

## Mud logging in hard rock drilling

SUGIHARA, Takamitsu<sup>1\*</sup> ; MOE KYAW, Thu<sup>2</sup> ; AOIKE, Kan<sup>1</sup>

<sup>1</sup>CDEX/JAMSTEC, <sup>2</sup>ODS/JAMSTEC

Mud logging in a riser drilling operation has been powerful tool in the scientific drilling. Since fast and safe drilling are minimum requirements in the deep drilling operation, it is generally difficult that continuous coring is carried out to obtain geological sample (rocks and fluid). Therefore, cuttings survey and mud gas monitoring in mud logging are essentially important in the riser drilling for scientific research. Some hard rock drilling operations by using the Chikyu have been planned (e.g., IBM, MoHole). Since continuous coring in the hard rock drilling is technically more difficult as compared with the drilling for sedimentary rocks and 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 logging and discuss on potential of the mud logging for the hard rock drilling.

Keywords: Mud logging, Deep drilling, Hard rock drilling, Riser drilling, Mud gas monitoring, Cuttings