

Marine Multicomponent Seismic Survey -Real-time Seismic Cable System-

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RSCS (Real-time seismic Cable System) is a new real-time seafloor reflection seismic observation system. It is a series of 3-component geophones and telemetry opto-electronics installed in a high pressure resistant housing, which enables real-time seismic data acquisition in ultra deep water. It was initially intended for large scale terrestrial crustal structure survey, and has since been modified for oil/gas exploration with the support of the JOGMEC.

The first reflection seismic survey was carried out in March 2006. The geophone data are high quality with the advantage of precise timing with GPS link on board and superior sensor directivity. It is suitable for P-S converted wave processing as well as for P-P processing. The data processing is different from the conventional reflection seismic CDP method with respect to the geometry and P-S conversion. Precise velocity analysis and prestack migration solve the problem of the elevation difference between shot (sea surface) and receiver (sea bottom) point.

A second seismic survey has been carried out in December 2006, equipped with accelerometer and hydrophone. This data was also very high quality, comparable to the geophone data. The accelerometer implies that the geophone will be replaceable with accelerometer. It means that there is a possibility to reduce the sensor size without gimbals. The hydrophone data is similar to the geophone data except for some polarity changes. This characteristic enables us to separate upgoing reflection from downgoing wave which includes only direct water waves and multiple reflections. The total data quality so far is very good compared to the conventional OBS systems. The RSCS has a great potential as a seabed observation system.