HAWAI'I UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT
DIVE: P4-243

MISSION STATUS

Location: Proposed HSWAC Pipe Route, South of Honolulu

Latitude: 21° 13.382' N **Longitude:** 157° 51.925' W

Mission Date: March 28, 2011 **Duration:** 6 hours 17 mins

Maximum Depth: 559 m

Project Title: Survey of the Proposed HSWAC Pipe Route

Principal Investigator: Christopher Kelley

Address: HURL

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Observer 1: John R. Smith
Address: HURL

Observer 2: Scott Higa
Address: Honolulu Seawater Air Conditioning, LLC
7 Waterfront Plaza
Suite 407, Box 124
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Honolulu, HI 96813

Pilot 1: Max Cremer

Pilot 2:

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

Objectives:

To survey the proposed Honolulu Sea Water Air Conditioning (HSWAC) pipe route starting at the intake position at 544 m and ending at the point the route reached a depth of 250 m. *Pisces IV* was tasked with surveying a 40 m wide corridor east of the pipe route while *Pisces V* (P5-767) was tasked with surveying a 40 m wide corridor west of the pipe route. Observers were asked to locate, identify, and video-document objects of concern along the pipe route which would include large disposed or fired ordnance such as depth charges, sea mines, 500+ lb aerial bombs, and torpedoes, as well as large carbonate outcrops, boulders, or metal wreckage. These objects could pose a risk to the successful installation of the pipe and their presence could require the route to be altered.

Observations, findings, etc:

The survey was completed as planned. No large ordnance or other objects of concern to HSWAC were observed along the pipe route. Smaller ordnance objects observed and documented included M1 30 lb chemical bombs, M47A2 mustard agent bombs (one is splayed open with agent fully exposed), artillery projectiles (including possible Mk 13 16 inchers), mortar shells, and an aerial rocket or missile (?) not in HURL's current ordnance identification manual. There were some cylindrical units that may be Mk 6 or Mk 8 350 lb depth charges. All ordnance objects observed were clearly old and in advanced states of corrosion. Most of the cylindrical units appeared hollowed out and empty.

A number of large carbonate boulders and dredge spoil deposits were observed in the survey corridor, particularly along the upper third of the survey area. Boulders were approximately 10 m wide x 1.5 m high, 20 x 4 m, and 9 x 3 m. HSWAC will have to determine if these were outcrops previously mapped and already accounted for in their pipe lay plan. Additionally, a metal frame was found near the intake site, debris from what appeared to be a disassembled airplane (including a wing), rectangular objects that may be stacks, packs, or crates of indiscernible items, square objects that looked like car batteries, an old automobile farther up the route, some large looping cable hawsers, and a couple ~6" diameter metal pipes extending 6-10 ft vertically (or nearly so) out of the seabed. Some areas were more concentrated in debris (ordnance and/or other) while other areas were largely devoid of any contacts. HSWAC and their contractors, Makai Engineering, will need to evaluate the potential risk these objects and their density pose.

No particularly unusual animals or great densities were found along the pipe route. Deepwater coral was observed on one carbonate boulder. HURL biologist Christopher Kelley was noting the animal species encountered from *Pisces V* and can provide HSWAC a list from both submersible upon request at a later date.

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

The high intensity HMI light on *Pisces IV* was not working for this dive. Failures in the power converters prior to the dive required use of all spares to get the HMI on *Pisces V* working. Thus, the video record from *Pisces V* will be somewhat less well illuminated than that from *Pisces V*.

The digital depth output in *Pisces IV* was noted to be 3 m deeper at the beginning of the dive than the more accurate analog gauge, thus a -3 m correction should be applied to reported depths on the audio and onboard digital (computer) record. Later in the dive (time 1221, depth 502 m) it was noted the true depth = digital depth.

After processing the submersible tracking data, a westerly offset of approximately 20 m was noticed on both the *Pisces IV* and *V* tracks, which presently cannot be explained. This problem could be in the TrackLink system, the underlays created for the IPS system, the Fugro AUV sidescan data, or some problem during the data processing. Of interest, was an approximately 13 minute segment of the dive where both subs remained stationary on the bottom while the ship was required to maneuver out of the path of a barge entering

Honolulu Harbor. During this period, the tracking positions were clearly affected by the movement of the ship and were scattered by as much as 25 m. Therefore, the ship position relative to the submersibles could explain at least part of the tracking offset.

Recommendations for corrective action or improvement:

Maintain a larger inventory of HMI power converter spares for two-sub operations.

Determine why the true depth and digital depth differ only some of the time. How can a consistent offset be applied?

The source of the tracking error is presently being investigated. Once it's identified, it will be corrected.

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

Yes.

List specimens or samples collected on the mission.

None.

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 3/28/2011 (date) in the following way:

a. CTD data by 3/28/2013 (date)

b. video and images by 3/28/2013 (date)

c. other 3/28/2013 (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