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FIGURES

Figure 1 LOCATION DIAGRAM - EL 5133
1.0 SUMMARY

Exploration Licence 5133 (White Hill) was originally granted to Australian Development Limited (now Poseidon Gold Limited) on 24 March 1987. Following initial reconnaissance and data compilation, the licence was included in a joint venture with Newmont Australia, encompassing 13 exploration licences in the Tennant Creek field.

In August 1990 the joint venture was dissolved and responsibility for the licence was returned to Poseidon Gold Limited.

Exploration activities by Poseidon Gold Limited in the twelve month period to 23 March 1992 have included a reassessment of previous exploration results, collation of data generated under the Newmont Joint Venture, and a detailed regional gravity survey.

2.0 INTRODUCTION

2.1 LOCATION AND ACCESS

Exploration Licence 5133 occupies portions of Phillip Creek and Tennant Creek stations as well as Crown Land on the Stuart Highway currently subject to the Warramunga Aboriginal Land Claim. The licence comprises two groups totalling 14 blocks located approximately 10 kilometres north of Tennant Creek township. Local access is via station tracks and cleared fencelines passable in dry weather.

2.2 REGIONAL GEOLOGY

The White Hill project area covers parts of the central section of the early Proterozoic Warramunga Group sediments. Dodson and Gardener (1987) subdivide the uppermost formation, previously known as the Carraman Formation, into six numbered greywacke units and two units of acid volcanics known as the Gecko Volcanics and the Warrego Volcanics. This sequence is underlain by acid volcanics and shaley sediments of the Bernborough Formation and the Whippet Sandstone which are in turn underlain by greywackes of the unit 1 greywackes of Dodson and Gardener or the Monument Beds of previous authors.

Williams (1987) has suggested that the Whippet sandstone is the lower most unit of the Warramunga Group and that it unconformably overlies a sequence of greywacke, shale, BIF, chert and acid volcanics which he considers are the equivalent of Division 2 of the Arunta Complex by Stuart et al (1984).

Williams (1987) has further proposed an informal subdivision of the Carraman Formation by recognizing low, middle and upper units. The middle unit named the Black Eyed Member (thickness up to 3000m) has been delineated on the basis of its magnetic response and includes a sequence of haematite shales, quartz porphyries and greywackes with up to 20wt% magnetite. This unit also encloses all known massive magnetite ironstones on the field, some of which are hosts to the major ore bodies including Nobles Nob, Juno and Warrego.

Structure is reasonably complex with three main deformations resulting in moderate to steep open folds oriented ESE-WNW with numerous plunge reversals. Two main periods of faulting are recognised including an earlier development of steep shear zones subparallel to fold axes and a
later set of NW-SE faults with major sinistral strike displacements. Folding is thought to have commenced early in the basin's history while some sediments were still only partially consolidated.

The Warramunga Group has been metamorphosed to the greenschist facies and shows evidence of local contact metamorphism against granite contacts, however, the numerous porphyry intrusives have produced minimal contact metamorphic effects.

Two ages of granites occur on the field, the earliest known is the Tennant Creek Granite which occurs mainly on the eastern side of the field and is foliated. The Warrego Granite which occupies the central and western parts of the field post-dates the folding events but carries numerous quartz veins related to the later faulting event. Other intrusives include dolerite, syenite and lamprophyre dykes.

Several sets of large quartz veins cut through the field with a north to north-westerly trend and are considered to be low temperature fillings of late stage fractures.

2.3 LOCAL GEOLOGY

The western group of blocks in the tenement (Grey's Bluff) is occupied by the main mass of Tennant Creek Granite to the north intruding Carraman Formation greywackes, siltstones, tuffs and quartz-feldspar porphyry to the south. Hornfelsing of the sediments has occurred on the southern margin of the granite and the contact zone here is probably south-dipping. North and north-west trending faulting and shearing has been recognised in this area, and late stage faults have been filled with quartz veining. The sediments in the area have moderate to steep southerly dips and are crosscut by small quartz-feldspar porphyry and lamprophyre dykes.

The eastern group of blocks is similar to the west in that Tennant Creek Granite occupies the northern portion of the tenements, with hornfelsed Carraman Formation sediments to the south. The late stage north-west trending Quartz Hill Fault displaces the granite contact in the south-west section of the licence. To the east and north-east, outcrop diminishes with increasing soil and aeolian sand cover.

3.0 PREVIOUS EXPLORATION

From 1987 to 1990 Newmont Australia Limited progressed with a non-model specific exploration programme designed to discover mineralisation in non-magnetic structural settings not associated with Tennant Creek style massive ironstone bodies. To this end Newmont conducted systematic regional and infill soil sampling, RAB drilling, geological mapping, aeromagnetic and structural interpretations. Twelve geochemically anomalous areas were defined, of which four occur within the licence area as it stands now. The main focus of work was on anomaly C24 in the Greys Bluff area, within the western 4 blocks of the licence. This anomaly was investigated with geological mapping, ground magnetometer surveys and shallow RAB drilling. No encouraging results or anomalies were gained from the geochemistry or geophysics.
4.0 EXPLORATION COMPLETED DURING THE PERIOD 24/3/91 TO 23/3/92

4.1 DATA COLLATION AND REVIEW

An initial review of the Newmont exploration data in 1990 concluded that only limited additional work on EL 5133 was warranted. In 1991 a further detailed review of the data was undertaken, and several areas highlighted for additional geochemistry and structural mapping. Areas in particular include the Grey’s Bluff western and southwestern soil anomalies defined by Newmont, and anomalies C28, C34 and C35 which were defined during first pass regional soil sampling and were not investigated further. These anomalies occur in the eastern group of blocks.

As part of the data collation several thousand reference soil samples held in storage were sorted and listed, with the aim of submitting these for analysis of pathfinder elements to complement the gold analyses completed by Newmont. Several hundred of these samples were collected from EL 5133.

4.2 GRAVITY SURVEY

A regional gravity survey incorporating EL 5133 is currently being undertaken by Poseidon Gold Limited in the Tennant Creek region and a preliminary 1:50000 scale Bouger Gravity contour plan has been produced. Prospect scale interpretation of the results has not been attempted at this stage. The survey is being conducted with the aim of detecting significant structures associated with the emplacement of ironstone bodies and subsequent mineralising events.

4.3 CONCLUSIONS

Past exploration on EL 5133 has highlighted several Au-anomalous zones which are considered worthy of further limited work. One of these anomalies in the Grey’s Bluff region is possibly coincident with a weakly mineralised ironstone outcrop on the western edge of the tenement which has not been investigated in detail.

5.0 EXPENDITURE INCURRED DURING THE PERIOD 24/3/91 TO 23/3/92

Expenditure incurred on EL 5133 during the period 24/3/91 to 23/3/92 totals $11722. A breakdown of this is as follows:

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<table>
<thead>
<tr>
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<tr>
<td>Administration</td>
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$11722
6.0 PROPOSED EXPLORATION PROGRAMME - YEAR SIX 24/3/92 - 23/3/93

Systematic exploration by Newmont Australia Limited significantly downgraded the potential for economic mineralisation on EL 5133 and subsequently the licence has been reduced to 7 blocks for year six of tenure. The work completed by Newmont has also prompted a re-evaluation of the exploration objectives and techniques used on the licence. As such, work on the EL will take the following course:

- The final collection, processing and interpretation of the regional gravity survey data.
- Analysis of reference soil samples (in storage) for Cu, Bi and Pb.
- Collection of duplicate and infill soil samples over the anomalies requiring further evaluation.
- Geological mapping and incorporation of information from a detailed regional photogeological interpretation being undertaken for Poseidon Gold Limited.

7.0 PROPOSED EXPLORATION EXPENDITURE STATEMENT - YEAR SIX

The proposed expenditure for year six of tenure for EL 5133 is detailed as follows:

\[ \begin{align*}
\text{Administration and Overheads} & \quad 1000 \\
\text{Consultants} & \quad 1500 \\
\text{Consumables} & \quad 300 \\
\text{Geophysics} & \quad 2000 \\
\text{Laboratory Assays} & \quad 3000 \\
\text{Motor Vehicles} & \quad 500 \\
\text{Salaries and Wages} & \quad 3500 \\
\text{Tenement Management} & \quad 200 \\
\hline
\text{Total} & \quad $12000
\end{align*} \]

8.0 REFERENCES

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9.0 KEYWORDS

EL 5133, White Hill, Carraman Formation, Tennant Creek Granite, gold,
gravity, soil geochemistry.