HAWAI‘I UNDERSEA RESEARCH LABORATORY

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

DIVE: ___P5-798_____

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

MISSION STATUS

Location: __ Wai‘anae scarp west of Barber’s Point, Oahu _____

Latitude: _21° _17.11’ N__ **Longitude:** _158° _13.49’ W_

Mission Date: **__16-Dec-2012_____** **Duration:** **__3__** hours **_49_** mins

Maximum Depth: ____1750_____ meters

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

Principal Investigator: __Fletcher-Rubin_____

Address: __Dept. of Geology and Geophysics, Univ. of Hawaii_____

__1680 East West Rd_____

__Honolulu, HI 96822_____

Phone: __808-946-5434 (Rubin)_____

Observer 1: __Ken Rubin_____ **Observer 2:** ___Haunani Kane_____

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

_____ _____

_____ _____

Pilot 1: ___Max Kremer_____ **Pilot 2:** _____

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

Objectives:

There were two objectives of this dive: (1) to observe, sample and date a possible shoreline feature at the top of a steep scarp face off of Waianae volcano. (2) to observe the basaltic substrate of that feature. Our primary interest is sampling coral reef material or littoral deposits containing carbonate fossils that serve as sea-level position indicators. These might include shallow coral species, beach rock, coralline algae, mollusks, etc. Bathymetric maps of the region

indicate the presence of shelves, walls and other large-scale features that are likely to host potential sample targets. Our secondary interest is to obtain samples of the basaltic substrate to determine their age, composition, and relationship to the growth history of Waianae volcano and the landslide event(s) that subsequently removed large quantities of the edifice.

Observations, findings, etc:

Good, small relief outcrops of what appeared to be consolidated, bedded carbonate sands on a gently westward sloping platform were observed at shallow elevations near the start of the dive. This region was riddled with waste munitions and unexploded ordinance. The slope break to deeper terrain founf on a near vertical "wall" of rock was uneven in depth, steepness and lithology. No obvious littoral deposits were observed at or near it.

Collectively these observations suggest that the slope break is not a paleoshoreline feature, but rather is associated with the headwall of a mass wasting event of the Waianae volcano. The nature of outcrops deeper than the slope break likewise are consistent with this interpretation, with steep faces of largely in-place, subaerial basalt flows interrupted by flatter areas debris (that often occurred in poorly sorted, loose boulder fields or gravel/boulder conglomerates), subsequently cut by steep, sub-parallel pocket gullies. Many of the observed sedimentary boulder units contained rounded clasts suggestive of rounding during down-slope transport.

The dive worked its way to the north along a rock spur that was nearly perpendicular to the main face the steep escarpment, to a location where the slope break was shallower. We observed multiple dikes, some >1m thick, mostly trending either 060-240 or 150-330 degrees. The former is sub-parallel to the orientation of the rock spur. The dikes appeared to cut both lava flow and conglomerate units, but this point will need to be verified by careful review of the dive tapes. Several small outcrops of horizontally bedded, fine-grained material were observed in shallower elevations that proved difficult to sample. It is unclear if these were local pockets of sediment, or something that could be correlated over larger distances.

Observed Species list:

Various bottom fish, crinoids, .

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

a. Had to surface early due to trim tank taking on water.
b. drop point was pretty far from initial target features.
c. dive location was limited by two sub operation

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 reasonable bit of ground and depth range, despite the short bottom time. The sub and pilot performed admirably.

QLR continued

List specimens or samples collected on the mission:

5 samples of basaltic rock were taken

time	depth m	lat	long	sample number	basket	notes
1222	1744	21° 16.843	-158° 14.480	P5-798-R1	forward-port	small rock knob from strong outcrop (hard to sample). Mn Coated
1253	1743	21° 16.895	-158° 14.504	P5-798-R2	forward-port	rubbly outcrop with angular and rounded fragments
1305	1728	21° 16.964	-158° 14.526	--	no sample	lower density, chalky rock. Several huge rocks too large to take came off the outcrop then fell apart. Took pictures.
1308	1728	21° 16.964	-158° 14.526	P5-798-R3	forward-stbd	Moved around until wer got a smaller, competent rock, which looks like basalt
1329	1699	21° 16.788	-158° 14.418	P5-798-R4	forward-stbd	
1350	1660	*21° 17.024*	*-158° 14.505*	P5-798-R5	aft-port	2 pieces of clastic rock. Friable, hard to sample. (some broke up and washed away during sub recovery); *approx pos. from depth, heading, and last fix on map*

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 __12/16/2013_____ (date) in the following way:

a. CTD data by _____ (date)

b. Video and images by __12/16/2013_____ (date)

c. Other _12/16/2013_____ (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 now that Fletcher is a SOEST Associate Dean)