ANALYSIS OF POROSITY VARIATION IN GAS HYDRATE BEARING SEDIMENT

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ABSTRACT
Porosity is the key parameter in predicting the velocity of gas hydrate bearing sediment and quantifying the amount of gas hydrate. The purpose of this paper is to analyze the distribution and variation of porosity with depth in marine sediment where gas hydrate was sampled. In this study, porosity measurements from cores and in-situ porosity from well logs were analyzed. The studied data were collected from Ocean Drilling Program (ODP) Leg 164, Blake Ridge, Ocean Drilling Program (ODP) Leg 204, Hydrate Ridge, and Integrated Ocean Drilling Program (IODP) Expedition 311, Cascadia Margin. From the analysis, we observed that the average porosity of these sediments ranged from 50%-60% and the overall trend of porosity decreased with increasing depth linearly. Also, the well logs from the same area had similar variation tendency of porosity with depth, which differed from area to area. From analysis it can be concluded that depth and temperature are the main factors influencing the tendency and decreasing rate of porosity versus depth, and such as lithologies, geological setting, grain size and clay content could affect the range of porosity. The results are applicable to porosity evaluation in gas hydrate bearing sediment.

Keywords: gas hydrate, unconsolidated, porosity, baseline, depth

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