HAWAI'I UNDERSEA RESEARCH LABORATORY

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

DIVE: ___P5-750_____

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

MISSION STATUS

Location: __Penguin Banks 3-fingers region_____

Latitude: _21__° _00.255' N__ **Longitude:** _157_° _22.374' W_

Mission Date: **__20-Oct-2010_____** **Duration:** **__8__** hours **_7_** mins

Maximum Depth: ____228_____ meters

Project Title: __ The Glacial Sea Level Lowstand Shoreline In the Hawaiian Archipelago _

Principal Investigator: __Fletcher-Rubin_____

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Phone: __808-946-5434 (Rubin)_____

Observer 1: __Rubin_____ **Observer 2:** ___Fletcher_____

Address: ____(see above)_____ **Address:** ____(see above)_____

_____ _____

_____ _____

Pilot 1: ___Terry Kerby_____ **Pilot 2:** _____

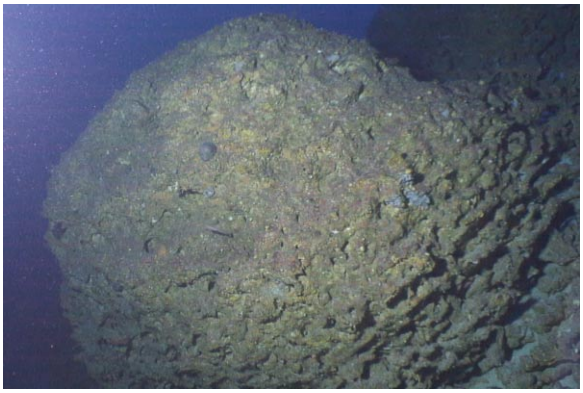
Scientific Data Acquired: Prepare an abstract outlining your objectives, techniques, findings, etc.

Objectives:

To find and date shoreline features, primarily coral reefs, associated with the last glacial maximum, ca. 20,000 yrs BP in order to constrain the age and depth of sea level at the last ice age. We anticipate sampling corals and other carbonate materials that serve as sea-level position indicators known to grow within definable limits of their contemporaneous sea-level position.

Observations, findings, etc:

Good outcrops of well-preserved reef rock were observed at the target sites and anticipated depths, and high quality *in situ* samples were recovered. A deep fossil reef complex of uncertain age was observed and samples at ca 230 m depth on the headland of a submarine peninsula west of the launch site. A nearly continuous carbonate rock slope of uncertain age was climbed and sampled through 172m. Multiple samples of fossil corals still sitting in clear growth position were taken at 136m depth. We expect the latter, and perhaps some of the samples reaching down to 150m to be from the Last Glacial Maximum, based on observations we made in 2006 aFossil reef material of clearly younger age was encountered at 165m depth as tge dive traversed northward along the west-facing side of the peninsular feature. Numerous large fossil coral heads were observed here and on a gently swallowing transect north and west along the topography up to 130m depth. Fossil heads were far more abundant, some quite large (up to 10m tall), and much of the topography appeared to be constructed of fossil reef material. Further west along the dive transect some fossil heads consisted of preserved upper surfaces that were undercut in their interiors, forming visors. The dive climbed to 100m atop a small, flat-topped mound to observe encrusting fossil corals at 125m depth populated with modern mesophotic reef organisms, transitioning into mostly living organisms on a sandy/rocky substrate at shallower depths. The dive then descended the slope on a southerly heading and observed the same features in reverse, until 185m depth, where the bottom became sandy, and remained that way to a depth of 228 m. The main difference between dive 750 and dive 749 the prior day was the slightly deep depths of the apparent LGM fossil reef and far more extensive coverage.

Large, fossil coral heads, nearly completely intact, at ca 150 m depth. Both heads are >5m tall and similarly wide, and presumed to be LGM aged. Samples were recovered at both outcrops. Images are frame grabs from the high-def. video obtained during the dive.

Observed Species list:

Various bottom fish, sea whips, algae, and corals.

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

Controller for Titan IV manipulator stopped working about 4.5 hours into the dive, effectively putting an end to sample (although one additional sample was taken with the other arm). After a half hour of work by terry to stabilize the basket and arm, the dive

returned to its objectives, with the latter part of the dive being was mostly devoted to visual observations

Recommendations for corrective action or improvement:

None.

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

Accomplishments matched expectations. The dive covered a full anticipated track length and then some. The sub and pilot performed admirably.

List specimens or samples collected on the mission:

15 samples of coral/carbonate reef rock, numbered P5-750-1 through P5-750-15

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):

The Glacial Sea Level Lowstand Shoreline in the Hawaiian Archipelago

Held on __10/18/2012_____ (date) in the following way:

a. CTD data by _____ (date)

b. Video and images by __10/18/2012_____ (date)

c. Other _10/18/2012_____ (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
Ken Rubin, for Chip Fletcher

(note: co-PI Rubin is the point-of-contact for the project while Fletcher is a SOEST Associate Dean)