NT Minerals Pty Ltd
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GR299-13
(EL 29085, 29086, 29087, 29088)
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Northern Territory

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1.0 ABSTRACT

The Burt Plains project tenements are located within the Paleo to Mesoproterozoic rocks of the Aileron Province with the Arunta Region of Central Australia. The main commodities targeted within the project include base metals, Ni-Cu, uranium, mafic-hosted vanadiferous magnetite, REE and orogenic gold. A detailed review of historical exploration and validation of historical exploration data has been the initial focus for exploration during the reporting period.

It is recommended that the next phase of exploration should include a more thorough review of the digital exploration data including HyMap data collected by AtomEnergy in 2008 which overlaps with the project. Historical BLEG sampling by Western Desert Resources over the south-eastern portion of the project did return a cluster of anomalous gold results which warrant further review to determine if satisfactory follow-up was completed by Western Desert Resources. The historical review completed by NT Minerals was not completed due to corrupted digital files and excluded exploration reports post 2008. This review will be completed once the replacement files are received.

The discovery of high grade copper mineralisation at the Kidman Resources’ Home of Bullion Prospect in the northern Arunta province has seen a new wave of exploration within the district. It is recommended that the next phase of exploration also include the reprocessing and merging of all past airborne magnetic surveys. In addition the distribution of airborne EM data should be completed to decide if this will also be worth reprocessing. A review of the data sets should then be undertaken in conjunction with the historical digital exploration data files (NTGS data) which appears to contain most exploration data up to about 2008.

2.0 LOCATION, TITLE HISTORY, PHYSIOGRAPHY AND ACCESS

2.1 LOCATION

The Burt Plains Project extends from approximately 30 km to the east of Alice Springs to over 100 km to the north of Alice Springs encompassing four tenements. Refer to Figure 1 below.
Figure 1: Burt Plains Project location.
2.2 TITLE HISTORY

Please refer to the table below summaries the tenement details of the EL’s within the Burt Plains project.

Table 1: Tenement Details

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2.1 PHYSIOGRAPHY

The physiography of the project area is quite variable and overlaps with rocky hills associated with the MacDonnell Ranges in the south east extending to flat open sand covered and alluvial areas to the north west. Refer to Figure 2 below.
Figure 2: Burt Plains physiography
2.2 ACCESS
There are limited vehicular tracks within the project area apart from the Stuart Highway with traverses the centre of the project in a NS direction. Numerous cleared fence lines throughout the project would provide some vehicle access.

3.0 GEOLOGICAL SETTING, EXPLORATION HISTORY, AND EXPLORATION RATIONALE

3.1 GEOLOGICAL SETTING
The Burt Plains project lies in the south eastern portion of the palaeoproterozoic Aileron Province of the Arunta Block and slightly overlaps with the northern margin of the Neoproterozoic Amadeus Basin. Refer to Figure 3 below.

Over the northern part of project straddles the boundary between the Lander Rock Beds and the Strangways Metamorphic complex. The region has also been intruded by paleoproterozoic mafic intrusive complexes. Copper and gold mineralisation occurs in a north west trending belt to the north of the project and current interpretations are that this mineralisation is related with iron oxide copper gold (‘IOCG’) style mineralisation. While the previous exploration focus has targeted outcropping mineralisation potential there remains an opportunity to target IOCG style mineralisation under cover using the airborne magnetics data. No previously identified mineral prospects lie within the current project area.
Figure 3: Burt Plain Geology
3.2 REGOLITH

The regolith of the project is summarised in Figure 4 below highlighting the basement rocks over the north western portion of the project are concealed by transported cover.

Figure 4: Burt Plain simplified regolith
3.3 EXPLORATION HISTORY

Previous exploration has been dominated by base metal and gold exploration with some minor uranium exploration occurring more recently. It appears likely that the majority of the project area will be covered with at least 400m spaced airborne magnetic data with some airborne EM coverage. HyMap spectral data has been collected over a portion of the project. Digital exploration data
available through the NTGS appears completed up to approximately 2008. Beyond 2008 the data is generally available in digital files supplied with the annual reports.

It is recommended that the next phase of exploration should include a more thorough review of the digital exploration data including HyMap data collected by AtomEnergy in 2008 which overlaps with the project. Historical BLEG sampling by Western Desert Resources over the south-eastern portion of the project did return a cluster of anomalous gold which warrant further review to determine is follow-up was completed by Western Desert Resources.

The historical review completed by NT Minerals was not completed due to corrupted digital files and this review will be completed once the replacement files are received from the NTGS.

The review completed thus far is provided below.

**CRA**

**ATP2373**

CR19710111: Targeting magnetic anomalies associated with ultramafic rocks for nickel mineralisation.

**ATP2889**

CR19720064: Targeting nickel and copper mineralisation. Extensive drainage geochemistry completed.

**ATP3382 and EL441**

CR19720067: Targeting Uranium within the Tertiary and Mesozoic sediments of the Burt Basin. No encouragement generated. Completed some seismic to look at the depth of the basin, some radiometric traverses, and analysis of water bores.

**ATP2710**

ATP3447

CR19730031: Some uranium anomalism noted. Hard to determine if any follow-up was completed.

EL518

CR19730119: Targeting sedimentary uranium via gamma logging of water bores.

EL753

CR19730121: Targeting sedimentary uranium.

Kewanee Australia Pty Ltd

EL805

CR19730052: Targeting base metals with no significant results from stream sediment sampling.

Dampier Mining Company

EL1342

CR19770139: A review was completed on the historical mica mine which is situated within the current project area.
White Industries Pty Ltd

**EL2618 and EL2641**

CR19820175: Targeting alluvial diamonds and kimberlite pipes. Completed a photogeological interpretation which identified many targets of which none were followed up.

CR19840103: Ground follow up did not identify any anomalous results.

**EL3559**

CR19840023: Field sampling did not return any anomalous diamond results.
CRA

EL3502
CR19830152: Completed an airmag survey (300m line spacing). Defined magnetic anomalies greater than 100m depth beneath Tertiary sediments which was considered too deep. Uncertain if the magnetic anomaly is within or outside the current project area.

EL3541
CR19830153: Completed an airmag and radiometric survey targeting base metals and kimberlites. No significant results.
CR19830229: Final report.

Uranerz

EL3557
CR19830190: Ground mapping and radiometrics. Not exactly sure what they were targeting. Quite a bit of mapping completed with no sampling other than radiometrics.
Australian Anglo American

**EL4420**

CR19850007: A good summary of mineralisation styles of the region is provided. Work completed outside of project area.

CR19850290: Summary of the Mica/Phlogopite prospect.

**Johannens Phlogopite Mine** lies within felsic granulite units assigned to the Frontonga metamorphics. The country rock is comprised of layered quartzose granulite, cordierite bearing granofels with garnet and hypersthene and calc-silicate rocks. Almost 3.6 tonnes of phlogopite were mined in the early 1940’s. The body was exploited from four shafts to about 15m depth. Three diamond drill holes, totalling 431m were put down by the N.T. Mines Dept. in 1978 to test for base metal mineralisation.

The rock suite which hosts the phlogopite occurs as a strata-bound sequence of various mineral assemblages. The setting has been regarded as being an ultrabasic sills (Morlock 1971) or as being volcano-sedimentary (Warren 1980). But it resembles a typical skarn, comprising calc-silicate assemblages ranging from calcite marble to forsterite granofels with magnetite - quartz, garnet

**Gumtree Prospect** lies within rocks assigned to the Ankala Gneiss. It comprises a prominent outcrop of banded hematite - magnetite - quartz which can be traced for 1000m. Secondary copper minerals stain a section of the BIF but are equally concentrated in anthophyllite schist and banded hornblende amphibolite units which outcrop immediately to the north. Well foliated schists, calc-silicate rocks and layered quartzofeldspathic leucogneiss outcrop to the south.

The copper mineralisation is not widespread and could have been derived from basic rock units. The iron formation is a volcano-sedimentary deposit however, with therefore, some potential for gold mineralisation. The two samples of BIF collected indicated trace value of Au (0.1ppm) along with anomalous Bi values. Further sediment sampling in the Gum Tree environment is required to lead into possible gold mineralisation. Bi may be a useful indicator element in this case.

CR19890089: CRA Completed airborne magnetic and radiometric survey with some ground follow-up of anomalies.
BHP Minerals

EL4723

CR19860139: Target was strataform Pb-Zn-Ag and Cu-Au. Completed detailed stream sediment sampling which generated several targets which were in filled with more detailed sampling.

CR19870073: Completed regional stream sediment sampling with little encouragement.

Macmahon Construction

EL5283

CR19880285: Analysis of drill samples held at the NTGS core library from the Phlogopite Mine returned no anomalous gold or platinum results. No drill targets were identified. Work concentrated on the Phlogopite mine area.

EL5269

CR19890081: Conducted EM geophysics on the ironstone hosted prospects of Redrock and Harrys Creek. Only low order anomalies were generated and drilling of best anomalies failed to intersect sulphides. No work was completed over the Gumtree prospect as it was considered a lower order prospect. No further work was recommended.
Range Resources

EL5545 and EL4326

CR19890356: No work completed in current project area.

White Range Gold NL

EL6693

CR19910001: Targeted and drilled an intense magnetic feature (outside of the current project) which intersected magnetite bearing granulites.
Saturn Resources

EL6899
CR19920478: No work completed within the current project area.

CRA

EL7335
CR19920484: Targeting diamond and base metals. Completed a detailed stream sediment sampling programme.
Stockdale Prospecting

EL7570

CR19930086: Completed stream sediment sampling for diamonds and gold. No anomalous results.

Tanami Exploration NL

EL10359

CR20020348:

EL 10359: The EL covers a four way intersection of prominent structural trends two of which have regional status namely the RDZ which is a thrust fault and the unnamed magnetic lineament that trends ESE parallel to BAT and also marks the northern contact of the Mount Hay Igneous Complex 20 kilometres to the west of EL 10359. A rock chip sample very close to the four-way intersection was anomalous in Zn and Au. There is also a copper drainage anomaly close to the northern boundary of the EL which is part of a much larger anomalous drainage system (10kms x 5 kms) immediately adjacent to and including the northern boundary of EL 10359. The base metal prospectivity potential of the tenement will be assessed.

CR20040714: Rock chips and soils collected are shown in the NTGS digital exploration data.
EL22918

CR20030164: No targets fall within the current project area.

EL22923

CR20030335: Work completed by GeoDiscovery which generated target although they fall outside the current project area.
An assessment of the Palaeoproterozoic Arunta Province, undertaken by GeoDiscovery in 2002, highlighted the potential for polymetallic (Cu-Pb-Zn-Ag-Au) metamorphosed massive sulphide deposits within the Central Arunta Project (CAP) area. The possibility that Iron Oxide Copper Gold (IOCG) deposits could occur within the Project area was also recognised.

The lithostratigraphic setting within which these deposit styles are sought is based on recent work completed by the Northern Territory Geological Survey (Pietach, 2001). A revised stratotectonic framework for the Arunta Province shows the CAP area to be underlain by three main stratotectonic packages, the Narwietoooma, Wigley and Cadney Packages.

The Narwietoooma Package (>1820Ma) comprises lithologies that are dominantly mafic through to felsic gneiss with intercalated pelitic and psammitic metasediments. Pietach (2001) interprets the protolith as being predominantly felsic and mafic volcanics that were subject to granulite facies metamorphism at around 1730 to 1720 Ma. In the NTGS study the Wigley Package is interpreted to be a lower grade metamorphic equivalent of the Narwietoooma Package.

The younger Cadney Package (1770Ma), which is interpreted to overlie the Narwietoooma Package in the CAP area, is dominated by calc-silicate rocks, marbles and sillimanite and biotite-bearing gneiss and likely represents a change to widespread sedimentation following extensive volcanism.

It is the transitional environment between the older Narwietoooma and Wigley Packages and the younger Cadney Package, which is regarded as the prospective position for metamorphosed massive sulphide deposits.

In EL22922 the presence of low-grade base metal mineralisation (Cu-Zn) at the Red Rock prospect provides support for the prospectivity of that area as does the occurrence of a number of discrete and intense aeromagnetic anomalies that are the focus of the work reported herein.

A blanket of Quaternary cover covers the majority of the tenement. The Strangways Ranges located at the eastern end of the tenement forms the only significant area of outcrop.

No field work completed.

EL22922

CR20040084: No field work completed. A review of regional data including airborne magnetic compilation.

EL22761

CR20040317: Completed a few ground magnetic traverses over selected magnetic features with some geochemical sampling completed with no anomalous results returned.
CR20050148: Originally granted to Teck Cominco and then transferred to Tanami Gold. Teck originally targeted Broken hill type mineralisation hosted by Sillimanite and garnet bearing metasediments within the Wigley package. Rock chip data completed is included in the NTGS digital exploration data package.

EL10404

CR20040389: No work completed inside current project.
Rum Jungle Uranium

EL22918

CR20080172: Uranium exploration with no work in current project area.

Western Desert Resources

EL25660

CR20080470: Completed stream sediment sampling which does not form part of the NTGS digital stream sampling data base. Noted some weakly anomalous rare earth element results. A number of gold BLEG stream anomalies were identified which would be worthy of a more detailed review of the stream geochemical data set that was completed.
Tianda Resources

EL25693

CR20080502: Targeting paleochannel uranium. Anomalies detected were returned from bedrock (elevated background) and not alluvium.

AtomEnergy Limited

EL25989

CR20080970: Targeting rare earth, uranium, and tin/tantalum. Completed HyMap (hyperspectral scanner) over the entire tenement area.
3.4 EXPLORATION RATIONALE

Several commodities are considered prospective within the region including base metals, Ni-Cu, uranium, mafic-hosted vanadiferous magnetite, REE and orogenic gold. A more detailed review of the NTGS digital exploration data base is required to specifically look at the effective sample coverage in conjunction with the regolith data as well as investigate regional data sets such as stream sediment data and look at the coverage for the various elements that have been analysed.

The discovery of high grade copper on the Kidman Resources’ Home of Bullion prospect in the northern Arunta province has sparked a new wave of exploration in the region. The style of mineralisation associated with the high grade copper discovery has been suggested by Kidman Resources to have similarities to a Mt Isa style copper system while previous NTGS interpretations suggested that the prospect has IOCG affinities. It is important to note that the mineralisation is associated with magnetite as a part of the mineralisation which will form a key exploration targeting tool.

Processing of the airborne magnetic data over the Home of Bullion prospect by NT Minerals shows that the regional magnetic feature is not strong and that the anomaly is a subtle linear magnetic anomaly. Refer to the Figure 6 below showing the magnetic anomaly over the Home of Bullion prospect.
Airborne magnetic data will form an important tool both for targeting as well as interpretation of areas under cover.

4.0 CONCLUSION AND RECOMMENDATIONS

The main commodities targeted within the project include base metals, Ni-Cu, uranium, mafic-hosted vanadiferous magnetite, REE and orogenic gold. A detailed review of historical exploration and validation of historical exploration data has been the initial focus for exploration during the reporting period.

It is recommended that the next phase of exploration should include a more thorough review of the digital exploration data including HyMap data collected by AtomEnergy in 2008 which overlaps with the project. Historical BLEG sampling by Western Desert Resources over the south-eastern portion of the project did return a cluster of anomalous gold which warrant further review to determine if follow-up was completed by Western Desert Resources. The historical review completed by NT Minerals was not completed due to corrupted digital files and this review will be completed once the replacement files are received.

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this will also be worth reprocessing. A review of the data sets should then be undertaken in conjunction with the historical digital exploration data files (NTGS data) which appears to contain most exploration data up to about 2008.