

Extraction of methane hydrate concentrated zone for resource assessment in the eastern Nankai Trough, Japan

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The Research Consortium for Methane Hydrate Resources in Japan (MH21) has explored methane hydrate resources around the eastern Nankai Trough since 2001.

Interpretation and analysis using 2D/3D reflection seismic data, wells logging/coring data and some others revealed existences of methane hydrate concentrated zones, of which reservoirs were composed with turbidite sand bodies. In the view of resource explorations, methane hydrate bearing zones should be classified to (a) methane hydrate concentrated zone and (b) methane hydrate bearing zone other than methane hydrate concentrated zone. Methane hydrate concentrated zone has a potential to develop because it can reserve more methane hydrate resources in a unit space.

We developed the interpretation workflow optimized for delineation of methane hydrate concentrated zones. The workflow consists of following 4 factors: (1) BSR interpretation, (2) Delineation of turbidite sand bodies using seismic visualization tools, (3) Detection of strong seismic reflectors suggesting methane hydrate concentrated sand layers, and (4) Identification of high velocity anomalies using high density (or continuous) velocity analysis technique.

By above strategy, we succeed in extracting more than 10 methane hydrate concentrated zones and evaluating their rock volume in the eastern Nankai Trough. They are classified to the channel-type and the lobe-type prospect.