

CASE HISTORY



Application: Mining and Minerals

Technology: High Resolution Acoustic Televiewer (HRAT)[®], Electric Log, Dual Focussed Induction, Small-Source Density

Location: Deep-sea mineral exploration in Okinawa Prefecture, Japan

Robertson Geo's marine geotechnics engineers completed an exciting and highly complex deep-sea mining exploration project in Okinawa prefecture, Japan.

Requirement:

Robertson Geo Services (RGS) were contracted through parent company OYO Corporation to carry out borehole logging for JOGMEC (Japanese Organization for Metals and Energy Security) on deep-sea boreholes in the Okinawa trough, to help quantify massive sulphide mounds containing mineral deposits of copper, lead, zinc, gold and silver.

Equipment:

The probes were conveyed using a Robertson Geo 2000m Marine Winch. Specialised high temperature versions of the probes were used due to the potential for high temperature and all probes underwent calibration and conformance checking prior to deployment on the heave compensated drill vessel.

Operations:

The probes were run on three boreholes at water depths of more than 1,000m. Heave compensation for the winch line was achieved by securely mounting the winch on the rooster box and running the wireline through a sheave wheel connected to a davit arm. All equipment and probes were surface tested before operations commenced and depth was referenced using seabed as a datum. The Electric Log was run first to monitor temperature, followed by the other probes.

Challenges and Solutions:

The main operational challenge was to regain access to the previously drilled boreholes. A state-of-the-art ROV, with high resolution image capability, was deployed down to the seabed to provide visual feedback so the vessel could position itself precisely. Once the drill bit had gained access to the borehole the vessel maintained its position with an automated system. The borehole was then checked and the casing withdrawn near to the top of the borehole, allowing logging operations to commence.

End value to client:

The complex operations were conducted safely throughout and the wireline data collected suggested a correlation with earlier data from core samples.

