EXPLORATION LICENCE 1301

YIVINGI RANGE

NORTHERN TERRITORY

ANNUAL REPORT FOR THE YEAR ENDED 2ND NOVEMBER,
1977
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1. Photogeology map of Yiyintyi Range.

   Exploration Licence 1301. Northern Territory.
SUMMARY

Exploration Licence 1301 was granted to Dampier Mining Company Limited on 2nd November, 1976. The area is known to contain Lower Cretaceous sediments possibly similar in age to the rocks which host the large manganese deposits at Groote Eylandt. Photointerpretation and the subsequent helicopter assisted survey failed to locate significant manganese. Several samples of laterite with minor manganese were collected and are being analysed. It is believed however that the minor manganese in laterite is not related to manganese deposits that may be associated with the Cretaceous sediments. Several samples of Cretaceous sediments were collected to study the precise age of the rocks.
1. **INTRODUCTION**

Exploration Licence 1301 of 251.63 square miles was granted to Dampier Mining Company Limited on 2nd November, 1976 for one year. Work during the year consisted of photointerpretation and later sampling of areas of manganese mineralisation within the Cretaceous sediments and the laterites.

On 2nd November, 1977, E.L. 1301 was renewed for a further year.

2. **WORK COMPLETED**

R.F. Loxton Hunting & Associates were engaged to carry out a comprehensive photo-interpretation of the area using RC 9 (1:85,000) black and white photographs. A short visit to Groote Eylandt manganese deposit was organised for the consultant to relate photo-tones to manganese mineralisation. A photogeology map of the area (Figure 1) was completed by the end of August 1977. A helicopter survey of the area was conducted from 27th September to 2nd October, 1977, with Bing Bong Station as the base camp, using a Hughes 500 helicopter on charter from Vowell Helicopters. During the survey several samples of laterite with minor manganese and a variety of suspected Cretaceous sediments were collected. The accompanying map shows the sample locations. Margins of Proterozoic rocks and areas of dark photo-tone were visited.

3. **GEOLOGY**

The search for manganese is based on the Groote Eylandt model which is:

1. The manganese ore occurs at the unconformity between Proterozoic and Cretaceous rocks.

2. The manganese ore is commonly capped by manganiferous laterite.

3. Laterite which occurs on Cretaceous beds younger than manganese ore is slightly manganiferous. Manganese in the laterite is presumably derived from reworked manganese ore.

Consequently the photointerpretation was directed at recognising:

1. Proterozoic-Cretaceous unconformity;
2. A dark possibly manganiferous laterite as distinct from ferruginous laterite;


Outcropping laterite is easily recognisable on the aerial photographs. In addition several areas of very dark tone were recognised as possibly due to outcropping laterite with some manganese. The Proterozoic-Cretaceous unconformity was recognised on the basis of the Proterozoic's distinctly recognisable joint pattern. Areas of sandy soil with scattered outcrops of structureless sediment were interpreted as Cretaceous Mullaman beds.

The photogeology map produced shows Proterozoic rocks and the Proterozoic-Cretaceous unconformity in the north-western part of the licence area. The Cretaceous rocks were interpreted as occurring all along the western margin of the area, immediately east of the north-south trending Yiyintyi Range. Yiyintyi Range is just outside the licence area. Laterite, alluvium, colluvium and marine sand cover the rest of the area.

Most of the dark tone laterite (Czlm) areas were confirmed as areas with thicker pine vegetation on sandy soil or thicker vegetation in and around swamps. Swamps are invariably ringed by boulders of sandy ferruginous laterite, often slightly manganiferous but not enough to warrant further investigations. Some of the dark staining in the laterites and on the rocks is due to high ash content of the soil especially in dried swamps.

Outcrops of manganese mineralisation or manganiferous laterite such as the ones which occur on Groote Eylandt, were not seen anywhere in the area.

As a result of the survey, it is believed that the laterite postdates Cretaceous rocks and occurs as one consistent unit throughout the area. It is probably Tertiary in age and is overlain by thick sandy soil towards the coast.

4. CONCLUSIONS

1. Manganese mineralisation does not occur at the Proterozoic-Cretaceous unconformity.

2. Manganiferous laterite such as the one which occurs at Groote Eylandt above the ore does not occur in this area.
3. Laterite is a consistent unit and is not related to possible manganese deposits.

4. Presence of minor amounts of manganese observed in the laterites is not unusual and could be easily derived from the Proterozoic rocks.

5. **EXPENDITURE**

Expenditure debited to EL 1301 during the year ended 31st October, 1977 was:

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<th>Description</th>
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<td>Wages and Salaries</td>
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<td>Tenement Fees, Licences etc.</td>
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<td>Occupancy/Location Expenses</td>
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<tr>
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<td>Other Items</td>
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<td><strong>Total</strong></td>
<td><strong>$15,413</strong></td>
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This report is submitted to the Mines Branch as required Condition 3 of Exploration Licence 1301.
APPENDIX - SAMPLE LOCATIONS

Location 74:
Sandy ferruginous laterite in sandy soil.

Location 77:
Sandy ferruginous pisolitic laterite. Outcrop on the edge of a swamp.

Location 78:
Sandy manganiferous and ferruginous pisolitic laterite.

Location 80:
Sandstone, light pink, medium to coarse grained, massive blocky with large scale cross bedding and ripple marks. Thin bands of clayey sandstone interbedded. Possibly Cretaceous.

Location 81:
Sandstone, white, saccharoidal, medium grained hard, massive, conglomeratic with pebbles of white sandstone. Outcrops as scattered boulders.

Location 82:
Sandstone, white, medium to coarse grained, massive and friable.

Location 83:
Sandy ferruginous laterite on the edge of a swamp.

Location 84:
Sandy ferruginous, nodular laterite.

Location 85:
Sandy ferruginous laterite.

Location 86:
Sandy ferruginous nodular laterite.

Location 99:
Sandstone, clayey, red and yellow with pockets of white overlain by thin laterite in places.