HAWAI'I UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT
DIVE: P4-265

MISSION STATUS

Location: Gardner Pinnacles

Latitude: 24°49.900 N **Longitude:** 167 ° 51.938'W

Mission Date: Oct. 23, 2011 **Duration:** 8 hours 15 mins

Maximum Depth: 446 m

Project Title: Evidence for Miocene and Younger Glacial/Deglacial Climate Variability from Drowned Coral Reefs around Gardner Pinnacles

Principal Investigator: David Clague

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Observer 1: Juan C. Braga
Address: Univ. Granada

Observer 2: Charlotte Humphrey
Address: Univ. Manchester Metropolitan

Pilot 1: Max Cremer

Pilot 2:

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

Objectives: Collect reef samples from coral reefs surrounding Gardner Pinnacles that drowned in the Miocene to determine amount of post-volcanic subsidence and climate variability during the Miocene approximately 12-15 million years ago. Collect basalt samples to date the island using modern techniques.

The dive site was to the E of Gardner Pinnacles, along a canyon cutting the slope at the eastern side of the seamount, from -446 to -150 m. We ascended up through the canyon following the base of the wall of its northern side. The wall was composed of carbonate which we sampled at regular points along our route. At the head of the canyon we came to a wall rising up from -150 m to -110m. We sampled large blocks at the base of the wall, also composed of carbonate. The wall was steep and there was not any suitable place to sample. On reaching the top of the wall we continued along a gently sloping surface that was covered in white carbonate mud/sand and occasional carbonate rubble/rhodoliths. The rhodoliths became more common and more densely distributed upslope up to an outcrop at -50 m. We collected rhodolith samples at several points along the way. The outcrop was composed of limestone, we collected several samples from this outcrop. We collected 20 carbonate rock samples the majority of which were broken off outcrops and in-situ. We

also collected 5 rhodolith samples from the seafloor. A living coral sample was collected from - 211 m water depth.
The survey was planned to sample the Miocene to Pleistocene reefs and related deposits from -446 to -50 m. It was also planned to sample living coralline algae.

Observations, findings, etc:

There were regular outcrops of carbonate rock throughout the dive. There were two major terraces at -400 m to -150 m and from -150 m to 110 m. An additional minor terrace outcropped at -60 m to -50 m. The top surface of the Gardner Pinnacles seamount is partially covered with rhodoliths.

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

The right-hand manipulator jammed open early on in the dive and could not be fixed.
We had some problems with positioning due to differences between dive tracking and the direction we followed.

Recommendations for corrective action or improvement:
Recommend continuing to use the bags of drop-shop weights at sites where it is uncertain if dense “ballast rock” samples can be collected at the beginning of the dive.

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

Yes. We sampled the interval surveyed. We expected to find Miocene-Pleistocene reef carbonates exposed in the walls of the canyon and the major terraces encountered.

List specimens or samples collected on the mission.
20 carbonate rock samples were collected. We made 5 collections of rhodoliths. One sediment scoop, 1 coral, and the invertebrates attached to the rock samples.

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)

a. CTD data by Oct. 29, 2011 (date)

b. video and images by Oct. 29, 2011 (date)

c. other Oct. 29, 2011 (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).

David Clague Principal Investigator