FINAL REPORT
HL3502
MT. DENISON
NORTHERN TERRITORY

IMAGED

DME LIBRARY
01 MAR 1996
SCANNED
CONTENTS

1.0 SUMMARY

2.0 PROSPECT SITUATION
   2.1 Relevant Maps
   2.2 Location and Access
   2.3 Tenements
   2.4 Townsite Facilities
   2.5 Communications
   2.6 Power and Water
   2.7 Transport
   2.8 Landholders

3.0 PREVIOUS WORK
   3.1 Past Production
   3.2 B.M.R Mapping

4.0 REGIONAL GEOLOGY

5.0 LOCAL GEOLOGY

6.0 GEOMORPHOLOGY

7.0 SAMPLING PROGRAMMES

8.0 RESERVES

9.0 CONCLUSIONS AND RECOMMENDATIONS
APPENDICES

I PROSPECT LOCATION 1:250,000 "Napperby"
Photocopy, Sheet 69, N.T.

II SKETCH MAP Indicating Positions of Tantalite
Workings and assayed sample locations - 1:20,000

III GEOLOGY 1:250,000 "Napperby" Photocopy
Sheet SF/53 - 9

IV ASSAY RESULTS
1.0 SUMMARY

A sampling and exploration program directed towards evaluating tin and tantalite mineralization was initiated in the early stages of the granting of this Exploration Licence while a field crew was mobilized in the area.

This program was directed principally towards alluvial mineralization but pegmatites were also examined with a view to determining the extent and potential of the host rocks.

The area contains many small workings and the presence of several economic minerals is noted, including wolframite and scheelite, tantalite, columbite and tapiolite, copper and tin. These deposits proved to be small and discreet, and while further exploration was recommended, declining metal prices and the isolation of this prospect prevented a more detailed examination.

......2/
2.0 PROSPECT SITUATION

2.1 Relevant Maps

Exploration Licence 2602 is represented on the following publications:

Sheet SF 53-9  "Napperby"  -  1:250,000 Topographical map.

Series R502  "Napperby"  -  1:250,000 Tenement map depicting Exploration Licences.

Sheet SF 53-9  "Napperby"  -  1:250,000 Geological map.

2.2 Location and Access

Exploration Licence 2602 is situated on Mt. Denison Pastoral Station, bounded by longitudes 132°10' and 132°20', latitudes 22°04' and 22°13' enclosing an area of 282.2 square kilometres.

Mt. Denison Station is 162 kilometres west of Prowse Gap, this being 142 kilometres north of Alice Springs on the Stuart Highway. Access to the station is provided by graded road suitable for most traffic in the dry season while bush tracks on the alluvial plains give reasonable access within the Exploration Licence. Bouldery and rugged terrain typical of large outcrops of granite limit access to four wheel drive or foot traffic for much of the area of interest, preventing rapid prospecting/reconnaissance.

......3/
2.3 Tenements

Jays Exploration Pty. Ltd., were granted two Exploration Licences in this region.

The original Exploration Licence application included a 72 square kilometre strip south of the granted area encompassing the Mt. Allen Tin Mine. This portion was excised as a result of the Aboriginal Mt. Allen Station Land Claim.

E.L 2601 encompassed the Mt. Stafford Tin Mine but was relinquished in September 1981.

2.4 Townsite Facilities

Alice Springs, 304 kilometres distant, is the nearest major settlement to the prospect. Some stores and supplies may be purchased from the Station shop located at Mt. Allen Homestead.

2.5 Communications

Radio telephone facilities exist at both Mt. Allen and Mt. Denison Stations. The nearest public telephone is found by the abandoned Aileron Hotel 130 kilometres north of Alice Springs.

2.6 Power and Water

All power in the region is provided by portable generators. Water is scarce and where underground supplies are tapped, both quality and supply are marginal to poor.
Potable supplies are pumped from subsurface stream flows while cattle needs are met by the damming and storage of seasonal flows.

2.7 Transport

Most roads are of a standard suitable for semi-trailers but upgrading would be required within the area of interest.

2.8 Landholders

Exploration Licence 2602 is situated on Mt. Denison, managed by Mr Leo Martin.

Neighbouring stations include Coniston, run by Messrs. Max and Jackie Lyen, and Mt. Allen, run by Mr Joe Oldfield.
3.0 PREVIOUS WORK

3.1 Past Production

Production from this region has been desultory, with mining done mostly by local aboriginals. Southwest of Brookes Soak copper, cassiterite, wolframite and tantalite workings occur in the general region about Double Dams.

Coarse to pebble sized tapiolite is shed from two small pods of pegmatite 1 kilometre east of Double Dams. One location shows that only eluvial and alluvial working in and around small stream gullies has been carried out, while the stream gully over the rise to the southwest shows that some hardrock has been gouged and a bulldozer employed to assist eluvial and alluvial work. A total of 174 kg of tantalite/tapiolite has been recovered by aboriginals who worked this show.

Further alluvial tantalite is said to exist to the north east.

At Sid Potter's show 2 kilometres northwest of Double Dams, wolframite is shed from fine to medium crystallised biotite-muscovite granite. Only two or three bags of wolframite have reportedly been recovered from this show.

A small deposit of scheelite was discovered in granites in the northern part of the Exploration Licence around 1955. Interest in the area became very strong but the mineralization proved negligible.

...6/
3.2 B.M.R Mapping

Geological mapping of the area covered by Exploration Licence 2602 is limited to that carried out by the Bureau of Mineral Resources, Geology and Geophysics in the production of the Napperby 1:250,000 sheet.

4.0 REGIONAL GEOLOGY

Two major structural regions exist in the Napperby area - the sedimentary Ngalia Basin and the older Pre-Cambrian basement rocks.

Pegmatite mineralization occurred with the syn-metamorphic intrusion of extensive granites into Archaen sediments. This was followed by the deposition and erosion of Palaeozoic sediments to lead to the exposure of present day outcrops through Quarternary alluvial plains of red soil and sand.

5.0 LOCAL GEOLOGY

Pre-Cambrian schists and quartzites occur to the north and in a few isolated pockets as roof pendant xenoliths within the granites which cover most of the Exploration Licence.
These granites are variously porphyritic and gneissic, with composition ranging from granodiorite to adamellite to alkali feldspar while texture is generally medium to coarse.

Pegmatites are mostly of hyperthermal origin with mineralized zones occurring as small pockets grading out of the country rock. Pegmatites derived from fracture in-fillings are also present and are usually associated with quartz outcrop.

General lineament and jointing is between 060° and 085°. This is clearly exemplified by the numerous quartz dykes and ridges which traverse the area.

6.0 GEOMORPHOLOGY

Arid weathering with occasionally flooding has produced widespread peneplanation over most of the region. Contrasting with this are sharply rising granitic bosses and quartz rises, covered in part with a thin veneer of eluvium and colluvium. Both catchment area and flood-plain channels are well defined.

7.0 SAMPLING PROGRAMMES

Sampling of alluvium and eluvium and the collection of rock chip samples was carried out in April and May 1981. This involved a three man field crew including a company geologist.
Alluvial/eluvial samples were concentrated on site and grades determined. Pegmatite samples were assayed in Perth for a suite of elements, as shown in the appended assay results.

8.0 RESERVES

Tantalite reserves are indicated to be within 5000 to 8000 loose cubic metres at a grade of around 0.16 kg/1cm although further work is required to verify this.

Wolframite mineralization is more widespread but at current metal prices neither mineral can be considered economic.

9.0 CONCLUSIONS AND RECOMMENDATIONS

While Exploration Licence 2602 encompasses large areas of granite containing several pods of mineralization it appears that alluvial potential from these sources is limited.

Knowledge of the hardrock situation remains limited, but the lack of large pegmatite bodies indicates there is little likelihood any potential exploitation exists in this field.

Further investigation of this region is warranted given more encouraging metal prices than exist at present.
SKETCH MAP SHOWING LOCATION OF ALLUVIAL TANTALITE WORKINGS DOUBLE DAMS, MT. DENISON

-LEGEND-
- APPROXIMATE GRANITE/PLAIN BOUNDARY.
- WATER COURSE.
- TRACK.
- EARTH DAM.
- SMALL ALLUVIAL WORKINGS.
- ASSAYED SAMPLE LOCATIONS.

SCALE 1:20 000

TO MT. DENISON

RED SOIL PLAINS

GRANITE

PINNACLE

DOUBLE DAMS

RED SOIL PLAINS

GRANITE

TO PINNACLE YARD

GEOLOGIST: P.P.
DATE: JULY 1982.
DRAWING No. 2-031
APPENDIX III
### ANALYTICAL REPORT

<table>
<thead>
<tr>
<th>Sample Ref.</th>
<th>Ta$_2$O$_5$</th>
<th>Sn</th>
<th>Nb$_2$O$_5$</th>
<th>Fe$_2$O$_3$</th>
<th>TiO$_2$</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M 20</td>
<td>&lt;0.01</td>
<td>0.25</td>
<td>&lt;0.01</td>
<td>75.6</td>
<td>22.2</td>
</tr>
<tr>
<td>2</td>
<td>TAP 1</td>
<td>72.8</td>
<td>0.43</td>
<td>8.90</td>
<td>15.4</td>
<td>0.41</td>
</tr>
</tbody>
</table>

Results expressed as percentages

Method: XRF
# ANALYTICAL REPORT

<table>
<thead>
<tr>
<th>Sample Ref.</th>
<th>Ta</th>
<th>Sn</th>
<th>Nb</th>
<th>Fe</th>
<th>K</th>
<th>Y</th>
<th>Sr</th>
<th>U</th>
<th>Rb</th>
<th>Cs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D1</td>
<td>17</td>
<td>25</td>
<td>25</td>
<td>1.15</td>
<td>5.55</td>
<td>16</td>
<td>45</td>
<td>13</td>
<td>540</td>
<td>25</td>
</tr>
<tr>
<td>2</td>
<td>30</td>
<td>25</td>
<td>&lt;10</td>
<td>0.95</td>
<td>2.15</td>
<td>6</td>
<td>25</td>
<td>11</td>
<td>400</td>
<td>20</td>
</tr>
<tr>
<td>D3</td>
<td>70</td>
<td>60</td>
<td>110</td>
<td>0.88</td>
<td>1.40</td>
<td>5</td>
<td>14</td>
<td>6</td>
<td>590</td>
<td>45</td>
</tr>
<tr>
<td>P1</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>9.05</td>
<td>0.17</td>
<td>18</td>
<td>130</td>
<td>&lt;3</td>
<td>4</td>
</tr>
<tr>
<td>P2</td>
<td>25</td>
<td>18</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>2.50</td>
<td>0.29</td>
<td>95</td>
<td>10</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>P3</td>
<td>40</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>1.90</td>
<td>2.10</td>
<td>5</td>
<td>250</td>
<td>&lt;3</td>
<td>110</td>
</tr>
<tr>
<td>P4</td>
<td>140</td>
<td>&lt;10</td>
<td>380</td>
<td>1.60</td>
<td>3.45</td>
<td>40</td>
<td>150</td>
<td>18</td>
<td>210</td>
<td>&lt;10</td>
</tr>
</tbody>
</table>

Method of Analysis: XRF