CONTENTS

LIST OF FIGURES

LOCATION

REGIONAL GEOLOGY

GEOLOGY OF THE EXPLORATION LICENCE

FIELDWORK COMPLETED

DETAILS OF EXPENDITURE

OPEN FILE
LIST OF FIGURES

FIG.1 ........................................... LOCATION MAP

FIG.2 ........................................... GEOLOGY
Location of Licence

EL No 1583 was granted to Otter Exploration N.L. for 12 months from the 10th August, 1977. It covers an area of 176 square miles and is approximately 300 km north-east of Alice Springs. Access is via the Plenty River Highway, to Jervois Station.
Regional Geology

The EL is situated near to the regional unconformity between the Archaean Arunta Complex, and the Upper Proterozoic - Palaeozoic sediments of the Georgina Basin.

The Archaean Arunta Complex is represented in part by the Bonya Sequence which consists of mica-schist, metamorphosed intermediate volcanics, calc-silicate gneiss, marble, amphibolite and quartz-magnetites. The whole sequence has been metamorphosed (greenschist upper amphibolite grade).

The Harts Range Group of the Arunta Complex outcrops to the south of the region. This consists predominantly of quartz-feldspar-mica gneiss, and garnet-mica-feldspar gneiss. In the Plenty River Mica Field, numerous pegmatites and biotite schists occur.

During the Lower Proterozoic a number of quartz-feldspar-muscovite granites intruded the Bonya Sequence unitys. Genetically associated with the granites is a swarm of quartz reefs, generally trending west-north-west to north-north-west.

Sedimentation was initiated in the Upper proterozoic with the (tillitic) Mt Cornish Formation. This was followed by a sequence of clastic and dolomitic sediments, peaking with the Upper Cambrian massive dolomites and oolitic limestones of the Arrinhrunga Formation. Ordovician and Devonian sediments are confined to calcareous siltstones, sandstones and dolomites.

The major structural feature in the region is the (Lower Proterozoic?) Delny - Mt Sainthill Fault System. This is a series of west-north-west trending faults, the major component being vertical, such that the northern block has moved up with respect to the southern. This fault system appears to have economic significance, as all metalliferous mineral occurrences known to date are located north of this system. eg. Molyhill mine, Jervois mines and Bonya copper and scheelite district. South of the fault system is the Plenty River Mica Field, an otherwise barren network of pegmatites intruding Archaean gneiss and schist of the Harts Range Group.

There are a number of mineral deposits of economic significance in the region. East of Mt Sainthill is the Molyhill scheelite mine, currently producing scheelite and molybdenite. The ore occurs in roof pendants of calc-silicates and skarn in the Jinka Granite.

The Jervois Copper mines occur in sheared calc-silicate gneiss and sericitic schists - the mineralization appears to be due to hydrothermal activity along fault planes. Other metals, in order of importance are lead, silver, zinc and tungsten.

The Bonya Scheelite District contains numerous copper and scheelite prospects. these occur in calc-silicates and amphibolites of the Bonya Sequence, and appear to be associated with the numerous scattered granite intrusions.
The Box Hole Bore Lead Prospect differs from the other mineral occurrences in that it occurs in the Upper Cambrian Arrinthurunga Formation, and appears to be syngentic.

Regional Magnetic Interpretation

The Delny - Mt Sainthill Fault System is represented by a somewhat discontinuous trend between the northern magnetically active Bonya Sequence, and the southern, magnetically quiet Harts Range Group.

The Jinka Granite, where it outcrops over the Jinka Plain is magnetically quiet, whereas the granite to the south-west (also Jinka Granite) is magnetically anomalous. This may be due to the presence of a large number of outcropping units of the Bonya Sequence, probably representing roof pendants. This is the granite with which the Molyhill scheelite deposits are associated.

The contacts between the Marshall Granite and the intruded Archaean schists are anomalous, possibly indicating metasomatic alteration of the country rock, with the formation of magnetite.

The Jervois Granite, plus the smaller granites, do not show up against the magnetically active background of the Bonya Sequence.
Geology of the EL

EL1583 is located just south of the Bonya Scheelite District. This is a fault - bounded block of Archaean Bonya Sequence, with intrusions of Jinka Granite. The remainder of the EL consists of Quarternary sand and alluvium covering Bonya Sequence units, and possible units of the Harts Range Group. Faulted blocks of the Grant Bluff Formation and Elyuah Formation occur in the north west.

A number of lineaments can be observed on the air photographs. The predominant north-west trending lineaments can be correlated with similar trending faults in adjacent areas. The major component of these faults is vertical, such that the central block (Bonya Scheelite District) has moved up relative to the adjoining blocks.

A north-east trending fault runs along the south eastern corner of the Bonya Scheelite District. This can be traced through to the photo-lineament which crosses the Jervois Mines District. A small copper prospect is located near this fault in the Bonya Bore area. A shaft has been sunk, terminating at 30 feet in chalcopyrite. Other minerals are azurite, malachite, stibnite, scheelite and wolfram. The mineralization is associated with narrow quartz veins in calc-silicate rocks. Close to the prospect, basic intrusives have been mapped, as well as Jinka Granite.
Work Undertaken

During May 1977, a reconnaissance flight was undertaken. An onboard spectrometer detected one radiometric anomaly north of Thring Bore, near the junction of the Marshall River and Thring Creek. A subsequent reconnaissance flight in August 1977, failed to detect this anomaly.
### DETAILS OF EXPENDITURE, EL1583 (12 months to 31/7/78)

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**Total** $4,035.71

Head Office Overheads @ 33% $1,331.78

**Grand Total** $5,367.49