

DataMotion Asia Pacific Limited ABN 44 009 148 529

#### registered office

Suite 3 72 Canning Hwy Vic Park WA 6100 AUSTRALIA



mailing address

Suite 6 72 Canning Hwy Vic Park WA 6100 AUSTRALIA

telephone - national 08 9355 2565

international +61 8 9355 2565

facsimile - national 08 9355 2575 - international +61 8 9355 2575

email - info@datamotion.asia visit us at - www.datamotion.asia

12<sup>th</sup> May 2011

# M12 RARE EARTH TARGET – GRAVITY 3D MODEL REPORT

- Southern Geoscience Consultants Report #2187 Re: Mt Barrett 3D Gravity Model
  - "The low density material overlying the magnetic core may represent deep weathering. In some carbonatites, deep weathering is a mechanism for REE enrichment."
  - "For targeting of REE mineralisation, the lowest density zone overlying the magnetic source may be more prospective than other parts of the system. A northerly inclined drill hole designed to intersect the low density zone within the modelled magnetic source should provide information on the nature and prospectivity of the possible shear or thrust zone on the northern edge/contact of the magnetic intrusive."

Datamotion Asia Pacific Ltd (DMN) is pleased to announce it has received the report prepared by independent consultants Southern Geoscience Pty Ltd. The report is based on data received from the results of the recent gravity survey conducted on the M12 Rare Earth Target at Mt Barrett.

Following a detailed review of all the current information on M12 by the Joint Venture partners the final drill hole locations will be identified ready for drilling.

We look forward to providing updates as the exploration schedule progresses.

The complete S.G.C. Report #2187 is attached and may also be reviewed on the company website <a href="https://www.datamotion.asia">www.datamotion.asia</a>. Professional advice should be sought to assist in the interpretation of this report.

- ENDS -

For further information contact:

Joshua Wellisch Director & Company Secretary DATAMOTION ASIA PACIFIC LIMITED Tel: +(61) 8 9355 2565 Mark Koehne PR Consultant Corporate Vision Consulting Tel: 0409 259 887

#### **DECLARATION OF COMPETENCY**

The information in this report that relates to Exploration results is based on information compiled by Mr John Carew under the direction of Mr. Bruce Craven, a member of the Australasian Institute of Mining and Metallurgy. Mr. Carew is a full time employee of Southern Geoscience Consultants Pty Ltd. Mr Carew and Mr. Craven has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves.' Mr Craven consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.



# **MEMORANDUM**

ТО	Wenlong Zang, Joshua Wellisch
FROM	John Carew
DATE	5/5/2011
REPORT NO.	SGC-2187
RE	Mt Barrett 3D Gravity Model

#### 1 INTRODUCTION

A gravity survey over the Mt Barrett magnetic anomaly was carried out by Atlas Geophysics during March/April 2011. The survey was done with gravity stations on a 200 m grid with three lines (two north south and one east west) covered using 100 m spaced gravity stations. The locations of all gravity stations are shown in **Figure 1**.

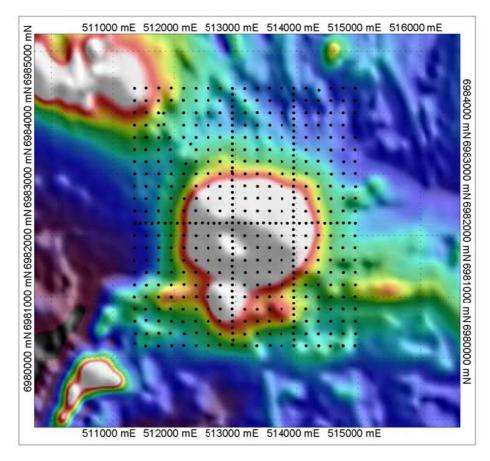


Figure 1. Mt Barrett gravity stations on an image of the RTP magnetics. Coordinates in MGA51.

The Mt Barrett magnetic feature has been previously interpreted as a possible carbonatite (late magnetic intrusive) that may be prospective for rare earth elements (REE) and or magnetite-gold mineralisation. The aim of the gravity survey was to map any density variations associated with the magnetic feature which may help aid its interpretation and or help site first pass exploratory drill holes.

Southern Geoscience has carried out quality control, processing and 3D inversion modelling of the gravity data.

### 2 SURVEY DETAILS

A total of **478** different gravity stations were surveyed. As part of the routine survey procedure **22** stations were revisited and repeat readings taken to monitor the repeatability of the gravity meter. The details of the gravity survey are contained in the Survey Production Report written by Atlas Geophysics and included as **Appendix 1** at the end of this memo.

The survey was interrupted by heavy rain during mid March and the crew demobilised before returning to complete the survey at the beginning of April. The heavy rains meant several planned station locations in the north east of the survey area remained inaccessible and had to be moved ~100 m. The interruption from the rain and the shift of several stations has not impacted data quality or overall interpretability/model-ability of the data and overall the data is of good quality.

The gravity data has been tied into the Australian Fundamental Gravity Network and is referenced to the AAGD07 gravity datum, which is the datum currently used by Geoscience Australia.

#### 3 PROCESSING AND MODELLING

During the course of the survey the gravity data was sent to Southern Geoscience Consultants on a daily basis for quality control and assessment purposes.

#### 3.1 Data Processing

The gravity data has been processed using SGC's in-house software. The Bouguer gravity values have been calculated using a range of Bouguer density values. The following is a list of the processing parameters used (included here for completeness).

#### **Table 1-Processing Parameters**

Elevation Control GRS80

Elevation Datum Ellipsoid

Gravity Units um/sec^2

Gravity Datum AAGD07

Value subtracted from Observed Gravity 9750000

Formula for Free Air correction Heiskanen & Moritz second order Free Air

Formula for Theoretical Gravity: Somigliana closed form

Formula for Atmospheric Correction Wenzel 2nd Order polynomial

Formula for Bouguer Gravity Spherical Cap

Using Geoid model GRS80

The final processed gravity data is contained in the file MtBarrett-Gravity\_FinalData\_SGC-Processed.XYZ.

The Bouguer gravity (reduced using a Bouguer density of 2.5 g/cm<sup>3</sup>) has been gridded and several enhancements of the gridded data have been made and used to generate a set of geotiffs and contours. **Figure 2** shows an image of the residual Bouguer gravity with contours and surveyed gravity stations.

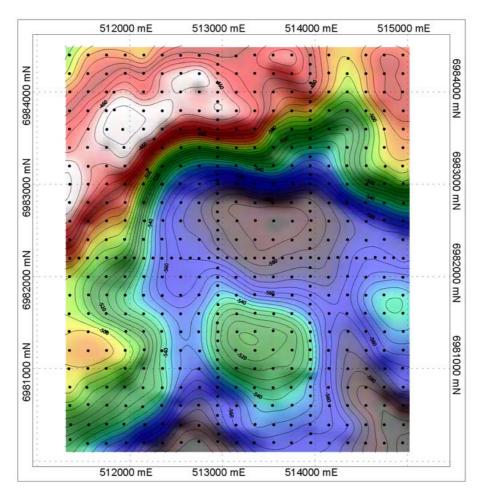


Figure 2. Residual Bouguer gravity image with contours (5 gu intervals) with gravity stations (black).

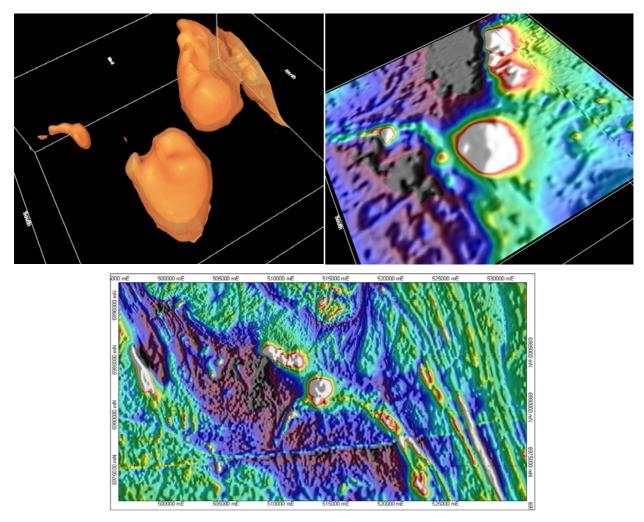
# 3.2 Inversion Modelling

### 3.2.1 Magnetic Model

A 3D magnetic model for the Bt Barrett magnetic anomaly (shown in **Figure 1**) has been previously generated from the open-file Lake Wells 200 m spaced airborne magnetic data. The results of this modelling have been previously reported in *Mt-Barrett-Modelling\_SGC#2015*.

The 3D magnetic model indicates the Mt Barrett magnetic feature of interest is associated with an isolated bulb shaped magnetic source with a magnetic susceptibility that is likely to be in the 0.025-0.05 SI range. However without any information from drilling the size of the real magnetic source can only be estimated by selecting one of the susceptibility isosurfaces in the model. The selection of this isosurface was in-part based on some forward modelling described in *Mt-Barrett-Modelling\_SGC#2015*.

The magnetic model indicates similarly magnetic material to the north west of the feature of interest. This is indicated by the 0.02 SI (orange coloured) isosurface in **Figure 2a**. The image of the TMI and RTP (**Figure 2b, 2c**) indicates the north western magnetic source is probably part of a more extensive unit. In terms of magnetic susceptibility (i.e. magnetite +/- pyrrhotite content) this unit looks similar to the feature of interest.

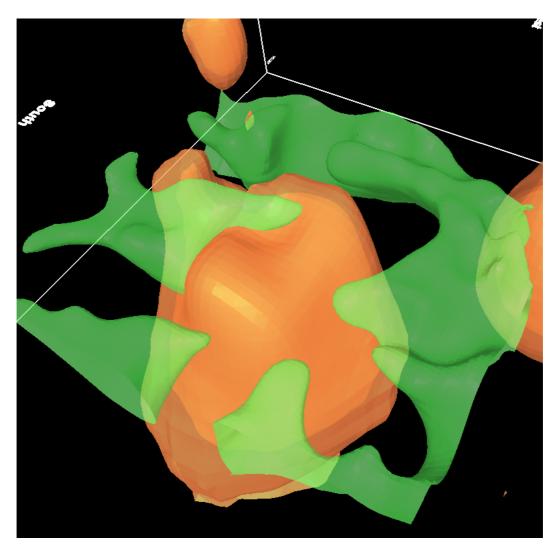


**Figures 2a** (top left)-View looking NW of the 0.02 SI isosuface; **2b** (top right)-View looking NW of the modelled TMI; **2c** (bottom)-RTP showing the Mt Barrett feature of interest in the centre of image.

# 3.2.2 Pseudo-Magnetic Model

3D inversion modelling of the pseudo-magnetic data (transformed from the gravity data) has been carried out. This was done by transforming the gravity data into pseudo-magnetic data and inverting this data using the magnetic inversion algorithm. This method can provide more detail and often produces a model that is preferred to one generated from inverting the gravity data. However the densities generated by modelling the pseudo-magnetic data are hard to evaluate in absolute (g/cc) terms. Importantly the densities produced are relative to each other; i.e. the part of the 3D model with a density of 0.1 is twice as dense as the part of the model with a density of 0.05.

**Figure 3** shows a view looking south west of the 3D magnetic model and the 3D pseudo-magnetic (density) model. The orange coloured modelled magnetic source is surrounded by relatively dense material which is coloured green; i.e. within the gravity survey area the magnetic body has a lower density compared to the surrounding non-magnetic countryrock. This density relationship is consistent with the interpretation that the magnetic source as an intrusive; eg. a felsic-intermediate or deeply oxidized intrusive core.

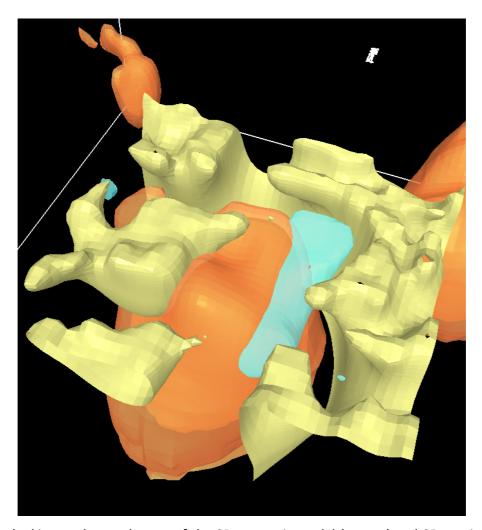


**Figure 3**. View looking south west at magnetic model (orange) and the gravity derived (pseudo-magnetic model (green).

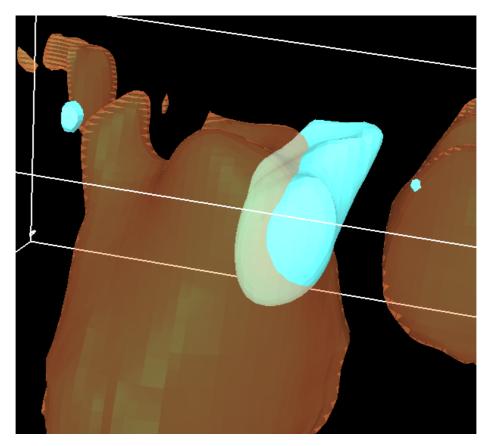
# 3.2.3 Gravity (Density) Model

3D inversion modelling of the gravity data has also been carried out. This has generated a model that looks similar to the pseudo-magnetic model, but has given more quantitative indications of the subsurface density values. For this model it is important to note that a Bouguer density of **2.50 g/cc** was applied when calculating the Bouguer gravity used as the input for the inversion. This means the semi quantitative, modelled densities are relative to a background of 2.50 g/cc; i.e. the density isosurface labelled 2.25 g/cc represents zones that have densities that are 0.25 g/cc less than the assumed background density. Likewise the 2.70 g/cc density isosurface represents densities that are 0.20 g/cc above background.

**Figure 4** shows a view looking south west of the 3D magnetic model and the 3D gravity model. The susceptibility isosurface representing the modelled magnetic source is coloured orange and the 2.25 g/cc and 2.55 g/cc density isolsurfaces are coloured blue and light yellow respectively. As discussed above, the 2.55 g/cc isosurface surrounds the modelled magnetic source, both to the sides and over the top of the southern part. The 2.25 g/cc isosurface is located near and above the northern edge of the magnetic body. This anomalously low density part of the model deepens to the south and extends into the modelled magnetic source (**Figure 5**).



**Figure 4**. View looking to the south-west of the 3D magnetic model (orange) and 3D gravity model (light yellow-2.55 g/cc and blue-2.25 g/cc).



**Figure 5**. View looking west of the 3D magnetic model (orange and semi-transparent) and the 3D gravity model 2.25 g/cc isosurface (blue).

The low density part of the gravity model may be representing deep weathering that may be more pronounced on the northern edge/contact of the magnetic feature. The intersection of the blue and orange isosurfaces (**Figure 5**) indicates an anomalously low density zone within the magnetic source. The reliability of these parts of the models are uncertain, as is the likely nature of the low density zone within the magnetic source at ~700 m below surface. The south dipping low density zone may be representing a fault or brecciated zone associated with the northern contact of the magnetic (intrusive) body. There is some suggestion of a fault (shear or thrust) in the sub-regional image of the RTP in **Figure 2c.** 

#### 4 CONCLUSIONS AND RECOMMENDATIONS

The magnetic model suggests the Mt Barrett feature of interest is associated with an isolated bulb shaped source the appearance and setting of which is consistent with an intrusion. The model also indicates there is a more extensive magnetic unit with similar magnetic properties to the north west. This more extensive unit looks like a stratigraphic unit within the greenstones.

The gravity survey and modeling indicate that the postulated magnetic intrusive has a lower density than the surrounding geology, although coverage of the background/surrounding geology is limited. Gravity surveying data over the magnetic material to the north west of the main intrusive feature may help determine the extent of their physical similarities.

The low density material overlying the magnetic core may represent deep weathering. In some carbonatites, deep weathering is a mechanism for REE enrichment. Alternatively the low density zone may be (at least in part) mapping variations in the overburden that are not directly related to the underlying magnetic body (e.g. palaeo channels).

For targeting of REE mineralisation, the lowest density zone overlying the magnetic source may be more prospective than other parts of the system. A northerly inclined drill hole designed to intersect the low density zone within the modelled magnetic source should provide information on the nature and prospectivity of the possible shear or thrust zone on the northern edge/contact of the magnetic intrusive.