

Final Report, Office of Naval Research
Grant N00014-97-1-0076

Research Described in Proposals Entitled
BASS Measurements of Bottom Currents and Stress in the North Sea

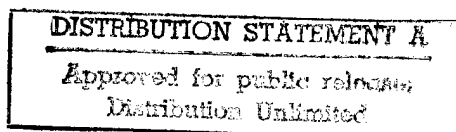
Fredrik T. Thwaites and Albert J. Williams 3rd
Applied Ocean Physics and Engineering Department
Woods Hole Oceanographic Institution
Woods Hole, MA 02543
(508) 289-3351

This is the final report covering ONR grant N00014-97-1-0076 titled "BASS Measurements of Bottom Currents and Stress in the North Sea". Two deployments of a Benthic Acoustic Stress Sensor (BASS) tripod were successfully made off Scheveningen, The Netherlands, in support of the NATO mine burial exercise. The spring systems test was a deployment from 1 May 1997 to 12 May 1997. The November deployment lasted from 11 November 1997 to 1 December 1997. The BASS tripod measured current, turbulence, waves and stress at three heights above bottom, temperature at seven heights, optical backscatter at five heights, and conductivity and pressure at one height above bottom.

Both deployments were successful. The May deployment sampled all these variables every 0.34 seconds for the entire duration. The November deployment sampled every 0.43 seconds, slightly slower than in May, so that the 340 MB hard-disk data logger would not fill up before the end of the deployment.

Data from each deployment along with .m files (for the Matlab environment) to process the data into meaningful engineering units were recorded on CD-ROMs and sent along with a data report to Richard Bennett of Seaprobe Inc. and Carlos Mercado of Presearch Inc. The CD-ROM for the November deployment also included 7 minute 10 second means of statistics of flow and stress in both .mat file format and ASCII to allow a user to load and observe processed means of the entire deployment duration.

Both deployments were essentially problem free. On the May deployment, the redundancy of BASS was required for one sensor height while the others had excess redundancy. The November deployment had excess redundancy for all sensors. Six-of-eight thermistors on the May deployment and seven-of-eight thermistors on the November deployment produced



reliable data, confirmed during calibration, and these reliable thermistors were placed where measurements were needed. Redundancy in each case allowed essentially perfect measured data. For the November deployment, the tripod top was modified to allow tripod assembly inside the Rijkwaterstaat building, as in November in Scheveningen, the days are short and the weather is often inclement.

We would like to thank Ad Stolk and the Rijkwaterstaat for their help on land and aboard the M. V. Mitra. The M. V. Mitra is a very capable boat for deploying equipment. We thank Seaprobe for a couple hours of labor given to us when two people were needed for lifting and assembly of the tripod. This allowed WHOI to only send one person for the deployments thereby saving travel money.

Both data sets are clean and should help in understanding the wave and current forcing on the sediment during the NATO mine burial experiment.

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Department of Applied Ocean Physics & Engineering
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543-1053
Fax: (508) 457-2194

July 23, 1998

Dr. Joseph Kravitz, Code 322GG
Office of Naval Research
Ballston Centre Tower One
800 N. Quincy Street
Arlington, VA 22217-5660

Dear Dr. Kravitz:

Enclosed is the final report for ONR grant N00014-97-1-0076, entitled "BASS Measurements of Bottom Currents and Stress in the North Sea," Principal Investigators: Fredrik T. Thwaites and Albert J. Williams.

Please let me know if you need any further information.

Sincerely,

A handwritten signature in dark ink, which appears to read "Fred Thwaites", is positioned above the printed name.

Fredrik T. Thwaites

cc: D. Rideout, Administrative Contracting Officer
Director, Naval Research Laboratory
Defense Technical Information Center ✓
M. Tavares, Grant and Contract Services
AOPE Department Office

FTW:sjb