HAWAI'I UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT
DIVE: P5-696

MISSION STATUS

Location: West Twin Bank, NWHI

Latitude: 24° 23.976 **Longitude:** 166° 04.359

Mission Date: 11/08/2007 **Duration:** 7 hours 36 mins

Maximum Depth: 1580 m

Project Title: Deep Ridges and Seamounts in the NWHI

Principal Investigator: Christopher Kelley

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Observer 1: John R. Smith
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Observer 2:
Address:

Pilot 1: Steve Price

Pilot 2: Terry Kerby

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

Objectives:

The primary objective of this dive was to examine the geology of the unnamed seamount 30 miles north of French Frigate Shoals. Complete multibeam mapping was carried out before and after this dive during the entire four dive series. The other three dives are focused on the biology. A promising dive spot was located from the previous night's multibeam mapping. The dive took place on a ridge that appears to be a rift zone on the northern flank of the seamount. The ridge continues beyond the mapped area and *Pisces* diving depth. In the SeaBeam data, the ridge has several isolated high points both on and off axis (cones) and several reentrants on its sides that may indicate flank failure. The plan was to drop in at 1502 m and continue upslope as far as possible, collecting rock samples from a suitable range of depths, make continuous verbal observations of geological features and contacts, and take photographic and voucher samples of biological specimens of interest to the project.

Observations, findings, etc:

Most rock samples were not broken open during the cruise because of the lack of a rock saw and the samples were not that large in general. Breaking them open with a hammer here may pulverize some of the samples. From previous cruises and dives in the NWHI, many of the Mn-coated cobbles are some type of sedimentary conglomerate or breccia consisting of various materials including chunks of basalt. They often appear highly altered (orange coloration).

Regarding the geological observations along transect, they were of moderate success. No truly outstanding outcrops were found, nor were anything that was obviously volcanic in nature seen. Samples were all loose cobbles rather than in place specimens from a pillow outcrop or columnar basalt/dike. The seafloor was mostly hardpan pavement, probably a veneer of Mn-crust, with interspersed patches of talus/cobbles. Minimal white sediment patches were found, and just a light but incomplete dusting in general was observed. An approximately 30° slope was evident at the landing site, and this was typical throughout the dive; possible slightly steeper in the reentrant near the end of the dive.

Geomorphologic/volcanic/structural features investigated (in order) included what appeared to be a volcanic cone (pinnacle), saddle point, smaller scale ridge, arm chair-like reentrant resulting from flank collapse, and an isolated high (cone?) on a side ridge that perhaps originated by collapse reentrants on either side of it. We had hypothesized that the “valley” reentrant would allow deeper penetration into the volcanic feature, but this did not really pan out as it was just a steeper surface covered with the same hardpan, light sediment, some but few loose cobbles, and largely devoid of biological cover. Right at the end of the dive, ascending the slope to the isolated high, we came across a rich and dense garden of small coral trees (ping/red corallium?) and sponges at 1477 m water depth.

Species list:
I defer to the indefatigable Dr. Kelley and his able associate Janie Culp.

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

1) Titan Manipulator worked OK throughout the dive, but produced some odd gyrations on its own as well as chattering in the jaw which makes collection of delicate samples difficult.
2) Sodalime CO_2 scrubbing material may not be entirely effect as I had a headache after the dive.

Recommendations for corrective action or improvement:

1) Need a complete overhaul of the Titan 7F system or a completely new manipulator.

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

Yes. However, extra time was required for the pilot training aspect that decreased the transect length accomplished. This was largely due to inexperience with collecting samples using the manipulator and some inefficiency on transiting on a specific heading and depth contour.

List specimens or samples collected on the mission.

Five (5) official rock specimens, 1 ballast rock collected at site 1, along with 2 additional ballast rocks from site 1 that could not be jettisoned at the end of the dive because they had shifted too far to the rear of the basket. All samples but one were manganese coated cobbles, subangular to rounded. None were collected from an outcrop; all were loose on the bottom on gently sloping terrain.

Four biological specimens were collected. A small piece of a large branched pink/flesh colored coral (*isidid*?), a *nirella*-like coral with a *crinoid* attached, a dead (white) bamboo coral stump, and small pink/red coral (*corallium*?) with 3 brittle stars and a *primnoid* attached.

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 P5-696 (Megafauna of Deep Seamounts and Ridges in the NWHI Monument)

held on 11/08/07 (date) in the following way:

a. CTD data by 11/08/09 (date)

b. video and images by 11/08/09 (date)

c. other 11/08/09 (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