1.0 INTRODUCTION

This report is to set out exploration work carried out by the Company in the area of EL 2478 during the 1982 field season.

The work is a part of activities under the joint venture agreement between Pan d'Or Mining N.L. and the Company, approved by the Minister for Mines and Energy on 9th June, 1981 and was carried out and supervised by the writer - the undersigned.

M. Sakurai  DIRECTOR
February, 1982. Darwin, N.T.
2.0 EXPLORATION CONCEPT

The Company is currently engaged in the investigation on a possibility of a large open-cut gold mining proposition for stratabound gold deposits in the South Alligator Group (the Zapopan area, for example).

The Company's exploration effort is also directed to obtain an opportunity for a large low grade tin mining proposition. The world's tin resources of easily discovered and easily exploited alluvial deposits are rapidly exhausting. Small, irregular and scattered tin-bearing vein deposits seem to offer a limited potential. The greisen environment, porphyry tin and banded fluorite - magnetite type deposits are recognized as the most important tin resources in the future (Taylor 1979). The world's known greisen type tin deposits include:

Attemberg in Germany (0.2 - 0.3% Sn 60-80 million tons), Hub, Czechoslovakia (0.3% Sn, 30-40 million tons), Lost River, Alaska USA (0.1 - 0.2 % Sn 25-30 million tons) and Permali, Banka Indonesia (0.018% Sn, 30-40 million tons).

Greisen type tin deposits are particularly of interest because this occurrence might be within the range of possibility in the Pine Creek Geosyncline. It is recognized that the first target for its exploration is to detect a near surface concealed greisen cupola and a dome structure.

3.0 RECOMMENDATION

It is suggested that a dome geological structure favourable for greisen type tin mineralisation might occur in the area. The overburden covered flat area surrounded by hills (shown on Fig. 6) should be closely examined by soil geochemical and soil mineralogical survey methods in the coming 1982 field season.
4.0 AREA and TITLE

EL 2478 is composed of 12.85 square miles (33.28 square km). It was granted to M. Sakurai on 17th October, 1980 and a transfer to the Company was approved on 22nd May, 1981.

5.0 LOCATION and ACCESS

The area is situated 25 km southeast of Adelaide River (Fig. 1) or 140 km south-southeast of Darwin. Adelaide River is a town on the Stuart Highway and the distance there from Darwin is 114 km. The new Stuart Highway passes through northern part of the EL area.

6.0 TOPOGRAPHY

The area is covered by the following published maps:

Sheet 5171 Batchelor, series NATMAP Scale 1:100 000

Sheet 5171-11 Burnside, Series R722 Scale 1:50 000

A topographic base map 1:20 000 scale was prepared by enlarging the published 1:100 000 scale topographic map (Fig. 2).

The area lies in a mountainous terrain composed of two parallel ridges, running north to south. Gunn Creek lies between the two ridges and its flow is from south to north. In the southern EL area other river systems cut the ridges and the flow is from west to east.
FIG 1  LOCATION - EL 2478
7.0 GEOLGY

There occur buff weathered slate, phyllite and greywacke of the Burrell Creek Formation in the area. They strike north-south and are folded very tightly. All the outcrops on the two ridges are composed of the above rocks and no other rock types can be recognized. However, there might be other rocks in the overburden-covered area between two ridges and the matter is discussed in detail in the succeeding chapter.

8.0 STRUCTURAL ANALYSIS

The airphotos studied in detail are listed as follows Table 1.

<table>
<thead>
<tr>
<th>Area name</th>
<th>Area Number</th>
<th>Film Number</th>
<th>Run No.</th>
<th>Print Number</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port Keats</td>
<td>NT362</td>
<td>8133-8140</td>
<td>26</td>
<td>8134</td>
<td>Black &amp; White</td>
</tr>
<tr>
<td>&quot;</td>
<td>NT362</td>
<td>8133-8140</td>
<td>26</td>
<td>8135</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>NT362</td>
<td>8111-8123</td>
<td>25</td>
<td>8119</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>NT362</td>
<td>8111-8123</td>
<td>25</td>
<td>8120</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>NT362</td>
<td>8111-8123</td>
<td>25</td>
<td>8121</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>NT362</td>
<td>8111-8123</td>
<td>25</td>
<td>8122</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>NT362</td>
<td>8163-8208</td>
<td>24</td>
<td>8163</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>NT362</td>
<td>8163-8208</td>
<td>24</td>
<td>8164</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>NT362</td>
<td>8163-8208</td>
<td>24</td>
<td>8165</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>NT363</td>
<td>8163-8275</td>
<td>23</td>
<td>8266</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>NT363</td>
<td>8163-8275</td>
<td>23</td>
<td>8267</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>NT362</td>
<td>8263-8275</td>
<td>23</td>
<td>8268</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>NT363</td>
<td>8276-8321</td>
<td>22</td>
<td>8277</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>NT363</td>
<td>8276-8321</td>
<td>22</td>
<td>8278</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>NT363</td>
<td>8276-8321</td>
<td>22</td>
<td>8279</td>
<td>&quot;</td>
</tr>
</tbody>
</table>
Although schistosity (slaty and phyllitic cleavages) can be observed very clearly, bedding of the Burrell Creek Formation is obscure in the field which makes understanding of detailed geological structure difficult.

The structure of the area was analysed by the following procedure:

**Northern Area Airphotos (Fig. 3)**

a) Clear fold feature F1 and F2 are noted. They are on the same hinge line.

b) Fold feature F3, F4 and F5 are noted. They are on the same folded surface as F2.

c) From the observation of a cut on the Stuart Highway, F5 is determined as a syncline. The eastern limb strikes 150 degrees and dips 60-70 degrees to west against the 70 degrees eastward dipping western limb.

d) Other fold features are, therefore, considered as:
   F4 anticline
   F3 syncline
   F2, F1 anticline

e) Fault features F+1, F+2 and F+3 are also read on the airphotos.

**Southern Area Airphotos (Fig. 4)**

f) Fold feature F6 is noted. F6 is on the same hinge line as F1 and F2 and is, therefore, determined as an anticline.

g) The above F1 to F6 are all northward plunging. Southward plunging F7 is noted. F7 is on the same hinge line as F1, F2 and F6 and is, therefore, determined as an anticline plunging south.
All the features are plotted on a tectonic map (Fig. 5). It is suggested that a dome structure between two ridges in the southern EL area might occur. The cone area of the dome is plotted on the published 1:50 000 scale map (Fig. 6). The area is covered by thick overburden and represents the bottom part of a huge ball formed by surrounding hills and a flat centre area.