

Energy Security Programs update



Southwest Margin surveys

After recently completing the Southwest Margin offshore geophysical acquisition surveys along Western Australia's continental margin (*AusGeo News 94*), Geoscience Australia is analysing the processed data.

The Southwest Margins 2D seismic survey acquired approximately 7300 kilometres of commercial 2D seismic reflection data as well as more than 10 000 line kilometres of gravity and magnetic data.

The seismic reflection data has been divided into four logical areas for processing: Mentelle Basin, Wallaby Plateau and Zeewyck and Houtman sub-basins (Perth and Southern Carnarvon basins: figure 1). The seismic field data are being processed, with priority given to completion of the Mentelle Basin and Wallaby Plateau data.

Mentelle Basin seismic sections have recently been received by Geoscience Australia and are currently being checked for product quality. The Wallaby Plateau data is expected shortly, with the data for the Zeewyck and Houtman sub-basins expected within several months. When all the processed data has been received, Geoscience Australia will prepare a seismic data package consisting of the newly acquired data and any reprocessed data covering the Southwest Margin region. This data package should be available towards the end of 2009.

The processed gravity and magnetic line data acquired during the seismic survey have just been returned from processing and are being checked for product quality. Geoscience Australia will shortly begin merging these data into the existing potential field grids to produce updated magnetic and gravity data grids of the region. These will also be available towards the end of 2009.

The new bathymetry data acquired during the Southwest Margin marine reconnaissance survey has been edited, checked for quality and integrated into the new bathymetric maps

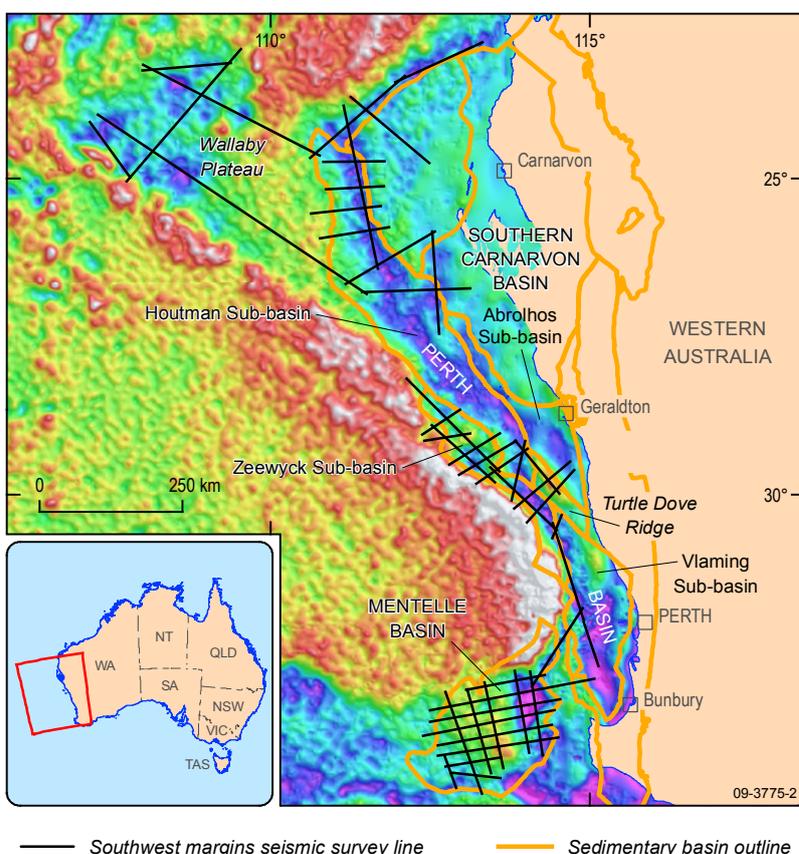


Figure 1. Seismic lines acquired during the Southwest Margin 2D seismic survey by the MV *Duke*. The background image is Bouguer-corrected satellite gravity data.

covering the region. All of the samples collected for geochemical analysis have now been processed and analysed and results are being verified and will be reported after interpretation is finalised.

Pine Creek airborne electromagnetic survey

Geoscience Australia, in collaboration with the Northern Territory Geological Survey (NTGS), recently acquired approximately 30 000 line kilometres of airborne electromagnetic (AEM) data over the Pine Creek Orogen. The survey was primarily funded through Geoscience Australia's Onshore Energy Security Program. Infill flying within the AEM survey area was funded by the National Water Commission and exploration companies. Data from the Woolner Granite AEM survey area was released in July, while planned release dates for the Rum Jungle and Kombolgie AEM survey areas are September and November respectively (figure 2).

The AEM acquisition was aimed at encouraging exploration by providing a regional geophysical and geological context for areas prospective for uranium mineralisation. Several known unconformity-style uranium deposits in the survey region (such as Ranger, Jabiluka, and Koongarra) are hosted by early Palaeoproterozoic Pine Creek

Orogen meta-sediments. Near these deposits the meta-sediments are unconformably overlain by late Palaeoproterozoic sandstones of the Kombolgie Subgroup. The AEM data will characterise the conductivity of the early Palaeoproterozoic basement rocks, and in particular, respond to graphitic schists, a known host for uranium mineralisation. The data may also map the subsurface unconformity with the overlying sandstones which is a target for exploration because mineralisation is inferred to occur adjacent to structures above or below this feature.

AEM survey coverage was extended into areas of laterally extensive regolith and Mesozoic and Cambrian sediment cover with a limited history of exploration. Results in these areas will indicate whether AEM data can penetrate the younger cover and map the underlying highly-prospective Proterozoic bedrock.

The National Water Commission funded infill flying east of Darwin within the Woolner Granite AEM survey area. The additional lines are targeting aquifers in Mesozoic sediments which are used for agricultural purposes. The survey results are expected to assist a review of regional groundwater resources and indicate whether salt water incursion from coastal or estuarine areas is a potential issue.

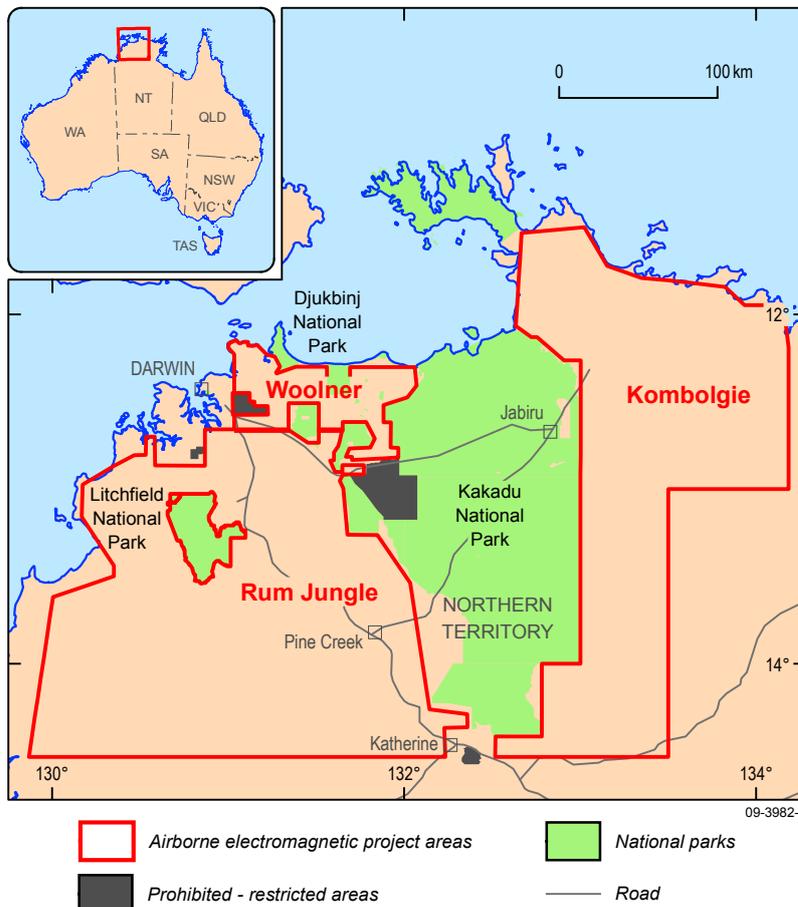


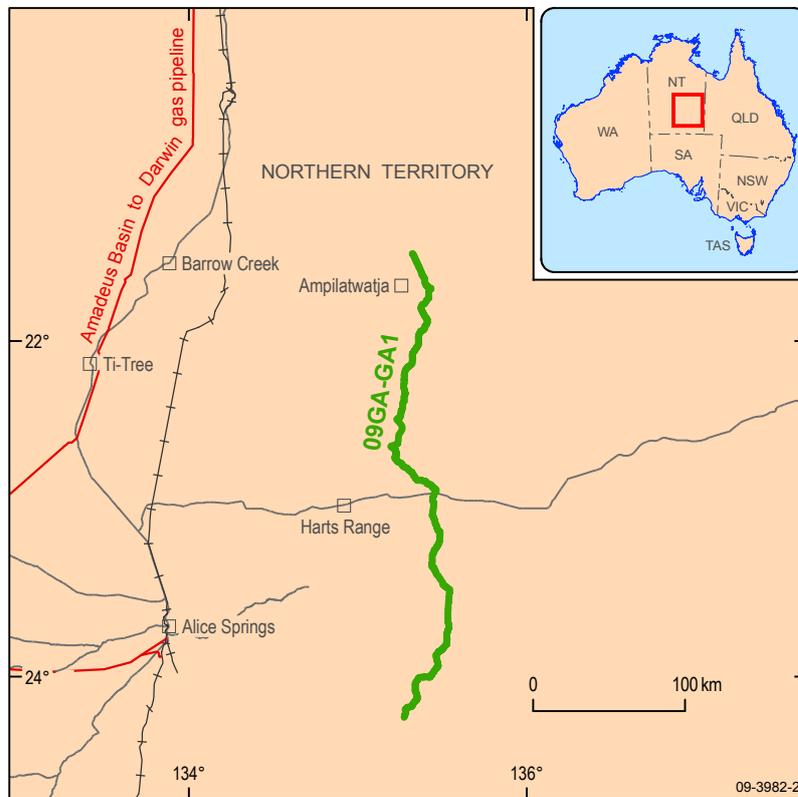
Figure 2. Pine Creek airborne electromagnetic survey area.

Georgina Basin-Arunta Inlier Survey

Geoscience Australia, in collaboration with the Northern Territory Geological Survey (NTGS), recently completed a 373 kilometre deep seismic traverse across the south-western Georgina Basin (figure 3). The survey was primarily funded through Geoscience Australia's Onshore Energy Security Program. An extension of the seismic line was funded by the NTGS. Release of the Georgina Basin seismic data is currently scheduled for late 2010.

The principal objective of the Georgina seismic line is to support the assessment of hydrocarbon prospectivity in the southern Georgina Basin. The survey transect commences in the Paleoproterozoic Davenport Province to the north, traverses the southwest of the Georgina Basin over the Cambrian Dulcie Trough and crosses the Arunta Region in the south. The seismic line aims to determine the depth of burial of organic-rich middle Cambrian source rocks, image potential hydrocarbon structural and stratigraphic traps, and shed light on deformation and fault reactivation expected from the Alice Springs Orogeny. The seismic data will also support assessment of the geothermal potential of the area by imaging high heat-producing granites and overlying cover.

The Arunta Region includes uranium and thorium bearing vein pegmatites which are likely to be located in preferred structural sites.



— OESP transect survey route — Road
— Gas pipeline —+— Railway

Figure 3. Georgina Basin-Arunta Inlier seismic traverse line location map.

The seismic acquisition will image the large-scale crustal framework of the Arunta Region and provide context for the emplacement of these intrusions. Finally, the seismic line will provide constraints on a broad, 2000 kilometre long west-northwest trending aeromagnetic lineament which crosses the region. This feature is thought to represent the axis of a major Cambro-Ordovician tectonic event.

For more information

Offshore Energy

Security Program

phone Clinton Foster on
+61 2 6249 9447

email clinton.foster@ga.gov.au

Seismic acquisition
and processing

phone Bruce Goleby on
+61 2 6249 9404

email bruce.goleby@ga.gov.au

Onshore Energy
Security Program

phone Ned Stolz on
+61 2 6249 9753

email ned.stolz@ga.gov.au

Seismic acquisition

phone Jenny Maher on
+61 2 6249 9896

email jenny.maher@ga.gov.au

Airborne electromagnetic surveys

phone Alan Whitaker on
+61 2 6249 9702

email alan.whitaker@ga.gov.au

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AusGeo News 94: Southwest Margin surveys completed

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