

SOME GEOLOGICAL FACTORS CONTROLLING GAS HYDRATE DISTRIBUTION ON THE BLAKE OUTER RIDGE, NORTH-WEST ATLANTIC

MATVEEVA, T. V., SOLOVIEV, V. A. VNIIOKEANGEOLOGIA, ST.PETERSBURG, RUSSIA

The Blake Outer Ridge is a major sediment drift in the north-west Atlantic continental margin, and one of the most investigated gas hydrate bearing regions. The main purpose of this study was to reveal main factors controlling the gas hydrate distribution within this sediment feature. We have studied the grain-size composition and pore water content of sediments recovered during 164, and 172 ODP Legs. Gas hydrates on the Blake Outer Ridge were determined by geophysical, geochemical data and visually at subbottom depths from 200 to 450 m. Geochemical data showed diffusional smoothing of pore water chlorinity from bottom to boundary of gas hydrate bearing zone. A number of negative chlorinity anomalies was observed within this zone. Below gas hydrate bearing interval chlorinity is constant or slightly increase. These data indicate the presence of wide fresh water zone. Consideration of sediment grain size and its comparison with distribution of pore water chlorinity showed that the gas hydrate bearing zone is confined to the interval of comparatively coarse sediments. On the basis of integrated granulometric parameter calculations it was found that the gas hydrate bearing zone differs from underlying and overlying intervals by better sorting and, consequently, better permeability. Seismic data have provide evidence of numerous fractured zones in the sedimentary sequence in gas hydrate area. The available data suggest that gas hydrates here are of filtration origin and generally controlled by comparatively coarse-grained sediments.