HAWAII UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT MISSION NO. P5- 550

MISSION STATUS

Location: South Point, Marker 4

Mission Date: Dec 8, 2003

Maximum Depth: 1042 m

Project Title: Microbial Glass Alteration

Principal Investigator: Dr. Hubert Staudigel

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Observer 1: Alexis Templeton **Co-Pilot:** Max Cremer

Address: Scripps Institution of Oceanography

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

At the start of the day, we had hoped to visit Loihi for one more dive, to explore the Naha vents and find Kaupo vents for a new study site; however, the winds had picked up to above 30 knots and we turned for South Point in the early morning. Then the goal of this dive was to refind Marker 4 just off of South Point, established on PIV-078 (Nov. 17. 2002), and to retrieve SIO exposure experiments and deploy new SIO and WHOI exposure experiments. This dive also served as a training dive for Max under the supervision of Terry Kerby. In addition, the PBS crew wanted to film to launch and recovery of the PV to simulate their Loihi dive the previous day.

The objective was to drop us to the north of Marker 4 and contour at 893 m to find the site, rather than start deep and come up the large feature/point that was our original target last year. We hit bottom at 1042m in the middle of a crinoid field at 9.58am at 18.58.410, 155.54.116 and were given a heading of 075 for 750m to reach the target. We were surrounded by shrimp, starfish, shark, and a monkfish. We stayed put for the next half hour adjusting the trim and letting Max and Terry call back and forth to the KOK to restage their Loihi Dive for the PBS crew filming in the tracking room. We then moved to 893m and contoured to the east across a forest of crinoids attached to basalt boulders. Rattail fish were suddenly abundant in the water as we moved across the slope towards a steep wall of broken pillows with thick oxidized surface layers. The pillows were covered with white corals, crabs and huge sponges. Although this outcrop looked very promising for the location of the study site, we didn't see the Marker and kept going (it later turned out that this was just a few meters below the site).

We called the KOK for range and position several times as we passed through alternating sandy and rocky areas, but never seemed to be closer than 200 m to the site and kept changing direction, so we stuck to the contour depth of 893m. We must have been moving around large features because we found ourselves moving west with the slope on the left, which is essentially backwards for this side of the island! Max was convinced that the earlier feature must have contained the study site and Alexis remembered that there was an offset in the depth readings for the Pisces 5 vs. 4, which Terry calculated to be about 3 m from our Loihi dive late last year. Since we were in the P5, but the last dive here was in the P4, we moved up to 890 m and returned along our previous path. As we reached the steep pillow wall again, we reentered a biological oasis of coral and fish. Looking downslope to the left, Marker 4 was immediately visible. We pulled back from the steep cliff for a frontal view and could see Marker 4 sitting on top of a steep wall – and 4 black SIO charges scattered down the wall. White WHOI charges from last year were nowhere to be seen.

We moved directly to Marker 4 at 890 m and deployed 2 SIO charges (SIO 61, 62) and 2 WHOI charges (WHOI 21, 2). We then moved backwards to see SIO 29 and SIO 30 downslope, which we left in place since they seemed stable. We dropped down to 893 m and picked up SIO 25 and SIO 28 from the sides of the cliff and then kept backing up blindly, trying to look downslope for the missing WHOI charges. We dropped as low as 937 m, where there's a steep talus slope, and to the north as well, but only saw white coral, not white charges. The next visit should probably start low, looking for these charges on the way up to the Marker, but for this time, we gave up. However, returning back to 890 m we noted that the huge white coral (paragorgia) we saw earlier serves as a very good landmark for just below the site.

We then moved just to the SE of Marker 4 and collected 3 scoops in a row, first a shallow scoop, then a deeper scoop, and then Max did a test shallow scoop (S1, S4, S2 respectively). Terry then attacked a small boulder with crinoid on top and extracted 3 small pieces of highly weathered basalt (X1, X2, X3). We then moved slightly further northeast (by just a meter or so) and collected a broken pillow with large oxidized rind (X4). At this stage our mission goals were complete and we had 15 minutes to explore before leaving bottom. We decided to return to Marker 4 to move upslope from the site. As we returned to Marker 4, we noted that the current was pushing the marker deep into the sediment, and as we were looking, we got too close to the newly deployed charges. Max used the thrusters to back off, but we were heavy with rocks and the thrust threw sediment all over the charges and blew them off the cliff! So we pulled off the cliff and looked back, found 3 of the 4 new white charges and picked them up and placed them slightly below Marker 4, where they would be more protected (just like SIO 29 and SIO 30 still in place from last year). After one more pass around, we found the final new SIO charge down low near the talus slope, recovered it, put it back with the other 3, took pictures of the final setting and left bottom at 3.46pm.

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

none

Recommendations for corrective action or improvement:

Need to see if we can find bathymetric data for this area/site

In your opinion, did the mission essentially achieve its purpose? Compare actual work accomplished with the work that was expected to be accomplished.

Yes, we were able to refind the site (M4), collect SIO charges and deploy SIO and WHOI charges. The currents seem to be strong here (likely why there's such an abundance of coral) and the charges are easily thrown down the cliff, which led to the loss of last year's WHOI charges and might well be repeated again.

List specimens or samples collected on the mission.

Collected:	SIO 25 and SIO 28 Scoops 1, 4, and 2 (all same location) Rock 1, 2, 3 (same outcrop) and Rock 4 (pillow)
Deployed:	SIO 61, 62 WHOI 21, 2s

DATA RELEASE

Data may be retained by the project leader for up to 2 years after the mission date with the following exception. NOAA may request to use photos for publication or publicity purposes at any time.

Fill in the appropriate statement below and sign this form.

I hereby release the data archived by HURL for public consumption following mission

_____(project title)

held on December 4, 2003 (date) in the following way:

a. CTD data by_____(date)

b. voice transcripts, video, and still camera film by December 2005 (date)

c. other_____(date)

d. I will give my written consent to individuals wishing to use these data prior to the above dates depending on the nature of the request(s).

_____Principal Investigator