Scrub Dam

EL 30229

FINAL REPORT

for the period
25 November 2014 to 10 Jan 2017

Tenement Holder: Australian Minera Resources Pty Ltd
Summary

This Report covers the period of tenure from 25\textsuperscript{th} November 2014 to the 10\textsuperscript{th} Jan 2017 on the subject licence held and operated by Australian Minera Resources Pty Ltd (AMR). The licence was applied for in December 2013 for it’s potential to contain magnetite-rich iron ore deposits, it was granted to AMR in November 2014 and was surrendered on 10 Jan. 2017.

EL30229 Scrub Dam is located just to the north of Alice Springs and sited on one of the largest and strongest magnetic anomalies in the NT, the North Australian Railway passes along the western edge of the EL, and the Stuart Highway is adjacent. The area is only 40km north of Alice Springs, but on pastoral land which should have reasonable access.

Since the obtainment of the title, AMR conducted its consultant Mr. Geoff Eupene from Eupene Exploration Enterprises has done some necessary paper research work and undertook a Geophysical Mag. & Rad. airborne survey of 812.4 line KM covering the whole tenement, and follow up geophysical interpretation was completed with a timely manner to achieve a better understanding of the tenement and further exploration plan. Further information of these exploration activities undertook in the year are included in this report.
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1.0 Introduction

EL30229 was applied for in December 2013 and it was granted to AMR on 25th November 2014 and surrendered on 10 Jan. 2017. The area was selected for its potential to contain magnetite-rich iron deposits which might be a cost efficient source of iron ore. While remotely locate just to the north of Alice Springs, the EL has good geological potential, sited on one of the largest and strongest magnetic anomalies in the NT, the North Australian Railway passes along the western edge of the EL, and the Stuart Highway is adjacent. The area is only 40km north of Alice Springs, but on pastoral land which should have reasonable access.

The tonnage potential of the magnetic body causing the anomaly can be estimated by geophysical modelling, and initial indications are that a body of hundreds, rather than tens, of millions of tons could be responsible for the anomalies.

There is a rich data base of modern exploration data available that has been gathered largely in the search for nickel- platinoid deposits in layered mafic intrusives that are present in the district. There are possible indications that the anomalies present in EL30229 are rather produced by high grade metasediments, and a possible source of these would be metamorphosed banded iron formations. The programme should also look out for associated minerals of value, possibly industrial minerals in these very high grade metamorphic rocks. There could also be beneficial, or deleterious, metals present in association with the magnetite, and it would appear that available cores and assays are available to research these features in advance of field operations.

Since obtainment of the title, AMR conducted its consultant Mr. Geoff Eupene from Eupene Exploration Enterprises has done some necessary paper research work and undertook a Geophysical Mag. & Rad. airborne survey of 812.4 line KM covering the whole tenement, and follow up geophysical interpretation was completed with a timely manner to achieve a better understanding of the tenement and further exploration plan. Details of these exploration activities undertook was included in 2015 annual report (1st operation year annual report of EL30229), and further information will also be provided in this report.

Because of the policy change of the company, no activity was undertook in the 2nd year of tenure, so no further expenditure has been spent on this title since last expenditure report was given.

2.0 Tenure

EL 30229 was granted to Australian Minera Resources Pty Ltd (100 %) on 25 November 2014. The tenement comprises 22 sub-blocks for approximately 61.96 km². Most of the EL falls on Bond Springs Pastoral Lease, with a very small area on the northern boundary on Yambah Pastoral Lease. The western boundary of the EL is generally the boundary of the Mining Reserve along the railway corridor. See Figure 1

<table>
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<th>Blocks Retain</th>
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<td>22</td>
<td>0</td>
<td>22</td>
<td>25/11/2014</td>
<td>24/11/2020</td>
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Table 1: Tenement details
This area was selected based upon its reasonable potential for concentrations of magnetite, possibilities of other metal credits, an abundance of existing exploration data, and its location along the eastern side of the North Australian Railway, within drive in-drive out distance of Alice Springs, which should deliver low capital and operating costs for any development.

3.0 Geology and Prospectivity
3.1 Landform and Flora

The geological setting of EL30229 is the Aileron Province of the Arunta Region. It contains high grade metamorphic rocks and intrusives which are of Mesoproterozoic to Paleoproterozoic age. These rocks are variably weathered and covered by younger sediments. The surface is generally sheet outwash and aeolian sand, with some stream alluvium associated with creek flats on the northern boundary. The area covers part of the eastern extent of the Burt Plain, a major landform unit in Central Australia. Just to the north east of the EL, the foothills of the Narbib Range contain widespread outcrops of the Proterozoic basement. The relief within the EL is flat, with elevations around 720m above sea level. Drainage is to the west, and flow disperses onto the Burt Plain. The northern portion of the EL is drained by McGrath Creek, a tributary of Harry Creek, while the southern portion of the EL is drained by various tributaries of Fifteen Mile Creek.

The area is covered in open shrubland, generally distributed along stabilized dunes, with denser woodland confined to watercourses, most notably along the main tributaries of Fifteen Mile Creek. Drought-resisting trees and shrubs dominate the sand covered country, particularly Acacia species and spinifex grasses. Eucalyptus species predominate along watercourses and where water lies at shallow depth.

A search of the EPBC Act Register indicates that there are no vulnerable, threatened or endangered species in the EL.

An Aboriginal Areas Protection Authority Register Search has identified Restricted Work Areas in a narrow zone parallel to the railway corridor. It is recommended that a site clearance certificate be obtained early in the exploration programme.

3.2 Regional Geology

Based upon regional mapping by government agencies, the basement geological setting of the EL includes Mesoproterozoic to Paleoproterozoic units of the Arunta Block. Rocks in the area are assigned to the Ankala Domain of the Aileron Province. They contain gneissic metasediments, granites and mafic intrusives dated at 1820Ma-1790Ma, associated with the Stafford Event. The metamorphic grade of all units has reached upper amphibolite to granulite facies. There is no outcrop of these units within the EL, and the exact nature of geological setting derived from mineral exploration drillholes has not been compiled.

The basement formations are overlain by up to 80m of Tertiary (?) sediments as well as Cainozoic alluvial fan and aeolian deposits.

In places on the northern side of the EL, laterite outcrops are present but elsewhere thin stabilized sand ridges dominate. Sandy alluvial deposits dominate the current drainages.

The basement geological setting is extremely complex and the rocks have been affected by multiple metamorphic events. An important part of initial work will be the compilation of the geological data from available drill holes and incorporating it into the regional geological model.
3.3 Prospectivity

Given the broad brief, an empirical approach was adopted to area selection. The known Iron ore deposits of the NT are described in NTGS Report 13 (Ferenczi, 2001), and this summary of these deposits as at 2001 is extracted:

“Iron-rich occurrences in the Northern Territory have been classified into four types: oolitic sedimentary, hydrothermal, Fe-skarn and surficial. Mesoproterozoic iron ore deposits of the Roper
River iron field (McArthur Basin) are examples of the first style. These oolitic ironstones form 0.5-4.0 m thick beds in the Sherwin Formation that are laterally continuous over tens of kilometres. Several hundred million tonnes of ironstone material is present in this region. Ore quality is generally low and typically about 40% Fe, 30% SiO2 and 0.1% P, although better quality material (>50% Fe, <30% SiO2 and 0.1% P) exists in the Hodgson Downs area. Shallow drilling is required over this area to determine subsurface phosphorus levels. Thin Ordovician oolitic ironstones are present in the Amadeus and Georgina Basins.

“Distal hydrothermal iron deposits are massive, tabular to podiform, stratabound hematite ± magnetite bodies formed by the enrichment of an iron-rich protolith. Hydrothermal fluids derived from magmatic or connate brines during orogenic activity have remobilised sedimentary iron in the host sequence into adjacent stratigraphic and structural trap sites. Iron-rich pods in the Frances Creek iron field (Pine Creek Orogen), Tennant Creek mineral field (Tennant Inlier) and Harverson Pass area (Arunta province) are examples of this style of mineralisation.

“Small Fe-skarn deposits are present in the Pine Creek Orogen (Mount Bundey area) and Arunta province. Some 840 000 t @ 63% Fe was mined from Mount Bundey between 1968-71 and a remaining resource of 190 000 t @ 62% Fe and 0.8% S exists below the pit floor. “Surficial Fe occurrences in the NT are not considered an attractive exploration target due to their typical low tonnage and grade.”

The geologist has some familiarity with the history of Iron Ore exploration and exploitation in the NT and we currently are witnessing the fate that awaits low grade, low tonnage deposits with difficult logistics, with all NT Iron ore producers currently in trouble. Such deposits have high operating costs and probably low capital efficiency, and produce products that are difficult to market in tough economic conditions. Frankly, none of the deposit styles recorded by Ferenczi are robust in tough conditions, except possibly the higher grade parts of the Oolitic style, given good logistics, and perhaps the hydrothermal styles if they have high quality, sufficient size and good logistics.

At the time of title grant, the level of exploration licence coverage in the NT remained quite high: it has reduced somewhat since, though virtually all known deposits remain covered in exploration title to the present. Given our views on existing deposit styles, we concluded that it might be better to conduct an empirical search for new deposit styles provided they had prospects of value, size and logistics that might enable profitable long term development. As there are no major oxide style banded iron formations (the major source of iron ore globally) known in the NT, and even if there were, they would most likely be manifest as massive magnetite bands in high grade metamorphic rocks, we thought it was worth looking at empirical evidence of suitable deposits of magnetite, particularly in high grade metamorphic terrain with potential for segregations of magnetite, whether it be derived from banded iron formations, or heavy mineral segregations in layered mafic intrusives, or other forms of magnetic segregation

A levelled set of magnetic data for the entire Northern Territory is available from NTGS. See Fig. 3.
In the presentation of Fig. 3, the data range is clipped to a minimum of -2170 and a maximum of +2670 with reference to the IRF datum. The minimum and maximum of the unclipped data of the entire grid at the cell sample size of the NT-wide grid, are -3052 to +5250 respectively. Based upon an inspection of the data, the gridded data of the entire NT was filtered to identify all areas where the total magnetic intensity was over +2000nT. These areas are outlined in pink in Figure 4.
The areas of high magnetic anomaly identified by filtering the grid were then overlain on maps of the NT showing tenement distribution and logistics aspects. EL30229, which lies immediately adjacent to the Stuart Highway and North Australian Railway, about 40km to the north of Alice Springs, was on pastoral ground, was recently vacant of exploration titles, and offered the best possible transport logistics of all of the available large magnetic zones identified with the filter. Investigation of the archives revealed that there was existing data that showed that there had been considerable valuable exploration data gathered in the past, and this indicated the presence of widespread magnetite-bearing garnet gneiss, without convincing evidence that the most intense magnetic anomaly has been targeted in past exploration. As well as being logistically well sited, the total anomaly is actually one of the largest and most intense in the whole NT. The peak value reported from a 0.0008° sized cells over the
EL was 5,489nT, versus the peak on the NT-wide data (broader sampling) of 5250nT. In terms of tonnage potential, the volume producing the anomaly has sufficient size to contain a deposit of perhaps hundreds of millions of tons of iron ore, which in this setting may contain accessory minerals of value. The first step in the exploration programme should be the thorough evaluation of all existing data including drill hole information. The magnetic setting of the deposit is illustrated in Figure 5.
Figure 6: EL30229, showing TMI grid, areas> 2000nT, and section through TMI grid.
4.0 Previous Exploration Work

EXPLORATION BY PREVIOUS COMPANIES

(Summarised from final report on EL 25338, Nupower Resources (renamed Central Australian Phosphate))

Previous exploration in the Burt Plain region has focussed on the potential of the basement rocks to host layered mafic-ultramafic intrusions with Ni-Cu-Co and platinoid (Pt-Pd) mineralisation, exposed in the Chapple and Hay Massifs, concealed beneath Burt Basin cover and first identified in airborne magnetic surveys by the BMR and NTGS. Several companies have also recognised the potential of the Cainozoic sedimentary sequences for secondary uranium deposits derived by the erosion of the surrounding uraniferous basement rocks. There has been minor work to evaluate the strong magnetic features for sources of iron oxides, but most of this was done before the detailed geophysical surveys that have since been completed.

5.0 EL 30229 Australian Minera Resources Pty Ltd
(25/11/2014~10/01/2017)

Since the title was granted to AMR, the company undertook exploration programme actively as required.

To have better understanding of the geological settings of the tenement, in middle of March 2015, AMR engaged Thomson Aviation undertook a low level airborne survey on EL30229 Scrub Dam, the program including magnetics and radiometrics survey, the processed line actually completed over the whole tenement is 812.kKM. The survey specification as well as survey details are showed below (Airborne survey data and reports provided by Thomson has been provided in EL30229 Annual report 2015).

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<tr>
<td>Traverse line direction</td>
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The aircraft used for survey operations combine good manoeuvrability with magnetically clean base to provide maximum magnetic sensor performance. Fig. 7-Fig.9 shows the raw images produced from the airborne survey as provided by Thomson.
Figure 7: EL30229 Scrub Dam Mag. Raw to date.  
(from Thomson Aviation final report)
Figure 8: EL30229 Scrum Dam DTM to date
(from Thomson Aviation final report)
As long as the airborne survey was completed and the survey data were delivered by Thomson Aviation, AMR engaged EUREKA CONSULTING PTY LTD to make further geophysical processing and interpretation of the airborne survey data, this interpretation work includes aspects as below:

- Examine the quality of the data supplied
- Apply any filters corrections or levelling procedures that Eureka in its discretion considers is warranted to extract maximum value from the data

**Figure 9:** EL30229 Scrum Dam total counts to date  
(from Thomson Aviation final report)
- Model any anomalous total field data that warrants this approach, produce 3D modelling images for any magnetic anomaly.
- Provide illustrations that reflect the features of interest in the data.
- Provide interpretations of the data as warranted,
- Provide preliminary comments on targeting of drill holes, and
- Produce reports as warranted by the results, to the best of its professional ability.

The regional data plus acquired geophysical survey has been reduced, processed and integrated with other exploration material. The interpretation work was completed in late of April 2015, pls refer to Figure 10,11,12 for some examples of interpretation diagram, and the complete interpretation report has been provided in EL30229 Annual report 2015.

![Figure 10: Fault identification using the different magnetic enhancements. Fault trace indicated by black and red lines.](image-url)
Figure 11: Magnetic interpretation features with highlighted zones overlain on the residual RTP magnetic response.
Figure 12: RTP magnetics image of high resolution survey over EL 30229 with anomalies having 3D modelling undertaken.
6.0 Conclusions

6.1 Conclusions

Abundant valuable geophysical, drilling and geochemical data has been generated on this area. An initial phase of thorough review of past work, including extraction of data from government archives, including drill core stored in the Government core store in Alice Springs, interpretation of available geophysics and production of specific drill targets to test the best potential for massive magnetite deposits (which have apparently not been specifically targeted as yet) should be undertaken if warranted by the review. Detailed local and regional survey data plus exploration information has been reviewed again by geophysicist with the intention of identifying potential areas for ongoing exploration within EL 30229 (‘Scrub Dam’).

Conclusions that can be drawn include but not limited to:

- The dominating elliptical magnetic response of a strong magnetic anomaly located in the NW of the tenement with centre about 377,900mE / 7,417,100mN may be of exploration interest. This anomaly response is truncated to the west by the boundary of the survey coverage and tenement but obviously extends further west under the Stuart Highway. The extent of the feature to the west is indicated to continue for at least an additional 5,000 metres based on the regional magnetic coverage.

  The character of this anomaly indicates a series of curvilinear magnetic anomalies wrapped into a tight elliptical anomaly shape. Considerable deformation of the regular, conformable shape of these anomalies suggests some faulting, especially its southern portion with trends extending along principally east-west trends and across the broadest orientation of the elliptical shape.

- The source material of the large NW magnetic anomaly is open to conjecture. The possibility of a carbonitite source is postulated, since the magnetic amplitude of the feature is significantly greater (nearly 4,000 nT in amplitude) than enclosing and adjoining conformable lithologies. The fact that internally, the magnetic signatures of the anomaly appear as a series of ridged anomalies, suggests a layered composition, but this is not uncommon in known carbonatites (e.g. Elk Creek).

- East and SE of the main, intrusive anomaly but lying to its south and centrally within the tenement, there is evidence of linear features trending NE-SW and NW-SE. These lineations are probable faults and the NE-SW trend has also been noted in the regional data with magnetic responses indicating these probable faults are regional in extent and continuing outside the bounds of the tenement. The interpretation has at least two regionally significant fault structures that trend through the tenement and can be seen continuing regionally to the NE and SW.

- Along the SE margin of EL 30229 and against its central eastern boundary appears an east-west oriented magnetic ridge anomaly which then turns to strike south and then SE as a possible fold nose. This structure is most obviously located at about 381,700mE / 7,413,400mN. The interpreted fold extends further west and has faulted but parallel fold limbs trending SE in the southern part of the tenement.

- An additional feature of the NW, primary elliptical anomaly (Intrusive 1), lies along its SE margin, and is indicated by the presence of a trend offset which has a linear magnetic response on a SE-NW orientation which may indicate a dyke-filled fault. The magnetic response of this feature suggests the amplitude across the interpreted fault’s offset is too great to simply be a faulted block magnetic contrast. Consequently it is interpreted that
additional mafic or magnetic material may have entered the deformed faulted margin to enhance the observed linear magnetic response.

Modelling of this feature suggests a low to moderately susceptible magnetic material that is relatively thin and introduced along a relatively straight, linear structure.

- West of the main anomaly (Intrusive 1) centred at 382,300mE / 7,415,200mN, is a low amplitude magnetic response zone of about 2,000 metres in strike extent east-west and north-south, and bounded by structure (faults and folds). The magnetic response of this area is generally low and is attributed to a buried granite with low magnetic susceptibility. The feature, called Granite 1, is primarily evident in the RTP magnetic imaging but is also highlighted around its edge by the tilt, edge and analytic signal filter enhancements.

- An area lying adjacent and south of Intrusive 2 is a zone of low and almost undisturbed magnetic response. The area is only of about 1,200 metres of lateral extent but is marked by a sharp consistent margin surrounding it with more active lithologies marking the boundary. The source of this small zone is interpreted to be a small intrusive of low magnetic susceptibility, possible an acidic granite. This feature is called Granite 2.

- In the southern portion of the tenement, the general strike is SE-NW and this parallels the orientation of the lithologies on the south flank of the interpreted fold in the central part of the survey. These lithologies extend to the east and past the eastern extent of the survey, but are interpreted to fold back again to the west with a second fold structure, this time with a curvilinear fold axis, which turns the units from SE to west–orientation and lies in the SE portion of the tenement. Quite strongly magnetic lithologies within the units being folded provide relatively high amplitude magnetic responses and these are tightly folded in the SW corner of the tenement.

- Throughout the survey data, the magnetic data indicates significant deformation and structural offsets. Faulting in particular is evident with breaks in linear or curved trends and a host of magnetic ‘blocks’ are evident, some with lateral movement others with and rotational offset.

### 6.2 Relinquish

Although there’re potential targets for further exploration based on the interpretation and analysis of the available data, considering the iron ore market and hard situation of the whole industry, AMR decided to focus limited funds on the more valuable tenements and relinquish this title, the relinquish was approved by the department on 10 Jan. 2017.

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