## The permeability estimated from Logging-While-Drilling (LWD) data, obtained by methane-hydrate bearing sediments of the Daini-Atsumi Knoll, Northeast Nankai Trough

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## Abstract

It is quite important to understand the permeability of pore-filling type hydrate-bearing sediments for considering how to construct methane-hydrate reservoir and to migrate hydrocarbon. Especially, in case of adopting depressurization method for gas production, the permeability of methane-hydrate bearing sediments is one of the most effectible physical properties for gas production rate. Thus, the many researchers have tried to grasp the permeability from measuring cores and from analyzing logging data. We, JOGMEC was carried out the pre-drilling campaign at 2016 for the 2nd offshore gas production test planned at 2017. The bottom simulating reflector (BSR) was penetrated by two research wells which were drilled with several kind of Logging-while-Drilling tools, and many new dataset were obtained. One of the new datasets was obtained by NMR tool, and we estimated the initial permeability of methane-hydrate bearing sediments using T2 distribution with Timur-Coates equation. Also, we calculated absolute permeability of those sediments using porosity measured by density-logging tool with Koizney-Carman equation, which referenced core permeability.

On the basis of core permeability, we found out that the constant for Timur-Coates equation for permeability computed from logging data is 50000, which value is coincident with the constant of the permeability analysis at the 2004 drilling campaign; i.e., the campaign was Kiso-shisui, Tokai oki - Kumano nada. The result of permeability computing, the permeability for muddy sediments was around 0.01-1mD, and that of sandy sediments was around 1 - 1000mD, which depends on methane hydrate saturation. We will present the result of permeability analyses, and discuss those permeability values validities for methane-hydrate sediments.

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