

## Gas hydrate dissociation behavior from temperature monitoring data

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Because the gas hydrate dissociation is an endothermic process, temperature measurement is an important way to know the response of gas hydrate reservoir to the application of some gas production techniques. Furthermore, a heat source, and how efficiently the heat is supplied from the formation are critical knowledge to evaluate effectiveness of the depressurization method as a practical gas production technique that depends on natural heat supply from formations.

The program of the 2013 first offshore production test of methane hydrate in the Eastern Nankai Trough included temperature monitoring in the production hole (AT1-P) and monitoring holes (AT1-MT1/MC). In all wells, some degree of temperature drop was observed.

During the six-days of the depressurization operation, maximum 5 K and 0.5 K in P and MT1 wells respectively. The vertical profiles of the temperature drop show high degree of heterogeneity, and the dissociation process reached in a localized region of the monitoring well. The water production zone in the production well was also concentrated at a specific depth.

Rapid temperature changes were observed in every well when the sand production event happened and terminated the flow in the seventh day of the test. The data show that the sanding occurred at a specific depth with strong water flow, and effect of it reached the monitoring hole location of 20 to 30 m far away.

Keywords: Gas hydrate, Thermal behavior, Depressurization, Downhole measurement

