Learning Lessons is Key to the Success in Future Scientific Ocean Drilling

*KYAW MOE[1]

1. Japan Agency for Marine-Earth Science and Technology

Most of scientific ocean drilling (IODP, ODP) expeditions fall in deep (>300 m water depth) and ultra deepwater (>1500 m) environments which are designated in oil and gas industry as most complex and high risk areas to operate and cost three times more than shallower water depths. Three key factors play in deepwater project management- time, cost and quality and hence those programs drill fewer wells while maximizing well information extraction.

Over five decades of deepwater drilling experience, scientific ocean drilling pioneered in offshore drilling technology ahead of oil industry at the beginning, however industry progressed later in offshore exploration and production with bigger rewards from higher oil prices and long term production. In 2005, D/V Chikyu was built in hope of overcoming seismogenic zone drilling challenges with riserless drilling. Key lessons learnt from the 12 years of operations include deep seismic imaging, operation under high current, borehole instability and geomechanics, operation efficiency with best use of technology, coring in faster rate and better quality, clean sampling for microbiology analysis.

While IODP operators are struggling with drillship maintenance and operating cost, oil and gas industry has been transforming in speed into digitalization and developing new technologies to maximize efficiency in time and cost as well as for safety. Within the limits, IODP operators developed and tested new or better tools and techniques in imaging, sampling, measurement and analyses and drilling optimization. To continue challenging into the ultra deepwater targets, IODP needs to work closely not only with International Continental Drilling Program but also with industry R&D portfolio in exchange of deepwater experience.

Keywords: IODP, ICDP, Deepwater Drilling Technology and Challenges

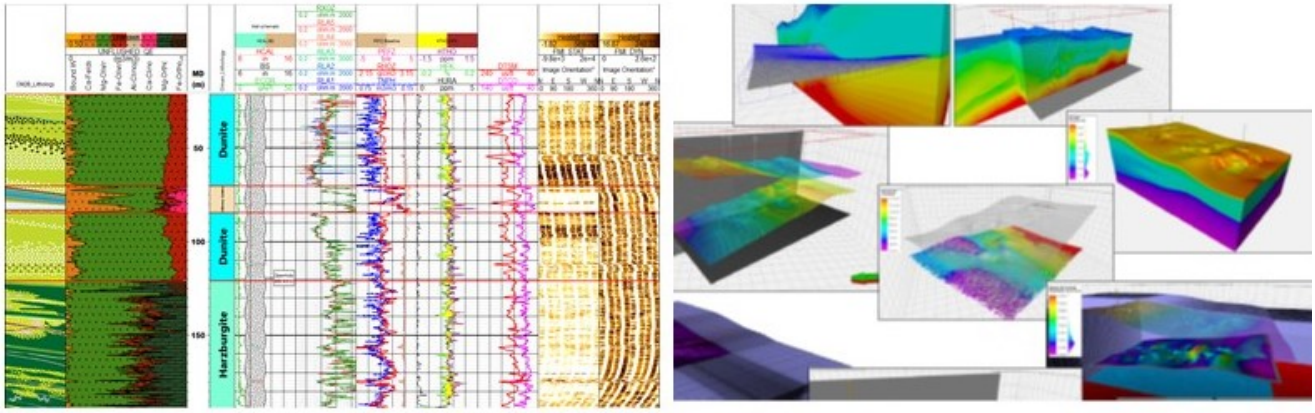

Figure. Use of new technology from industry in scientific drilling, elemental wireline logging data compared with core analyzed XRF and XRD (left) and 3D Geophysical and geomechanical modeling (right).

