

Sea Trials of the New ROV *ABISMO* to Explore the Deepest Parts of Oceans

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ABSTRACT

In JAMSTEC an 11,000-meter class ROV called “ABISMO” (Automatic Bottom Inspection and Sampling Mobile) is being developed. “ABISMO” means an “abyss” in Spanish. The main purpose of ABISMO is the sediment sampling in the deepest sea bottom. The ABISMO started developing in April 2005. The sea trials have been carried out in January, August and December 2007. We challenged 9,760-meter depth that was the deepest part of Izu-Ogasawara Trench. And ABISMO recorded 9,707-meter dive. Furthermore, we succeeded in sediment sampling of the sea-bed at water depth 9,760 m by a core sampler of the ABISMO.

KEY WORDS: Launcher; vehicle; deepest sea; sea trials; explore; core sampling.

INTRODUCTION

The 11,000-meter class remotely operated vehicle (ROV) “KAIKO” (Kyo, Miyazaki, Tsukioka and Ochi, 1995) which was owned by Japan Agency for Marine-earth Science and Technology (JAMSTEC), had shown successful results on scientific research of the deepest sea. However in 2003, the vehicle of KAIKO was lost by the break of the secondary cable that connected the launcher and the vehicle (Momma, Watanabe, Hashimoto and Tashiro, 2004 etc.). JAMSTEC have developed the alternate ROV KAIKO7000. Later, KAIKO7000 was reconstructed to KAIKO7000II (Nakajoh, Murashima and Yoshida, 2005 etc.).

The other side there is strong demand for exploring of the deepest parts of the ocean. Especially the old KAIKO showed excellent result on the field of the bacteria. Many bacteria had been found in the mud sampled from the Challenger Deep of the Mariana Trench by the old KAIKO. In JAMSTEC an 11,000 meters class ROV called “ABISMO” (Automatic Bottom Inspection and Sediment Mobile) is being developed. “ABISMO” means an “abyss” in Spanish. The main purpose of ABISMO is the sediment sampling in the deepest sea bottom. Fig.1 shows the picture of ABISMO.

As mentioned, the purpose of ABISMO development is to reach the deepest depth and for test bed of the next generation vehicle.

The ABISMO consists of 4 major parts:

- 1) an On-board equipment (Fig.3) on “KAIREI” (Fig. 2)
- 2) Launcher (a Sampling station)
- 3) Vehicle (a Sediment probe)
- 4) Samplers (Gravity corer or Smith Macintyre type sampler)

The system configuration is the same as KAIKO7000II except sampler. The ABISMO is smaller than KAIKO7000II. Launcher (a Sampling station) launches and recovers the vehicle and the sampler. Lower part of the launcher is a cage for housing the vehicle. It fixes the vehicle during descent and ascent.

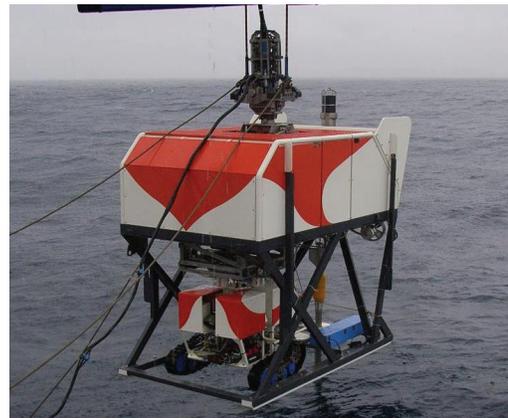


Fig. 1 Visual appearance The 11,000 meters class ROV “ABISMO”



Fig. 2 The research vessel “KAIREI”