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7900-rpt

CRUISE REPORT

R/V CIONA, May 16, 1979

MBL Dock and Return

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Cruise Report, R/V CIONA, May 16, 1979

Operational Area

Vineyard Sound, approximately 1 NM SE of Elizabeth Islands from Nonamesset Island to Tarpaulin Cove (Naushon Island)

Navigation

OBIP drop site was that of site 1, May 2, 1979:

41^o29.6' N lat
70^o41' W long

Site was located using ship's radar and fixed land references (chart 13230 Buzzards Bay).

Objective

The purpose of this cruise was to specify and confirm that bottom currents were in fact causing the high noise levels seen in earlier tests (see Cruise Report, R/V NEECHO, May 2, 1979) and could be ascribed to either eddying effects or actual rocking of the instrument.

Summary

At the drop site, 2 OBIPs were free-fallen 30m to the bottom and marked with a surface buoy. Current was entering a slack condition. Two divers descended to observe how the OBIPs had impacted the bottom, check their stability, and to note the bottom topography. Bottom conditions were noted as very hard with a shallow sand/gravel layer upon which there was a profusion of small (up to fist-size) rocks. In this zero bottom current condition, the OBIPs were steady but easily disturbed as they sat on many small rocks. There was no noticeable impact impression.

With the divers aboard, a 4 mile SW refraction line was initiated from the site, running parallel to Naushon Island. Forty foot lengths of primer cord were exploded after sinking to the bottom at five minute (1/4 mile) intervals. Surface current at the site was slack at the outset.

Upon return over the site 2 hours later, the surface current was a maximum of 2.5 kts. The divers descended to observe the OBIPs and noted perceptible movement with no settling having occurred. Bottom current was estimated in excess of 1.5 kts.

Many attempts failed to release OBIP channel 3 using the acoustic command system. Channel 6 released on the sixth try, with degraded communication noted. Repeated attempts to release #3 were abandoned when the deck unit appeared to fail altogether.

The divers returned to the bottom a third time to recover the OBIP, where it freed itself at initial touch. All gear was recovered and the CIONA returned to the dock.

Conclusion

OBIP 3 had responded to command (this was unclear at the time due to degraded communications) but was snagged on the anchor bale because of an installation error. A minor redesign of the anchor bale will preclude a reoccurrence.

The deteriorating acoustic link was attributed to a depleted power supply in the command unit.

Deployment on a hard rocky bottom that affords little impact impression to couple the OBIP will require the addition of a weighted tripod adaptor to fit the concrete anchor. This configuration will retain the advantages of stable free-fall and good coupling and protection on soft bottoms.

Data playback confirmed OBIP movement due to local current effects. Early refraction shots were recorded until current induced noise levels masked incoming signals.

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