

Recent Operational and Scientific Achievements of D/V *Chikyu*

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March 11, 2011 witnessed historic disaster cause by Off Tohoku mega-earthquake and tsunami totaling close to 20,000 casualties in NE Japan. D/V *Chikyu* was damaged by tsunami at Hachinohe-port but in April 2012, the ship was back to operation for the purpose of drilling the toe of the Japan Trench fault zone in which the topographic survey suggested 50m eastward displacement, the largest earthquake rupture ever recorded. The *Chikyu* in IODP Exp. 343 and 343T, drilled 850m from 7,000m water depth and recovered highly brecciated shear zone composed of pelagic clay stone. Installation of thermistor string was successfully completed in order to recover the record of frictional heating. This campaign established the record of the longest drill pipe used for scientific ocean drilling and demonstrated the capability of ultra-deep water drilling of the *Chikyu*.

The main purpose of riser drilling off Hachinohe (Exp.337) was to study deep subsurface biosphere in various sedimentary units including Paleogene-Neogene coal beds. It is expected that finding and recovery of microbes may able to open the door to new method of CCS (carbon capture and storage) and reproduction of methane from injected carbon dioxide. The *Chikyu* reached 2,466m below seafloor making the record of deepest penetration and sample recovery in the history of scientific ocean drilling. The hole-stability provided by riser technology enabled them to retrieve high-quality wire-line logging data as well as well-preserved core samples through rotary drilling.

Currently the *Chikyu* is conducting riser drilling at the Nankai Trough under the 2-4knts Kuroshio Current (Exp.338). At this moment landing of BOP at well-head was successful and logging while drilling operation is about to underway. The entire riser operation under this level of strong current has never been conducted. The *Chikyu* faces one of the most challenging drilling environments.

The year 2012 will be known as the first step of the full use of the *Chikyu's* capability for scientific purpose. In this presentation I would like to also review the past achievements of the *Chikyu* including Nankai Trough seismogenic zone and Okinawa Trough hydrothermal expeditions and future perspectives in the context of broader geo-bio science based on the planned workshop in April 2012.