AUSQUEST LIMITED
(ABN 35 091 542 451)

PARTIAL RELINQUISHMENT REPORT
PLENTY RIVER
EL 23570
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1.0 SUMMARY

This is a Partial Relinquishment report on the second partial relinquishment of AusQuest Plenty River tenement, EL 23570.

Exploration Licence 23570 was acquired as part of a larger project, which was originally targeting Broken Hill Style lead-zinc-silver mineralisation within a major transcurrent fault corridor, extending WNW-ESE through the region. Recent NT Government aeromagnetic surveys, flown in 2001, 2002 and 2004, however, have highlighted the potential for kimberlite/lamproite pipes in the general region, to the north of EL 23570.

Over the same period, work on isolated exposures to the east of the Harts Range by Maidment and the NTGS has indicated largely Neoproterozoic to Palaeozoic rocks, with some Palaeoproterozoic rocks. No evidence of rocks around Broken Hill age (~1690 Ma) has been found, giving little encouragement for this style of lead-zinc-silver mineralisation.

Whilst the prospectivity for Broken Hill Style lead-zinc-silver mineralisation in this area appears to be downgraded, the first field program exploring for diamonds on an adjoining AusQuest title to the north has just been completed. This program, conducted by joint venture partner Rio Tinto Exploration Limited (RTE), after the early lifting of a five year veto, found 4 microdiamonds at 3 dipolar anomaly sites in initial processing (AusQuest Report to the Australian Stock Exchange, 14.3.06).

The relinquished portion of EL 23570 is considered unlikely to be prospective for Broken Hill Style lead-zinc-silver mineralisation, and has been screened for dipolar anomalies which might represent kimberlite/lamproite pipes.

2.0 INTRODUCTION

EL 23570 was applied for by AusQuest Limited on 15.4.2002, and granted on 6.3.2003, for a term of six years. This followed both the release of the Eromanga NTGS aeromagnetic survey of 2001-2, which revealed a field of dipolar anomalies to the north, and the subsequent (November 2002) veto by Native Title Owners, of AusQuest ELA’s 22872 and 22873, which covered most of those anomalies.

This partial relinquishment closely follows the first grant of access for a short exploration program, via the Plenty River, in late last 2005. The short program, conducted by joint venture partner Rio Tinto Exploration Limited (RTE) on the area to the north, was undertaken within and passed through the Atnettye Native Title Freehold area. Because of Traditional Owner sensitivities involving the Plenty River corridor, which led to the initial and ongoing vetoes (ELA’s 22872 and 22873, and ELA 25008, respectively), AusQuest decided to await the outcome of the above exploration program on the key titles to the north.

Along with the adjacent block of AusQuest titles (Figure 1), application for EL 23570 was made partly on the premise that this area may be prospective for large, high-grade lead-zinc-silver deposits of the Broken Hill Type. However, the recent Ph.D. study of Maidment provided no evidence of Broken Hill age rocks in the area east of the Harts Range (Maidment et al., 2004). Whilst the possibility of Palaeozoic lead-zinc-silver mineralisation cannot be discounted, the prospectivity of the poorly
exposed apron of metamorphic rocks east of Harts Range for Broken Hill Type mineralisation now seems limited.

The large field of dipolar magnetic anomalies revealed by the NT Government Survey of 2001 (Eromanga Survey) highlighted the potential for a new field of kimberlite/lamproite pipes immediately north of EL 23570.

This relinquishment report accompanies the second mandatory relinquishment of the title area comprising 123 blocks (Figure 1).

3.0 TITLE AND ACCESS

The relinquished portion of EL 23570 is situated toward the northwestern margin of the Simpson Desert. It is only accessible from the north via the Plenty River track, through ELA 25008, which remains under veto (Figure 1). The area is about 120 km southwest of the Plenty Highway.

With the moratorium placed on AusQuest title applications to the north until late last year, and for the reasons outlined above, access negotiations for EL 22877 were not entered into with the Traditional Owners. Accordingly the area was not visited.

Figure 1. Plenty River; Location diagram, Relinquished part of EL 23570
4.0 EXPLORATION CONCEPT

Due to their typically large size and high grade, Broken Hill Type lead-zinc-silver deposits have been intensively targeted in exploration along the eastern margin of the Precambrian shield in western Queensland and NSW. These heavily explored areas represent the extrapolated geological settings of the type occurrences of Cannington and Broken Hill deposits. From the evidence of discovery, recognition of favourable environments for the formation of such deposits elsewhere in Australia, has been more problematic.

In seeking favourable, less heavily explored terrains AusQuest has drawn on research of the model type and its distribution. An eastern continental margin setting is interpreted for both Broken Hill and Cannington. These geophysically prominent margins can be interpolated between Broken Hill and Cannington, into the eastern Arunta Province, along a very broad, trans-continental linear WNW-ESE shear belt (the Larapinta structural corridor). This suggests that fault slices of Broken Hill-Cannington age rocks could have been structurally emplaced into the Arunta Province. The recent recognition of an exotic terrain in the East Arunta (Mawby, 2000; Buick et al., 2001; Maidment et al., 2002), whilst initially showing only young (Palaeoproterozoic to Cambrian) rocks in the shear belt, can be reconciled with the above hypothesis.

The planned strategy for exploring this terrain would rely on airborne EM as a direct method of detecting massive sulphide deposits. This would allow rapid, affordable coverage of a large area, but to be effective, is limited to areas where overburden is thin (~100 m or less) and relatively non-conductive.

EL 23570 was also pegged partly to cover the area south of the main field of dipolar anomalies defined by the NTGS aeromagnetic survey of 2001-2. Among the possible interpretations of these small anomalies is that they may indicate kimberlite or lamproite pipes which could be diamondiferous.

5.0 PREVIOUS EXPLORATION

A review of NTGS Open File company report over the area of the Plenty River tenements shows that little previous mineral exploration has been undertaken. The only activity documented in Open File reports within a 20 km radius of the relinquished part of EL 23570 relate to a Platinum Group Element (PGE) - gold exploration program of Gredelle Pty Ltd (1988) to the west (EL 5185), and a ‘redox front’ uranium exploration program of Afmeco Pty Ltd (1981), within the adjacent titles to the north (EL’s 2182, 2183 and 2561). No ‘on ground’ work is reported in the former program due to access difficulties, whilst 6 aircore holes, drilled in Afmeco’s program, yeilded no sign of mineralisation.

6.0 PLENTY RIVER GEOLOGY

Regionally, AusQuest’s block of titles and applications at Plenty River, straddle a prominent WNW-ESE structural corridor (the Larapinta corridor) as defined in aeromagnetic and gravity data. The exposed part of this corridor mainly comprises supracrustal Neoproterozoic to Cambrian metamorphic rocks of the Irindina package, structurally emplaced between Palaeoproterozoic basement rocks (Mawby, 2000; Buick et al., 2001; Pietch, 2001). The high temperature - high pressure metamorphic
event which affected the Irindina rocks in this region is of Ordovician age (Mawby et al., 1999), and the rocks include pelitic, psammitic and calc-silicate metasediments and mafic lithologies. This rock assemblage is somewhat similar in (compositional) character to the Cambrian rocks to the northeast of Broken Hill and indeed the Broken Hill Mesoproterozoic stratigraphy itself.

Stratigraphy of the Irindina package is well exposed in the Harts Range, and extends eastward into areas of poor exposure to the west of AusQuest’s group of titles. Some mapping of these areas has been conducted in the recent Ph.D. study of Maidment (Maidment et al., 2004), and further work is being undertaken by the NTGS (as yet unpublished).

Further southeast, flat-lying sedimentary cover sequences blanket the metamorphic and igneous rocks of the Arunta Inlier to increasing depths. The thickest component of these cover sequences belongs to the Eromanga Basin, spanning an age bracket of Late Jurassic to Cretaceous. Thin remnants of a Tertiary sedimentary stratigraphy are patchily developed (or preserved) and Quaternary fluvio-aolian unconsolidated sediment forms a veneer of dune-dominated cover in the Simpson Desert.

The local geology of EL 23570 is dominated by Quaternary longitudinal (NNW-SSE) sand dune and alluvial cover, in which shallow erosional windows associated with salina systems expose older, Mesozoic and Tertiary sedimentary rocks (see Hay River and Simpson Desert North 1:250 000 Geology sheets). These are mainly Cretaceous fine grained siliciclastic and carbonate rocks of the Eromanga Basin, with minor Tertiary siliciclastics.

No Proterozoic or early Palaeozoic (basement) rocks are exposed in EL 23570, the nearest exposures of such rocks being about 40 km to the northwest. Here metamorphic rocks which were formerly unassigned to any stratigraphic package are mapped (Illogwa Creek 1:250 000 sheet). Recent interpretations (eg. Pietch, 2001) place these exposures in the Irindina package, apparently of Neoproterozoic to Cambrian age (Buick et al., 2001 Maidment et al., 2002, 2004).

7.0 EXPLORATION RESULTS

No field work has been conducted on the relinquished part of EL 23570, with the veto on exploration of the adjoining titles adjoining to the north (EL’s 22872, 23792 and 25007) having been lifted only in August, 2005. Given that the main field of unambiguous dipolar anomalies is encompassed within these titles, they have been the focus of initial exploration. The track down the Plenty River provides the only land access to the relinquished part of EL 23570.

The NTGS (2001) Eromanga and (2004) Simpson Surveys provide moderately detailed aeromagnetic coverage of the relinquished part of EL 23570. These survey data were reprocessed by AusQuest (Figure 2), representing the only work carried out on the relinquished area of the tenement. No clear dipolar anomalies were recognised.

Like the adjoining AusQuest titles (Figure 1), application for EL 23570 was originally made partly on the premise that this area may be prospective for large, high-grade lead-zinc-silver deposits of the Broken Hill Type (Section 4). However, the recent Ph.D. study of Maidment provided no evidence of Broken Hill age rocks in the area east of the Harts Range (Maidment et al., 2004). Whilst the possibility of Palaeozoic
lead-zinc-silver mineralisation cannot be discounted, the prospectivity of the poorly exposed apron of metamorphic rocks southeast of Harts Range for Broken Hill Type mineralisation now seems limited. Furthermore, preliminary magnetics modelling by Mark Duffett of the NTGS (pers. com to J. Thornett) suggests that 200 to 300 m of cover rocks overlie crystalline (magnetic) basement in this area. This may limit the effectiveness of airborne EM as a prospecting tool for buried massive sulphide conductors.

8.0 REHABILITATION

No rehabilitation was required as no field work was undertaken on the relinquished portion of EL 23570.

9.0 CONCLUSIONS AND RECOMMENDATIONS

The potential for discovery of ‘Broken Hill Style’ massive lead-zinc-silver mineralisation is downgraded on the basis of Maidment’s geochronological work (Maidment et al., 2004). Screening of reprocessed aeromagnetics data from NTGS surveys (2001, Eromanga; 2004, Simpson Desert) has not indicated any small dipolar anomalies (which might represent kimberlite/lamproite pipes) in the area selected for relinquishment. Accordingly this portion of EL 23570 has been relinquished.

10.0 REFERENCES


Gredelle Pty Ltd. 1988. Field work and research for the period 21.4.87 to 21.4.88; ELs 5180 to 5185 in the Illogwa Creek region. CR1988-0326.


Survey Record GS 2001-0006. (Regional geol map of Arunta – should be included in Bibliography)