PRECISELY COORDINATED MULTIPLE SAMPLING IN CLOSE VICINITY OF UNDERWATER OBJECTS

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ABSTRACT

The task is an issue from establishment of Standard Operational Procedures (SOP) for sampling sediments in concordance with the requirement for characterization of sources of chemical pollutions.

There is large number of brought to light underwater objects which could contain warfare gases, among those ship wrecks with unsettled shipment and much smaller objects which could be chemical bombs, rounds, or containers detectable by either sonars and/or magnetometers. All types of these objects must be distinguished from natural rocks by means of ROV, and then as sources of potentially dangerous substances by sampling sediments for complex chemical analysis. To obtain reliable conclusion for identification of chemicals, position of sampling points must be linked with the highest accuracy with respect of the examined object. The presentation explains the design of sampling instrument and the principle of exact positioning of sampling points.

Owing that we are not free for choosing research vessel with the best standard dynamical positioning system, a realistic decision for the Baltic dump sites was found based upon a small boat keeping and changing its position step by step by siding over ropes attached to two or more anchors, their weights correspond to available mechanisms of the boat. To get a number of samples for a reasonable time, the lowered instrument represents a system containing 6 small independent grabs remotely controlled from the surface by cable under supervision of video and sector sonar. The video camera is installed on the sampling device, it confirms every sampling event, while the sonar provides exact distance&azimuth from the object. The system was successfully tested on Zodiak from RV Oceania and prepared now for further exploitation from a plastic motor boat available for autonomous navigation.