

Video-camera apparatus for tiny bubble observation in deep water

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Submarine gas hydrate investigations were conducted extensively in the Sea of Okhotsk by the joint Russian-German project, KOMEX followed by the international project, CHAOS (a joint effort among Japan, Russia, Germany, Belgium and Korea). Echograms obtained at the continental margin offshore Northeastern Sakhalin, Okhotsk Sea show many characteristic flare images, which quite possibly reflect gas bubbles emitted from the seafloor. Gas hydrate bearing sediments have been sampled in these flare areas. The KOMEX project performed sea-bottom surveys to observe gas bubbles visually by using the video-camera equipment. However, no bubble image was obtained in deep water, although the equipment was supposed to be kept within a flare zone. Possible explanations for this might be either because the equipment was not kept in a flare zone, or due to the extremely small size of gas bubbles for the equipment setting.

A special video-camera apparatus for a bubble size of 0.01 to 0.1 mm was designed and constructed at the New Energy Resources Research Center, Kitami Institute of Technology, Japan. The apparatus constructed was tested at Lake Baikal, and successfully recorded near-bottom particles (the particle size of about 0.1 mm) at a water depth of 1400 m. This apparatus could be used to detect tiny bubble emissions in deep water if exist.