HAWAII UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT MISSION NO. P5-xxx

MISSION STATUS

Location: Vailulu'u Volcano (14º12.87'S 169º 03.58'W)

Mission Date: July 5, 2005

Maximum Depth: 809m

Project Title: Bio-Hydro-Lithosphere Interactions at Vailulu'u Seamount

Principal Investigators: Dr. Hubert Staudigel & Dr. Craig M. Young

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Observer: Professor Craig Young **Observer 2:** none
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Scientific Data Acquired: Prepare an abstract outlining your objectives, techniques, findings, etc.

The dive began on the flanks of Nafanua volcano. We reached the bottom at a depth of 809m then ascended the summit of Nafanua volcano, where the main objective was to capture eels using newly designed "butterfly nets." One eel was found in a trap deployed the previous day and 5 specimens were captured in the nets. We were careful to observe organisms on the bottom and in the water column. Two polynoid polychaetes were collected on the side of Nafanua (761 m) and a number of red shrimp were observed near the eels. When the captured eels were later dissected, we found that the shrimp constitute the major (indeed only documented) food source. Upon completion of the eel collection, we transited through the water column to the area inside the southwest breach, then filmed a video transect from a depth of 825m to the breach. The most remarkable faunal features of this slope were dense aggregations of small "q-tip" sponges that began about 750m. The water on the inside was very clear, apparently cascading down from the breach. Numerous living synaphobranchid eels were observed on this slope. At the breach summit, we deployed microbial collectors (charges) and picked up a current meter with the intention of moving it to the Southeast summit. This was eventually not done because of

rough terrain and poor visibility. We moved east at a depth of 750 m, surveying the bottom with video. All fauna disappeared after a very short distance and this reduction in fauna coincided with a dramatic reduction in visibility. Most of the dive was spent navigating in and out of small, rugged box canyons. During this transit, we discovered an area of small finger chimneys and another area of larger (1-m high) iron oxide chimneys. We measured a sub-surface temperature of 25.3 degrees C at a depth of 728m in an area of thick bacterial mats. The southeast breach did not have good visibility and appeared to be an area of outflow from the volcano. Very few organisms were present here, and the difference in sponge density between the two breaches was dramatic.

Dive P5-645

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

Equipment worked well and the pilots were superb. When we were moving in poor visibility water, the tracking room allowed us to bypass the SE breach waypoint by more than 300m before they offered a course correction. This caused some loss of time.

Recommendations for corrective action or improvement:

No recommendations.

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

List specimens or samples collected on the mission.

2 polynoid polychaetes
5 eels
Numerous small sponges
5 sea anemones
Microbial mat

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

Bio-Hydro-Lithosphere Interactions on Vailulu'u (project title)

held on July 5th, 2005 (date) in the following way:

a. CTD data by any (date)

b. voice transcripts, video, and still camera film by July 5th, 2007 (date)

c. other rock samples by July 5th, 2007 (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).

Hubert Staudigel and Craig M. Young Principal Investigators