start up of the Bynoe Joint Venture operations will see the need for additional ore reserves which will be enhanced by material from there prospects. Ground reconnaissance to find additional pegmatites will continue.