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Marine Physical Laboratory

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Arctic Ambient Noise

Final Report Prepared for
the Office of Naval Research
Contract N00014-89-D-0142 (DO#7)
Principal Investigator: William S. Hodgkiss

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ARCTIC AMBIENT NOISE

Principal Investigator: W.S. Hodgkiss

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Final Report
Office of Naval Research
Contract N00014-89-D-0142 (DO#7)
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Period of Performance: 1 January 1990 - 31 December 1990
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Objective:

Analysis of Arctic ambient noise data taken in a 1988 experiment carried out by DREP.

Background:

In 1988, the (Canadian) Defense Research Establishment Pacific carried out an Arctic ambient noise experiment. A 24-element vertical array was deployed as well as several individual sensors at various horizontal ranges from the vertical array.

Summary of Results:

Selected segments of the data set were requested and obtained from DREP. These included quiet periods and active periods (various types of ice cracking events). A number of analyses were performed on the data including: (1) time series plots, (2) time-evolving power plots, (3) power spectra of the individual hydrophones, and (4) narrowband and broadband beamforming of the vertical array data.

In general, it was found that the arctic ambient noise levels in this data set varied over a large range depending on the number of ice cracking events. These levels ranged from lower to higher than normally observed NE Pacific deep ocean data. The beamformed data was revealing in that it indicated the presence of a number of transient events that appear to be related to ice cracking activity.