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Operator  Auvex Manganese Ltd
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1. EXECUTIVE SUMMARY

EL25983 is part of the Auvex Georgina PL Georgina Basin Project, located in the southern Georgina Basin. The Project area is prospective for base metals, manganese and phosphate mineralization.

EL25983 was nominated for surrender on the 24 January 2013.

During the reporting period exploration activities undertaken within EL25983 included interpretation of the available geological and geophysical data, the interpretation of satellite imagery, reconnaissance field visits, the development of exploration models and the definition of exploration targets.

The exploration model developed for base metal mineralization targeted north or northwest trending structures, positive magnetic anomalism (basement highs) +/- coincident gravity highs, anomalous geochemical trends (including manganese anomalism), and a disconformity between Cambrian Arrinthurunga Formation carbonate sediments and Cambro-Ordovician Tomahawk Formation clastic sediments. Application of this model to the Project area identified a prospective northwest trending linear zone, which extends into EL23983.

Phosphate mineralization is associated with outcropping or subcropping Cambrian Arthur Creek Formation. The Formation is present at considerable depths below surface within EL25983.

2. INTRODUCTION

Auvex Manganese Ltd operates seven Exploration Licences located in the southern portion of the Georgina Basin, in two Reporting Groups. Reporting Group GR240/11 of three Exploration Licenses includes EL25983. The Reporting Group GR240/11 tenements are held by Auvex Georgina Pty Ltd (a subsidiary of Auvex Manganese Ltd) and South Boulder Mines Ltd.

The Georgina Basin Project area is prospective for base metal, manganese and phosphate mineralization.

3. LOCATION, TITLE HISTORY AND ACCESS

The Project area is situated approximately 400 kilometres east north-east of Alice Springs, in the southern Georgina Basin (Figure 1). Access to the Project area is gained via a network of station tracks and fences extending from the Plenty Highway.

EL25983 is located north of Marqua homestead, adjacent to the Plenty Highway. EL25983 was granted to Bralich Holdings Pty Ltd on the 6 December 2007 for a period of six years. The tenement was purchased by South Boulder Mines NL in September 2008. In 2009 Auvex Resources became operator and 90% holder of EL25983. EL 25983 was surrendered on the 31 January 2013.
Figure 1: Location, EL25983
REGIONAL GEOLOGY

The 330000km² Georgina Basin is an erosional remnant of a series of central Australian intracratonic basins of Neoproterozoic to Palaeozoic age (Dunster et al, 2007).

Over 1.5km of Neoproterozoic sedimentary rocks are preserved in downfaulted blocks and half-grabens on the southern margin of the Georgina Basin, while up to 2.2km of Cambrian to Devonian sediments are preserved within depocentres and synclines. In the Project area, the seismic basement consists of relatively undeformed mafic–intermediate intrusive bodies and younger non-magnetic granitoids of the Altjawarra Domain.

The complex evolutionary history of the Georgina Basin began during the Neoproterozoic breakup of the Rodinia supercontinent, when a northwest trending transcontinental rift system developed. In the southern Georgina Basin, Neoproterozoic siliciclastic rocks were deposited in small grabens and half-grabens, and on rift shoulders.

By 550Ma, a major dextral strike-slip zone developed between the northern and southern blocks in central Australia (the Petermann Orogeny). In the southern Georgina Basin, up to 360m of Early Cambrian sediments were deposited in a distal foreland-sag basin. After the Petermann Orogeny strike-slip faults locked, more stable conditions led to deposition on a carbonate platform (including the Arthur Creek, Arrinthrunga and Tomahawk Formations). A hiatus in deposition between the Arrinthrunga and Tomahawk Formations reflects localized relative uplift corresponding to the Cambro–Ordovician Delamerian Orogeny.

The Early Ordovician Larapinta Event exposed a basement core complex south of the Georgina Basin. Sedimentation in the southern Georgina Basin was dominated by marine siliciclastic deposition. Synsedimentary normal faulting occurred in what are now the Toko and Dulcie Synclines. The synclines dominate the broad-scale structure of the southern Georgina Basin. The fold axes of both structures are parallel to the adjacent basin margin. Gravity and magnetic modeling of basin thicknesses indicates the synclines are amplifications of preexisting basin depocentres.

Ordovician extension was terminated at 450Ma by the onset of convergent subduction at Australia’s eastern margin. During the Alice Springs Orogeny, which intermittently spans the Late Ordovician to Late Carboniferous, basement was thrust over Neoproterozoic–Ordovician rocks to form the present southern margin of the Georgina Basin. Most north- and northwest-trending structures within the Basin were reactivated in a reverse sense.

The eastern and southeastern margins of the Georgina Basin are obscured by Jurassic–Cretaceous sedimentary rocks of the Eromanga Basin. Unconsolidated Cenozoic alluvial and eolian sediments blanket much of the Basin.

Within EL25983, Cambrian and Ordovician sedimentary units of the Arrinthrunga, Tomahawk, Ninmaroo and Kelly Creek Formations outcrop (Figure 2). Overlying Jurassic–Cretaceous sedimentary units outcrop as isolated mesas and hills.
Figure 2: Surface Geology, EL25983
4. EXPLORATION ACTIVITIES 2007-2013

During the reporting period exploration activities undertaken within EL25983 included interpretation of the available geological and geophysical data, the interpretation of satellite imagery, reconnaissance field visits, the development of exploration models and the definition of exploration targets. Details of the work programmes are included in previously submitted annual reports.

5.1 Interpretation of Available Geological and Geophysical Data

Explore Pty Ltd (principal Kim Francombe) collaborated with Southern Geoscience Consultants to retrieve, process and interpret existing open file aeromagnetic and radiometric data over the Project area.

The data indicated that manganese mineralization is controlled by northeast-southwest trending structures, possibly reflecting hydrothermal fluid migration along faults extending from a basement source.

5.2 Interpretation of Satellite Imagery

Remote Sensing and Geological Services (principal Taff Davies) completed an interpretation of Landsat Thematic Mapper imagery over the Project area. Seventy absorptive targets were identified as potential manganese mineralization locations, of which eighteen were located in EL25983. Some of the targets related to known manganese occurrences in association with northeast-southwest trending structures.

Point Repose Consulting Pty Ltd (principal Nat Cull) completed an review of the aeromagnetics, previous exploration data and remote sensing targets to generate priority targets for further reconnaissance exploration. The review identified an additional twenty-five targets, none of which were located in EL25983.

5.3 Reconnaissance Field Visits

Reconnaissance field inspections of known manganese outcrops and priority remote sensing targets within the Project area were undertaken (using a helicopter for access). The majority of the manganese mineralisation occurrences encountered consisted of replacement of thin, generally 5cm to 30cm thick, flat-lying horizons with a sandstone unit of the Tomahawk Formation. Although in some instances these occurrences were extensive, occurring over areas greater than 1,000 metres by 200 metres, they were not considered likely to represent a large mineralised system. Some of the targets showed evidence of hydrothermal brecciation and altered fluid pathways within carbonate units. A total of sixty rock chip samples (GB001-GB038, GB040-GB061) were collected; thirty-five of which were subsequently assayed for \( \text{Al}_2\text{O}_3 \), \( \text{CaO} \), \( \text{Cr}_2\text{O}_3 \), \( \text{Fe}_2\text{O}_3 \), \( \text{Fe} \), \( \text{K}_2\text{O} \), \( \text{LOI} \), \( \text{MgO} \), \( \text{Mn} \), \( \text{Na}_2\text{O} \), \( \text{P}_2\text{O}_5 \), \( \text{SiO}_2 \), \( \text{S} \), and \( \text{TiO}_2 \) by method XRF785, SGS Laboratories. Two of the samples collected were from EL25983.
5.4 Base Metal Target Definition

The previous exploration activities identified six priority manganese targets based on sample analyses and field observations. The targets are associated with northeast-southwest trending structures and a disconformity between Cambrian Arrinthurunga Formation carbonate sediments and Cambro-Ordovician Tomahawk Formation clastic sediments. None of the targets are within EL25983.

A review of the existing data was undertaken examining the potential for base metal mineralization within the Project area. An exploration model was developed to identify base metal mineralization targets, using known occurrences of base metals in the Georgina Basin as a guide. The model indicates base metal mineralization is associated with north or northwest trending structures, positive magnetic anomalism (basement highs) +/- coincident gravity highs, anomalous geochemical trends (including manganese anomalism), and Cambrian carbonate sediment hosts. Application of this model to the Project area identified one priority exploration target within a broad, northwest trending linear zone, which extends into EL23983. VTEM geophysical surveying and RC drilling of the priority target did not locate any significant base metal mineralization.

5.5 Phosphate Target Definition

Historic data indicated phosphate mineralization is associated with outcropping or subcropping Arthur Creek Formation. The Formation is present at considerable depths below surface within EL25983.

5. CONCLUSIONS AND RECOMMENDATIONS

A review of the available geological and geophysical data for the Project area culminated in the definition of exploration models and the identification of priority exploration targets within the Project. VTEM geophysical surveying and RC drilling of the highest priority target (outside EL25983) did not locate any significant base metal mineralization.

None of the remaining priority manganese and base metal targets lie within EL25983. EL25983 was nominated for surrender on the 24 January 2013.
6. REFERENCES


