E.L. 2706 Northern Territory

Final Report

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E & R noted.

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Plate 1 : Geological Plan of EL 2706

1.0 INTRODUCTION

Northern Territory Exploration Licence 2706 was granted to Pan d'Or Mining N.L for an initial period of tenure of twelve months, on the 17th February, 1981. The Licence covered an area of some 12 square kilometres and lay approximately 25 kilometres south-west of the town of Pine Creek, in the vicinity of Umbrawarra Gorge. True location and extent are illustrated by the enclosed Text Figure 1.

The examination of this area has formed a part of the Company's regional study of mineralisation associated with the Carpentarian-aged so-called Cullen granite. Known disseminated concentrations of tin within the batholith are widespread, as are gold, tin and base-metal bearing 'hydrothermal' veins in its proximity. The former constituted the prime target for exploration on the Licence in question. The disseminations do not reach levels at which mining of the granite itself could prove economic, but secondary concentration by recent erosional activity has resulted in the occasional 'alluvial' tin deposit within the confines of the intrusion. Of these, the Umbrawarra field was the most productive, with 245 tonnes of tin concentrate being reportedly won by treatment of recent sediments. The described field programme was aimed at a rapid assessment of the Licence area for such alluvial concentrations. The likelihood of the occurrence of hydrothermal mineralisation of economic quantities was considered low, but was retained as an additional target. As will be outlined below, although anomalous tin values were encountered within recent sediments, the results achieved indicate only a very poor potential for either mode of mineralisation.

The area varies considerably in relief, from a high plateau in the south west to low undulating hills to the north east. Drainage is intermittent with creeks flowing only during periods of torrential rain. Access is facilitated by a maintained unmetalled road to the scenic location at Umbrawarra.

2.0 EXPLORATION PROGRAMME

A preliminary exploration programme was conducted over EL 2706 during June of 1981. Fieldwork was preceded by photogeologic interpretation and literature research - the latter centreing around a study of published information on the geochemistry of the Cullen Granite and of records of past production from 'alluvial' tin mines within its confines. Although relatively abundant, the information collected was not of great relevance to the programme conducted. Insufficient data has been collected to date for the evolution of exploration guidelines specific to this area. Photogeological studies were based on 1:16 000 scale black and white government photography and were carried out with a view to defining targets for closer study. Base plans were prepared from the photography and utilised as an aid to geological mapping.

Ground reconnaissance was carried out over a period of five days, by a field-crew of two based in a fly-camp. To reiterate - the aims were to reexamine published geology and assess the potential for reconcentration of detrital heavy minerals, particularly tin, within recent sediments and the possible occurrence of hydrothermal minerals within fracture-fills. Geological mapping was carried out, based on close-spaced traverses across geological strike, and (primarily for the sake of completeness) gamma radioactivity was continuously monitored. At a number of sites along recent drainages, samples of sand and gravel were 'panned' for examination of heavy minerals. A number of the resultant concentrates were later submitted to Australian Laboratory Services in Brisbane for analysis for tin (by XRF).

Geological data and sample locations were later compiled and appear herewith as Plate 1. Radiometric data are not indicated as no variations that could not be attributed purely to rock type variation were recorded.

3.0 LOCAL GEOLOGY

As mentioned, the study area is predominantly underlain by a variant of the Cullen Granite, represented by abundant outcrop or concealed by recent cover. The Bureau of Mineral Resources describe the local intrusion as variant G3 of the Carpentarian batholith (BMR Journal Vol 2, No 3 1977, Ewers and Scott) - a grey, coarsely porphyritic granite with phenocrysts of microcline and microperthite, biotite, hornblende, sphene, zircon, fluorite and minor secondary muscovite, epidote and allanite. Regionally, the association of the Cullen Granite with economically viable concentrations of minerals is well-known. Specifically, with reference to the widespread tin mineralisation, geochemical studies on the intrusion yield a surprisingly low average Sn content (about 2 ppm). The anomaly between this and the Umbrawarra alluvial occurrences is obvious, in that considerable volumes of granite would have to be eroded to produce secondary concentrations of the value discovered. It is possible that a higher tenor of mineralisation was associated with the roof zone of the batholith, now extensively removed by erosion. Guidelines pointing to the preferred occurrence of certain minerals are therefore of nebulous value in this area and exploration must be based on detailed local surveys. In the field the granite underlying the Licence under study is noted to have a saccharoidal coarse texture composed of quartz, feldspar and biotite with occasional large phenocrysts. No geochemical studies of the granite have been carried out during this study.

The granite is overlain over the majority of the Licence by the Adelaidean-Carpentarian Depot Creek Sandstone Formation. The generally flat-lying units of this Formation form a plateau approximately 400 feet above low undulating granite hills. They consist of layers of highly ferruginous, fine to medium grained quartz sandstone with occasional thin conglomerates. Contact with the granite is occasionally visibily erosional and rounded fragments of the intrusive abound within the conglomerates examined.

In the south west portion of the Licence the Depot Creek Formation is overlain by sporadic Cainozoic laterite and lateric conglomerates. Recent sediments in the drainage systems are principally granite-derived and of low volume.

No complex structures were defined.

4.0 DISCUSSION OF RESULTS

No anomalous mineralisation considered to be of economic significance was encountered during the survey undertaken. The potential of the Depot Creek Sandstone Formation was discounted primarily on a visual basis, as no geological or mineralogical features pointing to the presence of economic minerals were recognised. The only potential considered to remain after ground reconnaissance was considered to be in the possible 'secondary' concentration of tin within recent sediments, of a similar nature to the Umbrawarra occurrence. For this reason eleven concentrates, obtained by 'panning' of approximately 5 kilogrammes of stream sediment, were submitted for assay. Sample locations are indicated on Plate 1 and a description of their derivation follows:

Sample No.	Description
A-22	From base of creek, downstream of rock-bar. 0m-0.5m Gravel and sand.
A-23	From 'alluvial trap' between granite boulders. Coarse sand.
A-24	From base of creek, 10cm below surface. Coarse sand with some pebbles.
A-25	From base of creek, 30 cm below surface. Sand and gravel.
A-26	Gravel from base of creek.
A-27	1m below creek bed, sand and clay.
A-28	30 cm below surface of creek bed. Coarse sand.
A-29	Gravel from base of creek.
A-30	Basal sand, gravel and clay. 60cm below surface of bed.
A-31	Gravel and sand from base of creek.
A-32	Elluvial sand and gravel.

All concentrates were weighed and assayed for Sn by XRF. The following table shows the values achieved and converted true Sn content based on an original mass of 5 kg for each sample:

Sample No.	Concentrate Weight(gm)	Sn(ppm)	True Sn(ppm)
A22	59.24	20	0.2
A23	39.88	655	5.2
A24	62.89	0.19%	23.5
A25	60.70	240	2.9
A26	67.84	70	0.9
A27	81.99	-5	-0.08
A28	146.67	-5	-0.08
A29	39.37	25	0.1
A30	55.80	15	0.1
A31	68.63	-5	-0.08
A32	83.87	55	0.7

As is evident, only one of the samples submitted returned a significantly anomalous value (A24). A revisit to the area in question showed, however, that the potential volume amenable to treatment if higher values became evident with depth would be too low to support a mining operation. Apart from its significance in a regional sense, therefore, the anomaly is discounted.

5.0 CONCLUSION

The original exploration programme proposed for Exploration Licence 2706, prepared prior to the present author's employment by Pan d'Or Mining N.L, revolved around a two-fold study, based on the discovery of significant mineralisation during preliminary phases. Proposed expenditure during the term of tenure, of $30 000, would have been highly realistic if such mineralisation was encountered. However, the initial programme, carried out as described above, has shown the area encompassed to display too low potential to warrant the committment of any further funds. For this reason it was recommended that tenure be relinquished prior to expiry of the first twelve month period granted. A submission to that effect was made to the Northern Territory Department of Mines and permission was granted for relinquishment.

Although the study effected has significance in the Company's regional work, the results achieved prompt no further interest in the proximity of EL 2706

6.0 EXPLORATION EXPENDITURE

The following comprises a summary of exploration expenditure incurred. It is based primarily on calculated costs of employment of personnel and logistical and administration factors - relating to time spent on individual facets of the programme.

1. Pre-field activities:

a)	Literature research, acquisition and study of aerial photography, preparation of base plans.	$ 720.00
b)	Supervision and planning	$ 220.00
c)	Acquisition of aerial photographs, materials	$ 45.00

2. Fieldwork:

a)	Geological mapping, field reconnaissance	$1 150.00
b)	Consumables	$ 38.20
c)	Vehicle (rental/fuel and maintanance at $50 per day)	$ 250.00
d)	Accomodation (shared cost at $10 per day per person)	$ 100.00
e)	Supervision	$ 270.00

3. Other:

a)	Sample assays/freight	$ 220.00
b)	Compilation of field data and plans	$ 360.00
c)	Compilation of final reports - NT Mines Dept. + internal memos and reports	$ 440.00
d)	Fees	$ 45.00

4.	Administration - estimated at 10% of expenditure	$ 385.82
		$4,244.02 TOTAL

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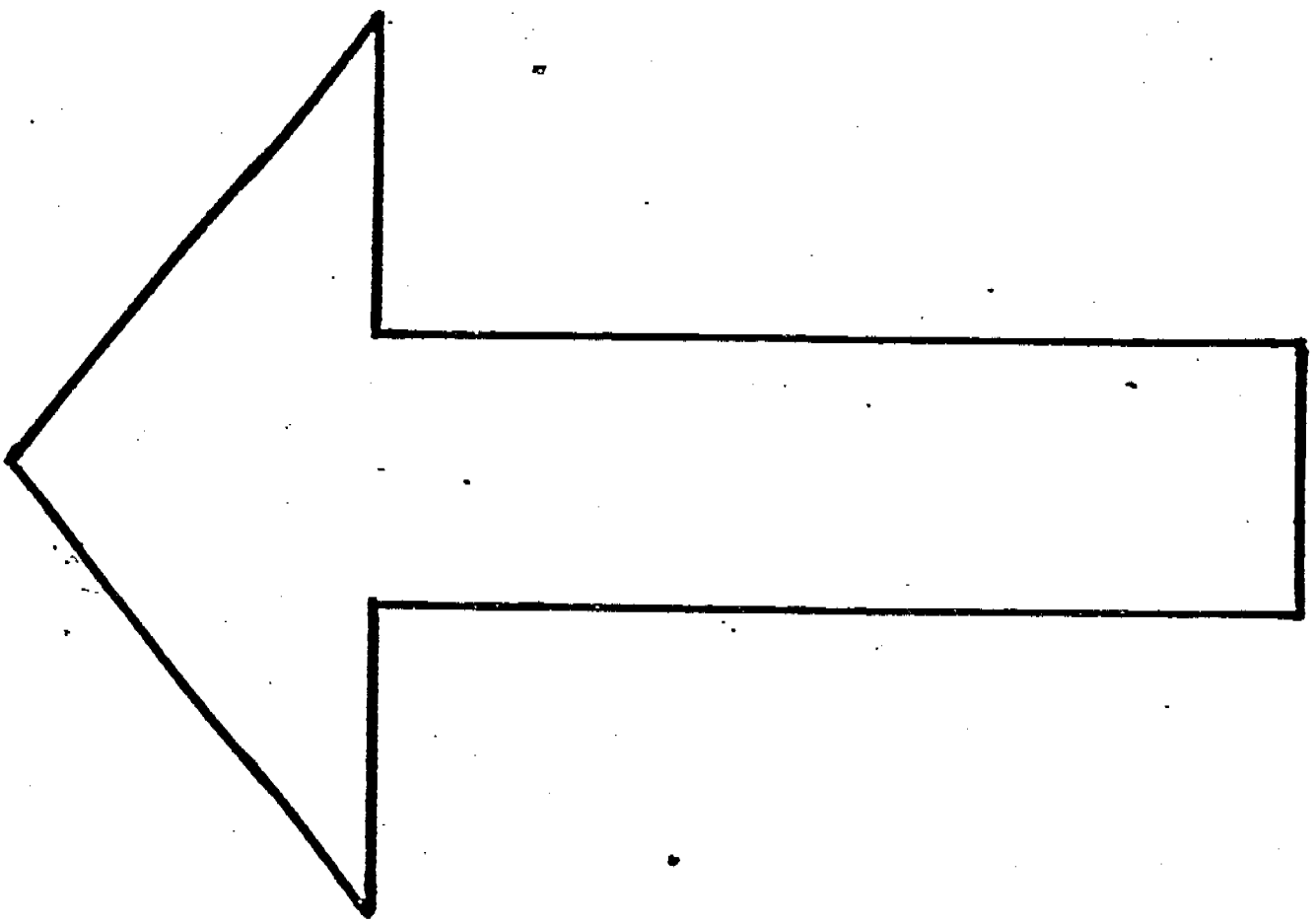
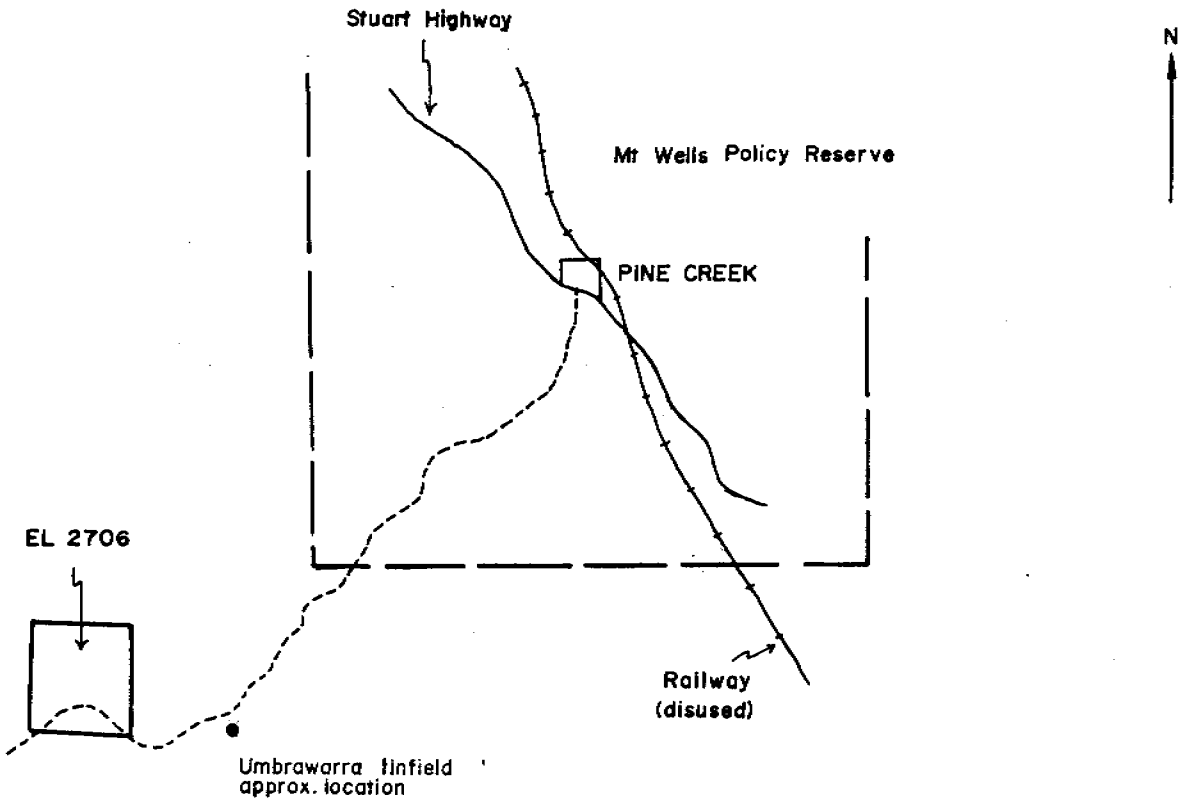


TEXT FIG. 1 : EL 2706, LOCATION



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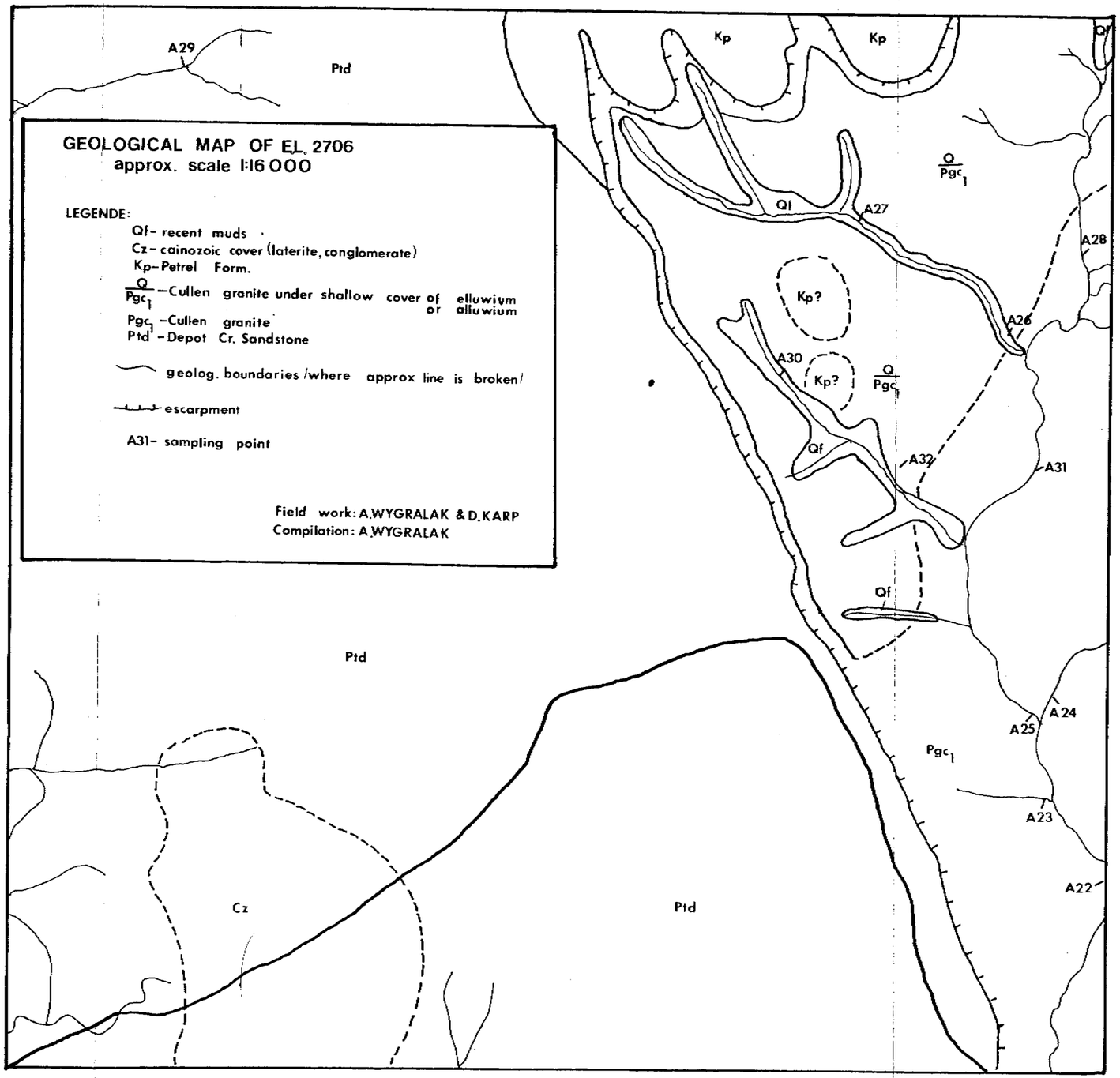

GEOLOGICAL MAP OF EL. 2706
approx. scale 1:16 000

LEGENDE:

Qf- recent muds
Cz- cainozoic cover (laterite, conglomerate)
Kp- Petrel Form.
$\frac{Q}{Pgc_1}$ -Cullen granite under shallow cover of elluwium or alluwium
Pgc_1 -Cullen granite
Ptd -Depot Cr. Sandstone

geolog. boundaries /where approx line is broken/

escarpment

A31- sampling point

Field work: A.WYGRALAK & D.KARP
Compilation: A.WYGRALAK

ASSAY RESULTS:

sample	Sn(g/t)
A22	0,2
A23	5,2
A24	23,5
A25	2,9
A26	0,9
A27	<0,08
A28	0,1
A29	0,1
A30	0,1
A31	<0,06
A32	0,7