HAWAII UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT MISSION NO. P5-410

MISSION STATUS

Location: LOIHI SEAMOUNT, HAWAII. PELE'S PIT + HUGO SITE.

Mission Date: 10.28.98

Maximum Depth: 1329m

Project Title: HURL DIVES

Principal Investigator: ALEXANDER MALAHOFF

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Observer 1: JOHN R. SMITH

Address: HURL

~~**Observer 2:**~~ Pilot

Address:

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

The goals of this ambitious dive were to survey and sample along the east wall of Pele's Pit, then motor to the HUGO site and recover the emergency battery pack and hydrophone before returning to the surface. All these goals were met.

We found a slightly deeper spot (1329m) than recorded in the Pit before. This was along the southern wall near the "spillway". Some of the recently discovered vent sites were re-measured for temperature and found to be slightly warmer. Major water samplers were used to collect water from 2 of these sites, and the basket Niskin at a 3RD area of more diffuse venting.

(over)

Several geologic features which may pose a hazard to future science ops were surveyed and video/stills taken. We looked at the "chock stone". This is a large block which has fallen down and slid into place. It is not tightly wedged, but doesn't appear to be ready to slide farther. It forms an overhang with vigorous venting underneath, however, it is not possible to safely sample these vents.

We also survey the Lohiau vents at 1255 m on a pillar jutting out from the pit wall. At the junction of the pillar with the wall one can see vigorous venting that is undercutting the wall. Eventually, this vertical face will be subject to failure.

A thorough survey was performed as we left the pit along the east wall above "chock stone" area and new Marker #7 site (upslope from #43). Kept hearing landslide noises on UQE that we did not cause. This slope is extremely steep and vertical in some places. It consists of old truncated pillow ridges and talus blocks which are precariously perched and in place for no apparent reason! Perhaps they are "glued" in place by hydrothermal clays/material.

We found several areas of venting/bacterial mat not seen before, though all venting was diffuse. The most interesting such areas were at 1248 + 1265 m. These were termed "pipe-cleaner" vents and consisted of 10-30 cm high straw-like chimneys growing out around areas of very fresh talus (no sediment cover). There was faint venting from the tips.

- My recommendation: The "chock stone" poses no danger to the Jet vents site, but there is no need to revisit it since the water cannot be sampled. However, the east wall is steep and composed of precariously perched material and we heard → next pg

landslides occurring while on the slope. ~~Taking~~ Sampling below the slope at Jet Vents area could be hazardous if an earthquake occurred. It would be interesting to revisit the "pipe cleaners" site, though any attempt to sample the chimlets or water will destroy these unique features. The vent areas are rather

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MISSION EVALUATION: Small in extent.

Limitations, failures, or operational problems noted:

SOME NISKIN BOTTLES DID NOT CLOSE COMPLETELY.
SOME FAILURES WERE SAME ONES AS ON PS-409.
PISCES THRUSTER TILT INDICATOR BROKE DURING DIVE.
Ti-MAJOR WATER SAMPLERS SHOULD BE MAINTAINED BETTER, POSSIBLY ASSIGNED TO ONE OR TWO SPECIFIC HURL PERSONNEL.

Recommendations for corrective action or improvement:

- IMPROVE NISKIN BOTTLE SAMPLER.
- VIDEO RECORDS SHOULD HAVE CONTINUOUS DISPLAY OF TIME, DEPTH, HEADING INCORPORATED.
- STILL CAMERA SHOULD RECORD AT LEAST TIME. (DEPTH WOULD BE NICE, IF POSSIBLE.)
- CONSIDER ADDING A DIGITAL STILL CAMERA

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

YES, ALL GOALS COMPLETED.

OBJECTIVES WERE TO:

1) SURVEY RECENTLY DISCOVERED AREAS ON EAST END OF PIT ~~THAT~~ MAY POSE HAZARDOUS TO FUTURE SCIENTIFIC MISSIONS.
2) COLLECT WATER SAMPLES FROM NEW VENT SITES,
3) COLLECT WATER SAMPLES AT REGULAR INTERVALS WHEN LEAVING BOTTOM, LIKE A MANNED TOW-YO CAST.
4) ~~SEE~~ EXPLORE NEW AREAS ALONG EAST WALL FOR FUTURE SCIENCE OPS
5) RECOVER HUGO BATTERY PACK + HYDROPHONE

List specimens or samples collected on the mission.

NO ROCKS COLLECTED,
17 NISKIN BOTTLES FIRED.
2 TITANIUM MAJOR SAMPLERS TAKEN.
RECOVERED HUGO BATTERY PACK + HYDROPHONE.

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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_____(date) in the following way:

a. CTD data by_____(date)

b. voice transcripts, video, and still camera film by_____(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

For Alex to sign