

FINAL TECHNICAL REPORT
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SNAG Calibration Experiment-Buzzards Bay

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ABSTRACT

The Office of Naval Research, under an Accelerated Research Initiative in ULF/VLF noise, supported the construction of a fleet of 31 Ocean Bottom Seismographs of new design. These instruments utilize an external sensor so that mechanical noise generated by the internal recording device and by water flow will be separated from the sensing package. The external sensor also allows the contact area of the sensor package to be easily modified to optimize coupling of the sensor with the sea floor. This grant supported seafloor tests of coupling and noise transfer characteristics in Buzzards Bay, MA. Specifically, it supported engineering manpower, travel and shipping of equipment from San Diego, CA to and from the experiment site. Analysis of the data was supported under another grant.

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NARRATIVE

The instruments are described in two papers by Sauter and others, 1990, and Jacobson and others, 1991.^{1,2} The Ocean Bottom Seismometer consists of a structural plastic frame which carries several pressure cases. Two large cylinders contain the acquisition electronics and recording system. The inertial sensors are mounted externally in a sphere. Two EG&G acoustic releases are used for attachment of the anchor and for communications.

This grant supported the shipping of two acquisition packages (electronics and pressure case) and support computer from San Diego to Woods Hole, MA. Supporting personnel were LeRoy M. Dorman, Professor, and Allan W. Sauter, Assistant Specialist, from SIO. The instruments were set up and checked out in the WHOI OBS laboratory, John Hallinan, supervisor. The instruments were operated from the R/V ASTERIAS, operated by WHOI. The instruments were operated in a tethered configuration from ASTERIAS. The tether was a multiconductor cable carrying a serial link and power. The SIO support computer provided the shipboard communications link. Data were recorded in the computer memory in the computer in the acquisition package and transferred through the serial link to the shipboard support computer, where the data were recorded on 1.2Mbyte flexible disks. The data were also displayed on the support computer as a check on data quality.

The field test were conducted on 7 and 8 November, 1989. During these tests, 62 records were obtained. The results of the tests are contained in the final technical report for grant N00014-89-J-1635 of A. Trehu.³ A publication is in preparation under the authorship of A. Trehu and G. Sutton.

References

1. Jacobson, R. S., Dorman, L. M., Purdy, G. M., Schultz, A., and Solomon, S. C., Ocean Bottom Seismometer Facilities Available, *EOS, Transactions of AGU*, 72, 506-515, 1991.
2. Sauter, A. W., Hallinan, J., Currier, R., Barash, T., Wooding, B., Schultz, A., and Dorman, LeRoy M., A New Ocean Bottom Seismometer, *Proceedings of Conference: Marine Instrumentation '90*, 99-104, Marine Technology Society, 1990.
3. Trehu, Anne, Investigations of the Seafloor Coupling characteristics of the new ONR OBS and Related Questions. Final Technical Report for grant N00014-89-J-1635, Oregon State University, Corvallis, OR, p. 31, 1992.

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