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KIGAM Seafloor Observation System (KISOS) for the baseline study in monitoring of gas hydrate test production in the Ulleung Basin, Korea

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For the baseline study in the monitoring gas hydrate test production in the Ulleung Basin, Korea Institute of Geoscience and Mineral Resources (KIGAM) has developed the KIGAM Seafloor Observation System (KISOS) for seafloor exploration using unmanned remotely operated vehicle connected with a ship by a cable. The KISOS consists of a transponder of an acoustic positioning system (USBL), a bottom finding pinger, still camera, video camera, water sampler, and measuring devices (methane, oxygen, CTD, and turbidity sensors) mounted on the unmanned ROV, and a sediment collecting device collecting sediment on the seafloor.

It is very important to monitoring the environmental risks (gas leakage and production water/drilling mud discharge) which may be occurred during the gas hydrate test production drilling. The KISOS will be applied to solely conduct baseline study with the KIGAM seafloor monitoring system (KIMOS) of the Korean gas hydrate program in the future. The large scale of environmental monitoring program includes the environmental impact assessment such as seafloor disturbance and subsidence, detection of methane gas leakage around well and cold seep, methane bubbles and dissolved methane, change of marine environments, chemical factor variation of water column and seabed, diffusion of drilling mud and production water, and biological factors of biodiversity and marine habitats before and after drilling test well and nearby areas.

The design of the baseline survey will be determined based on the result of SIMAP simulation in 2013. The baseline survey will be performed to provide the gas leakage and production water/drilling mud discharge before and after gas hydrate test production. The field data of the baseline study will be evaluated by the simulation and verification of SIMAP simulator in 2014.

In the presentation, the authors would like introduce the configuration of KISOS and applicability to the seafloor observation for the gas hydrate test production in the Ulleung Basin. This work was financially supported by the the Ministry of Knowledge Economy(MKE) and Gas Hydrate R/D Organization(GHDO)