Mud gas monitoring for hard rock drilling

*Takamitsu Sugihara¹, Moe Kyaw Thu², Kan Aoike¹

¹CDEX/JAMSTEC, ²ODS/JAMSTEC

Mud logging in a riser drilling operation has been a powerful tool in scientific drilling. Since fast and safe drilling are minimum requirements in the deep drilling operation, it is generally difficult to conduct continuous coring to obtain geological samples (rocks and fluid). Therefore, cuttings surveys and mud gas monitoring in mud logging are essentially important in the riser drilling for scientific research. Some hard rock drilling operations using the Chikyu have been planned (e.g., IBM, MoHole). Since continuous coring in the hard rock drilling is technically more difficult compared to the drilling for sedimentary rocks, slow rate of penetration results in consuming much of operation time, the cuttings survey is a unique approach for lithological characterization in the hard rock drilling. In addition, fluid sampling from hard rock core is also difficult, even if core sample is obtained. Thus, the mud logging is especially important for the hard rock drilling, not only minimizing operation time but also maximizing scientific result. In this presentation, we will introduce current technology of advanced mud gas monitoring and discuss on potential of the mud gas monitoring for the hard rock drilling.

Keywords: Mud logging, Hard rock drilling, Mud gas monitoring, Formation fluid