Report Prepared by Marsh J. Youngbluth

HAWAII UNDERSEA RESEARCH LABORATORY (HURL)

QUICK LOOK REPORT MISSION NO.

MISSION STATUS

Location: Dive 047, Offshore of Barbers Point, SW Oahu, Hawaiian Islands

Mission Date: 2 February 1988, 0900-1530 h, Terry Kirby (pilot)

Maximum Depth: 800 m

Project Title: Vertical Distribution and Abundance of Pelagic Zooplankton

Project Leader: Dr. Jeannette Yen

Address: Department of Oceanography
University of Hawaii
Honolulu, Hawaii 96822

Phone: 808/948-7772

Observer: Dr. Marsh J. Youngbluth

Address: Harbor Branch Oceanographic Institution (HBOI)
5600 Old Dixie Highway
Fort Pierce, Florida 34946
305/465-2400

Scientific Data Acquired: Prepare an abstract outlining your objectives, techniques, findings, etc.

My objectives were twofold: 1) document the vertical distribution of of zooplankton, particularly the gelatinous groups and 2) interface to the PISCES V submersible, the equipment needed to photograph and collect pelagic animals.

During this dive there appeared to be two zones of abundance for appendicularians, 0-250 m and 600-700 m. Associated with these zones were notable increases in the number of globs, strings and sheets of mucoid matter up to 30 cm OD. We had the impression that the background density of small, 1-2 mm-sized particles, changed with depth. The largest concentration seemed to be at 640 m. Quantification of particle abundance will require the installation of a transmissometer or nephalometer to the submersible. Only a few zooplankton were seen again on this dive.

Euphausiids began to appear at 400 m. Cyclothone spp. fishes started at 440 m. Recorded first sight of the midwater ctenophore lobate Bathocyroe fosteri at 500 m. Photographed some mucous sheets and one medusa (Solmissus sp.) at 600 m.

At 800 m we observed a behavior that we had not seen before. A small (2-3 cm bell diameter) hydromedusa autotomized its bright orange tentacles when exposed to the bright light of the submersible. The tentacles extended about 8 cm below the bell and broke away right at the lower margin of the bell. We could not determine if the tentacles were bioluminescent.

The event of the dive was the appearance of a pelagic sea cucumber at 800 m. The bottom depth was 1100 m. These animals are supposed to live near the sea floor, feeding on resuspended sediments. The swimming behavior of this animal was video-taped and then it was captured with the suction sampler. Preliminary inspection of the video record and the preserved specimen suggests that this animal is an undescribed species, perhaps an undescribed genus.

The lack of pan control for the video camera and the inability to thrust vertically limited our water column productivity. We had to spend an inordinate amount of time to record the swimming behavior and then even longer to capture a very slow moving animal. The specimen was damaged by the suction sampler. Had we been able to move vertically, the animal could have been collected intact with one of the detritus samplers.

On replay of the tapes from all of the dives (#045-047) on this cruise, we noted more "ghosting" than normal, small particles appeared as comets. These records suggest that the Osprey camera may be defective.

In summary, three of six scheduled dives were completed. The work accomplished with the PISCES V indicated clearly that the submersible has the potential to be adapted for research in the water column. The Mar Ops staff from HURL provided the assistance that we needed and we look forward to working with them again. The support vessel R/V KILA was adequate as a tender to haul the launch and recovery platform but only for operations close to shore. The ship's crew was very helpful. For cruises which will require work offshore or in areas remote from shore-based facilities, a larger vessel with considerably more space for scientific activities, submersible maintenance and equipment storage will be essential.