

Seismic Evidence of Gas Hydrates Occurrence in Lower Slope to Basin-floor, Deep Water Area of Northeastern Bay of Bengal

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ABSTRACT

High resolution multi-channel two-dimension (2D) and three-dimension (3D) seismic data revealed the gas hydrates occurrence in lower slope to basin-floor, deep water area of Northeastern Bay of Bengal. The area of interest is located in the Northeastern deep water basin-floor, which is 125 km west of Myanmar, with water depths of 1230-2100 m. Bottom Simulating Reflectors (BSRs), often marking the base of gas hydrates stability zone, appear at 2200 ms to 2800 ms in the two-way travel time (TWT) seismic sections, about 400 ms beneath the seafloor. The BSRs show a strong characteristic of reflection, of which coefficients are much larger than that of seafloor. Although the BSRs in 3D seismic sections are not very continuous as are typical ones reported elsewhere in the world, the reversed polarity and the crosscutting-normal-strata features could be apparently observed. When we track the high amplitude reflectors in 3D seismic sections, they show an overall feature parallel to the seafloor, even a little change at depth while water depth changes. Moreover, like the typical BSRs reported elsewhere in the world, the BSRs express more remarkable features in 2D seismic sections. They are quite continuous, very high amplitude, and with obvious crosscutting the surrounding strata. The adjacent biogenic gas discoveries such as in A1, A3, AD7 and A6 indicated biogenic gas source for gas hydrates, meanwhile, the wide occurrence of gas hydrates implied prospective hydrocarbon exploration potential in this deep water area.