



FY 99 Progress Report on the Real Time Tsunami Detector System

April 28, 1999

The D-145 mooring that was deployed in September 1998 operated for 86 days with 96.3% data return during that period. The transmissions stopped on 26 December 1988 with no apparent degradation of the signal or data prior to termination. Since that time the RV THOMPSON and RVWECOMA have passed by the site and have reported the aluminum tower was completely missing from the buoy. At this time we must assume the problem was vandalism or theft, although a post recovery inspection of the buoy deck and attachment points may give additional clues. Recovery is planned for June 1999.

Although encouraged by the excellent performance of the buoy, a great deal was learned in the effort. The few missing data points have been carefully studied and we have taken steps to minimize these losses and increase the robustness of the entire system. Specifically, a new GOES transmitter and a 40-watt amplifier have been tested and accepted, yielding a significant increase in received signal strength. Buoys with dual acoustic modems, micro controllers, power systems, and antennas are being developed. This total redundancy should provide greater data return from a single buoy.

Data is transmitted from the buoys via the GOES satellite to a Direct Readout Ground Station (DRGS) that was installed at PMEL. The software package that was delivered with the system has given intermittent problems since installation and the vendor has been unable to make the necessary fixes. A new software utility was written to control the receivers and capture the data as it arrives. This system is working in parallel with the original computer and is also being compared with the the same data that is received by NESDIS at Wallops Island, VA.

FOR THE NEXT DEPLOYMENTS

An engineering mooring complete with these upgrades will be deployed off Monterey Bay in May 1999 for a 6-month test. The results of this experiment will be used to finalize the details of 4 moorings that will be deployed in the North Pacific in September/October 1999. Additionally, an ambitious experiment is planned for deployment at OWS PAPA in the fall to evaluate the acoustic modem performance. An adaptive modulation scheme with ambient sound monitors will be left over the winter to gain knowledge of the sound path, power, coding, and other engineering parameters over varying environmental conditions and direct applications to this

project. (This has not been done before and will hold information that we would use now if we had it.)