HAWAI'I UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT (QLR) for *Pisces* and *RCV-150*

DIVE: *Pisces 4:* 161

(*Extend length of sections as needed/appropriate*)

MISSION STATUS

Location: Loihi summit

Latitude: 18° 56.438 **Longitude:** 155° 15.541

Mission Date: 10/8/2006 **Duration: 9** hours 0 mins

Maximum Depth: 1215 meters

Project Title: Loihi's volcaniclastic deposits: Interpreting explosive submarine eruptions

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Pilot 1: Terry Kerby **Pilot 2:**

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

Objectives:

Our objective was to revisit and sample deposits at two localities from dives 401 and 404, which had been interpreted as products of explosive eruptions. These samples and those from sister dives will be used for analysis of size distributions amongst vesicle (bubble) and crystal populations in the erupted basalt to establish the history of ascent and degassing of the magma in comparison to subaerial Hawaiian and Strombolian eruptions.

Observations, findings, etc:

We first landed at site I from dive 404 (N 18º 56.438; W 155 º 15.541) and confirmed that there is no primary pyroclastic material here- simply areas where volcaniclastic sand has been caught in topographic lows- between lobe or in collapse holes.

We next visited site J, which, on the basis of outcrop features, is the most promising deposit to-date. This site contains a succession of fine-coarse lapilli beds (rare bombs) with weak rhythmic bedding. The deposits appear clast-supported with abundant 1-4 cm clasts.

The first sample collected at Site 1 at 1113m (N 18º 56.159; W 155 º 15.422)is badly affected by hydrothermal alteration to clay, and probably will not be useful. This is sample *P-4-161-1A.*

We then collected two excellent samples 8 m apart. In this area the deposits are essentially fresh and with abundant lapilli-sized clasts. Rare fluidal small bombs (8-10 cm diameter) were visible on the surface, but were exceptionally fragile and could not be collected. These are *P-4-161-2A* and *P-4-161-2B.* Each sample was scooped into a series of three containers in a bio-box, with no cross-sample contamination. Samples were collected over an area of c 30 x 50 cm and to the depth of a scoop, say 10 cm. Depths were 1140 and 1141m respectively and the location is N 18º 56.117; W 155 º 15.495.

We then started a long traverse to Site D from leg 401. En route, we stopped at a previously undescribed, well bedded sequence in which brown mud layers alternated with grey-black beds of coarse ash to lapilli size (N 18º 56.117; W 155 º 15.541). One of the latter was sampled at 1123m. In the laboratory this samples proved to be dominated by dense sub-rounded basalt pebbles probably derived from a lava flow and then re-deposited as a mass flow. The Hugo cable is very close to this site and 6 meters deeper.

The final visit was to site "D" which is a high near-vertical sequence of predominantly pillow lavas, alternating with m-thick intervals of bedded volcaniclastic units with cm-sized clasts. Outsized pillow fragments occur in the volcaniclastic units. We sampled at the base of the steep section (N 18º 56.358; W 155 º 14.855) in one clastic unit. The sample is *P4-161-1A.*
This site will be revisited on dive 162.

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

None.

Recommendations for corrective action or improvement:

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

The dive was highly successful and met our short-term objective. The current sampling strategy proved 100% successful. We were able, using the open scoop, to transfer large samples (2-3kg) of loose volcaniclastic material to be stored in numbered compartments a bio box. This process gives significantly larger samples than the valved sediment scoops, which were also totally successful. This will open up the possibility of doing grain size work in addition to our stated purpose of getting material for studies of size distributions for vesicle (gas bubble) populations.

List specimens or samples collected on the mission:

bulk samples of uncompacted pyroclastic material for vesicularity work:

P-4-161-1A	previous site J
P-4-161-2A	previous site J
P-4-161-2B	previous site J
P-4-161-3A	new site
P-4-161-4A	previous site D

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. Video and images 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