HAWAI'I UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT
DIVE: P5-597

MISSION STATUS

Location: Loihi Seamount

Latitude: 18° 54.467 **Longitude:** 155° 15.730

Mission Date: 10/22/04 **Duration:** 8 hours 48 mins

Maximum Depth: 1326 m

Project Title: Temporal Evolution of Loihi Seamount Geochemistry Across a Major Tectonic-Volcanic Event

Principal Investigator: Frank Sansone

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Observer 1: Eric Heinen De Carlo **Observer 2:**
Address: Same as above **Address:**

Pilot 1: Terry Kerby **Pilot 2:** Steve Price

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

Objectives:
The primary obsjective of this study is to document the recovery of the Loihi hydrothermal system and its associated biological communities after the major volcanic-tectonic event of 1996 and to determine the temporal and spatial scales over which these changes occur. The continuation of this research as the seamount cools from the 1996 volcanic-tectonic event will provide insights into processes and fluxes that may have been previously unknown or theorized. In addition, the importance of our study is amplified by the increasing awareness that submarine volcanoes are important to global biogeochemical fluxes. Finally, the resulting greater understanding of the temporal variability of CO_2 release by Loihi hydrothermal vents will be valuable for predicting the role of hotspot volcanism on global CO_2 cycling; this is particularly important in light of the very high CO_2 found in Loihi vent fluids.

Observations, findings, etc:
Landslides have significantly altered the seafloor at a number of locations within Pele's Pit. One result, in addition to the loss of markers 20, and 48 (deployed during previous HURL sub operations) reported in the Dive PV-695 quick look report, is that marker 37 is no longer present. The extremely skillful navigation by pilot Kerby, however, allowed relocation of all these sites and deployment of a new marker (38) at the site of old marker 37. Addionally, a new marker 39 was deployed at the top of what had been previously dubbed Hiolo Ridge, at new sampling site established during this dive. This site is now dubbed Upper Hiolo Ridge. Vigorous venting was observed from multiple locations within a few meters of each other on Upper Hiolo Ridge and experiments were deployed at several of the vents. Venting continues at the old Boiling Pot site, although the venting is now diffuse as fluids must traverse through a layer of sandy silt and talus before reaching the seafloor. As during Dive PV-596, a variety of samplers were deployed at different active venting locations. Exploration of the south side of the spillway revealed that venting at this location has now ceased. A very large dike of about 50 m height and a few meters width remains although it appears that surrounding rock has mass wasted leaving a precarious vertical (and likely unstable) wall in place.

At both venting sites occupied during this dive, samplers were used to collect vent fluids for chemical analysis. Other samplers, for microbial analyses, and temperature recorders were deployed at the sites and will be recovered during subsequent dives.

Species list:
None

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

None

Recommendations for corrective action or improvement:

HMI lights would significantly increase the resolution of the still and digital imagery, as it would allow the cameras to operate at larger f-stops.

Also, a digital still camera, mounted above the basket, with remote pan, tilt, and zoom, would be extremely useful.

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

All dive objectives were met.

List specimens or samples collected on the mission.
Samples collected: 2 titanium “majors” samples, 2 titanium gas-tight “Lupton” samples, 2 Niskin samples (one failed), 6 suction “rosette” samples, 3 rock samples

Samplers/Experiments deployed: 4 bacteria traps, 1 shrimp trap, 2 slide traps, 2 miniature temperature recorders

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 October 22, 2006 (date) in the following way:

a. CTD data by October 22, 2006 (date)

b. video and images by October 22, 2006 (date)

c. other October 22, 2006 (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