Methane Hydrate Potential of the Hidaka Trough, Offshore Japan

*AKIRA FUJIMOTO[1], Tetsuya Fujii[1]

1. Japan Oil, Gas and Metals National Corporation

JOGMEC, as a member of research group for resources assessment of Research Consortium for Methane Hydrate Resources in Japan (MH21), has been conducting resources assessment of methane hydrate (MH) offshore surrounding Japan.
This study aims to investigate the gas hydrate potential by the analysis of the 3D seismic reflection survey. In terms of resources assessment, it is important to understand the character and distribution of the BSR (bottom simulated reflector), sand distribution, high velocity anomaly and strong amplitudes above BSR to interpret the methane hydrate concentrated zones (MHCZ) quantitatively.
The 3D seismic reflection data (4800 m streamer, 384 channels, 48 fold) acquired in 2013 and 2014 by geophysical vessel ‘Shigen’, which is owned by Agency for Natural Resources and Energy. We investigated the potential of methane hydrate as resources in the Hidaka trough by the 3D data in Hidaka trough which located in the south Hokkaido government, Japan.
The BSR exists in quaternary sediment and extends over a broad area of the Hidaka trough. Amplitudes of BSR are various and some of them associate with amplitude versus offset (AVO) anomaly. Quaternary sediment is interpreted as hemipelagic and gravity flow deposit. Low amplitude anomaly below BSR associated with low interval velocity and pull down effect are observed as large gas chimney.
Topographical anomalies like small diapir with high amplitude indicates hydrate mounds on the water bottom. They suggest that hydrocarbon matured and generated in deep area, then it migrated and trapped to shallow sediment through several faults caused by tectonics in the foreland basin. It is obvious that hydrate in the basin are closely related to the petroleum system.
Even the focused area has not been drilled, the analysis of 3D seismic data and its interpretations are useful to understand thermal structure, fluid migration, and estimation of the MHCZ in the basin.

Keywords: Methane Hydrate, Seismic Reflection

