

MINERAL MAPPING AND SPECTRAL LOGGING OF THE GAWLER CRATON

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Between 29 September 2003 and 25 January 2004 a major campaign of spectral core logging was undertaken at PIRSA's Glenside Core Storage Facility using the prototype *HyLogger* core scanner developed by CSIRO's Mineral Mapping Technologies Group. The *Hylogger* offers a cost effective, objective means of capturing detailed mineralogical data while providing a high-resolution digital image of the drill core. The instrument is built around a visible-to-short-wave infrared spectrometer coupled with a quality linescan camera. A sophisticated computer-controlled X-Y table is used to manage the rate of core feed and provide the precision needed to integrate the data sets. Development of the current operational system was achieved with company sponsorship through AMIRA International (Project P685), a project in which PIRSA was an active participant.

Of the 357 holes scanned with the HyLogger in the recent campaign, 201 were from the Gawler Craton and 155 were from the Central Gawler Gold Province. Those that engaged regolith issues number 106, of which 58 were chip trays. All together, some 60 gigabytes of data were acquired over the Gawler Craton. Products generated include high resolution images of the core trays and automated mineralogical logs plotted by depth. With ancillary information provided, assay data, lithological logs and petrophysical logs can be integrated with the display.

A number of Central Gawler Gold projects were identified for this analysis including: Barns Prospect; Tunkillia; Lake Harris Greenstone Belt; and, the Tarcoola Gold Mine. By way of demonstration this presentation will focus on the Barns Prospect. In this example a strong correlation has been found between the chemistry of the white mica assemblage and the distribution of Au. In addition a comparison can be made between diamond core and drill cuttings, which show that the diagnostic alteration assemblage can be traced into the lower saprolite where there is also elevated levels of Au mineralisation.