News

Update on Geophysical Survey Progress from the Geological Surveys of Western Australia, South Australia, Northern Territory and Victoria (information current on 13 July 2015)

Further information on these surveys is available from Murray Richardson at GA via email at Murray.Richardson@ga.gov.au or telephone on (02) 6249 9229.

Table 1. Airborne magnetic and radiometric surveys

Survey name	Client	Project management	Contractor	Start flying	Line km	Spacing AGL Dir	Area (km²)	End flying	Final data to GA	Locality diagram (<i>Preview</i>)	GADDS release
Coompana	GSSA	GA	GPX Surveys	7 Feb 2015	255 265	400 m 80 m E–W	85910	47.2% complete at 13 Jul 2015	TBA	173: Dec 2014 p. 24	TBA
Delamere/ Spirit Hills	NTGS	GA	Thomson Aviation	20 Jul 2015 pending completion of Defence flying operations in the survey area	96 500 est.	400 m 80 m N–S	33690	TBA	ТВА	176: Jun 2015 p. 22	ТВА
Yalgoo	GSWA	GA	MAGSPEC Surveys	30 May 2015	110516 est.	100/200 m 50 m E–W	11 200	32.3% complete at 12 Jul 2015	ТВА	176: Jun 2015 p. 23	TBA

TBA, to be advised.

Table 2. Gravity surveys

Survey name	Client	Project management	Contractor	Start survey	No. of stations	Station spacing (km)	Area (km²)	End survey	Final data to GA	Locality diagram (Preview)	GADDS release
Gippsland	GSV	GA	Atlas	30 Jun 2014	1440	12 traverses at 500 m station spacing	8358	100% complete at 21 Jul 2015	Final data expected to be released via GADDS when permission to do so is received from GSV	170 – Jun 2014 p. 25	TBA
North McArthur Basin	NTGS	GA	Atlas	16 Sep 2014	7175	4 km regular grid with areas of 2 km infill; 1 area of traverses spaced 4 km apart with a station spacing of 1 km	71 030	100% complete at 4 Nov 2014	Preliminary final data were supplied to GA at the end of Nov	171: Aug 2014 p. 39	The survey covers all or part of Arnhem Bay, Gove, Mt Evelyn, Mt Marumba, Blue Mud Bay, Katherine, Urapunga and Roper River standard 1:250 k map sheets
Ngururrpa	GSWA	GA	Atlas	10 May 2015	5000	2.5 km regular grid	30700	100% complete at 13 Jun 2015	TBA	176: Jun 2015 p. 23	ТВА
Northern Wiso Basin	NTGS	GA	Atlas	18 Jun 2015	5020	4 km regular grid with areas of 2 km and 1 km infill	83 240	29.5% complete at 5 Jul 2015	TBA	176: Jun 2015 p. 24	ТВА
SW Yilgarn WA	GSWA	GA	Atlas	12 Jun 2015	28678	2 km along public roads and tracks	175000	10.3% complete at 12 Jul 2015	TBA	176: Jun 2015 p. 24	TBA
Victoria Basin	NTGS	GA	TBA	Survey Quotation request released on 29 June	6300	4 km regular grid	99170	TBA	TBA	The proposed survey covers parts of the Port Keats, Delamere, Larrimah, Fergusson Range, Katherine, Waterloo, Victoria River Downs, Daly Waters, Wave Hill and Newcastle Waters standard 1:250 k map sheet areas (Figure 1)	TBA
Stavely	GSV	GA	TBA	Survey Quotation Request in preparation	Approx. 8000 in 9 separate areas	500 m regular grid in 8 areas and 500 m station interval along one traverse	TBA	TBA	TBA	The proposed survey covers parts of the Horsham, Hamilton, Ballarat and Colac standard 1:250 k map sheet areas (Figure 2)	TBA

TBA, to be advised.



Table 3. AEM surveys

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Survey name	Client	Project management	Contractor	Start flying	Line km	Spacing AGL Dir	Area (km²)	End flying	Final data to GA	Locality diagram (Preview)	GADDS release
Musgrave Region	GSSA	GA	TBA	ТВА	TBA	TBA	TBA	TBA	TBA	The technical specifications of the survey are being planned between GA, GSSA and CSIRO	Since Preview 176 the National Collaboration Framework Agreement was executed between GA and GSSA on 2 Jul 2015

TBA, to be advised.



Figure 1. NTGS Victoria Basin gravity survey 2015.







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New geophysical data being acquired and released by the Geological Survey of Queensland

In 2013, the Queensland State Government announced a 3 year \$30 million exploration industry assistance package, the Future Resources Programme, to be implemented by the Geological Survey of Queensland (GSQ). A portion of this funding was dedicated to collection of geophysical data in the Mount Isa Region through initiatives such as the Mount Isa Geophysics Initiative and the Industry Priorities Initiative, which implements selected projects suggested by industry. This funding, in conjunction with remaining funds from the Greenfields 2020 Programme, underpins all of the geophysical data collection undertaken and planned by the GSQ from 2013–2016.

The Isa Extension Magnetotelluric (MT) Survey was proposed during the first round of the Industry Priorities Initiative. The original proposal was to use magnetotelluric data to investigate possible extensions of the prospective Mount Isa shale basins to the south of the Mount Isa Inlier. The survey was expanded from the original proposal to also capture broader crustal-scale information. The survey comprised more than 800 broadband (BBMT) stations on a 2 km \times 5 km grid and approximately 800 audio magnetotelluric (AMT) stations with a station spacing of 500 m along traverses (Figure 1). The final AMT station data recording will begin in August, with the BBMT and most of the AMT collected late in 2014. Release of the complete MT data set and contractor processed sections will occur soon after acquisition is complete. The GSQ is undertaking a 3-year programme (starting 2015) to process and interpret this data in an effort to demonstrate what MT surveys can accomplish for explorers.

A trial of Geotech's high power VTEM Supermax system was proposed in the second round of the Industry Priorities Initiative. The focus of the trial was to collect data to the east of Osborne Mine, in an area where conductive sediments of the Eromanga basin have historically reduced the effectiveness of airborne electromagnetic (AEM) systems. The survey, named Osborne East, has a line spacing of 1 km close to outcrop with the line spacing extending to 2 km further from outcrop (Figure 2). Data from this trial survey is freely available on the QDEX Data website (https://www. business.qld.gov.au/industry/mining/ mining-online-services/qdex-data), enabling explorers to make an assessment of the value of the data collected by the system.

The GSQ has invested a considerable amount of money in furthering the understanding of the large scale crustal architecture of the Mount Isa Province through the collection of three new deep crustal seismic lines (Figure 3). The surveys provide new information about the location and nature of major crustal features, while also capturing useful information about the overlying basins. This data was collected in three phases starting with 14GA-CF1 in July 2014 with the final phase of data acquisition completed in May 2015 creating a linked network of deep crustal seismic lines over north west Queensland. Processing and interpretation is well underway on GA14-CF1 with products expected later in 2015. Processing on GA14-CF2 and GA14-CF3 will start in the upcoming months with interpretation to follow. Field data for GA14-CF2 and GA14-CF3 will be made available in the near future. Please contact the GSQ geophysics team (geophysics@dnrm.qld.gov.au) if you would like to be notified when this data is available.

The upcoming 2015–2016 work programme is designed to provide additional precompetitive geophysical data to support explorers as they expand their operations into undercover areas. Data collection will focus on the area around Cloncurry where the prospective rocks of the Eastern Succession are covered by younger sediments. Initial planning includes a magnetotelluric survey, an infill gravity survey and a regional AEM survey.

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Figure 1. Location of the Isa Exension MT survey. Shaded black area in inset represents the extent of the Mount Isa Inlier.

MT

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Figure 2. Location of the VTEM Supermax trial survey. Shaded black area in inset represents the extent of the Mount Isa Inlier.

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Figure 3. Location of the new deep crustal seismic lines.

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News from the Geological Survey of South Australia

A visit in April by BHP Olympic Dam's principal geometallurgist Kathy Ehrig resulted in the collection of a small amount of rare but interesting petrophysics from mineralised rocks in the Olympic Domain. Magnetic susceptibility and density measurements from drill holes WRD33 and WRD50A are available through the petrophysical layer on SARIG (https://sarig.pir.sa.gov. au/Map).

The AusLAMP magnetotelluric programme is still underway in South Australia, led by Stephan Thiel in collaboration with the University of Adelaide (Figure 1). The 104 new long-period sites have been combined with previous MT data to produce an image of the electrical resistivity distribution of the crustal and mantle lithosphere and constrain the geodynamic history of the Gawler Craton and its margins. Early results indicate a resistive Gawler Craton in the upper crust, lower crust and upper mantle with significantly lower resistivity in the lower crust and upper mantle along the mineralised eastern margin of the Stuart Shelf.

GSSA geophysicists are also currently working on new gravity and magnetic state images. Unlike previous gravity images, the next gravity image will likely involve a further levelling of surveys in areas where multiple surveys overlap. It will also remove artefacts previously seen where adjacent surveys overlap. The new magnetic image will comprise data from over 100 new magnetic surveys. Stay tuned for news on these new grids later this year.

Tim Keeping, Philip Heath, Stephan Thiel and Gary Reed Philip.Heath@sa.gov.au

SA NF & AusLAMP

Status as at 23 June 2015

Legend

- Yellow sites planned.
- Lime Green sites currently deployed.
- Dark Green sites currently re-deployed.
- Aqua sites picked up but pending info on data quality.
- **Red** sites that need redeploying
- Orange sites with OK data but would benefit from redeployment
- Blue sites completed



Figure 1. AusLAMP magnetotelluric stations as of 23 June 2015.