

### Offshore Otway Basin Victoria Aeromagnetic Survey

*by Peter Gunn, AGSO*

In May and June 1994, a detailed 44,379 line kilometre aeromagnetic survey was flown over the Victorian portion of the offshore Otway Basin by Kevron Geophysics Pty. Ltd. on behalf of AGSO, the Victorian Department of Energy and Minerals, the South Australian Department of Mines and Energy and a consortium of exploration companies. The project was managed by AGSO on behalf of the other participants. AGSO's role was to design the survey, let tenders for the data acquisition, and supervise the data acquisition and processing through to the stage of located, levelled data. AGSO subsequently gridded the data received from the contractor and produced various map, image and interpretation products which were integrated into an interpretation of the complete dataset.

Prior to 1994 the aeromagnetic coverage of the offshore Otway Basin in Victoria was incomplete and consisted of surveys with line spacings greater than or equal to 1.5 km, several of which were limited by low sensitivity recording instruments, high survey altitudes and imprecise navigation.

The new aeromagnetic data were acquired along north-south flightlines spaced 500 metres apart. Tie lines were flown in the east-west direction with a spacing of five kilometres and the survey altitude was 130 metres above the sea and

the land. The data were recorded with a 0.01 nanotesla resolution, at a sample interval of 8 metres, with GPS navigation providing spatial positioning to within 10 metres.

The data have been used to map basement and intrasedimentary structure plus the distribution of volcanics and igneous intrusions. A major finding of the survey is that a large portion of the offshore Otway Basin appears to have been originally underlain by an extensive magnetic basic igneous sheet extruded or intruded during Late Jurassic - Early Cretaceous times. Subsequent faulting due to extension in the basin has fractured this sheet and the resultant fault pattern is imaged by the magnetic data. Interpretation of the data has allowed mapping of transfer fault systems, down-to-basin normal faults and faults controlling what appear to be prospective structural highs.

Integration of the results with seismic data has added validity to the interpretation. The results were also used to plan a cruise of the AGSO vessel Rig Seismic to record 14 second data in the offshore Otway Basin. These data are currently being processed.

Enquires regarding the availability of the data and the interpretation report can be made to: Dr Peter J. Gunn, Head, Geophysical Mapping Section, AGSO, GPO Box 378, Canberra ACT 2601, Tel: (06) 2499226 Fax: (06) 249 9986.