

# NOAA Pacific Islands Fisheries Science Center

## Small Boat Mission Report

**Mission Number:** SB-09-05

**Operator-in-Charge:** Jeremy C. Taylor

**Small Boat ID/Type:** M/V *Huki Pono*

**Mission Title:** South Oahu Autonomous Underwater Vehicle (AUV) Survey

**Mission Area:** South shore of Oahu, Hawaii

**Mission Dates:** 15 November–21 November 2009

### 1. Objectives

Cruise objectives were to:

- 1) collect data with the newly acquired and installed Imagenex 837 Delta T Multibeam system,
- 2) test the feasibility of conducting joint AUV and BotCam deployments in collaboration with Prof. Jeff Drazen's team from the University of Hawaii Oceanography Department, aboard the M/V *Huki Pono*,
- 3) collect an initial set of data using BotCams and the AUV in the same areas to develop these as fishery independent stock assessment methods,
- 4) Collect imagery of benthic and demersal communities in mesophotic coral ecosystems using the SeaBED AUV.

### 2. Schedule

15 November Assembled the AUV and installed the acquisition electrics on the M/V *Huki Pono*.

16 November Science party performed pier side test including ballasting, heading checks, and maintaining specified depths.

17 November Deployed the AUV twice, testing the newly acquired multibeam near Honolulu Harbor over known feature (outfall pipe).

18 November Integrated BotCam and AUV off of Magic Island. Deployed AUV twice while deploying BotCams at four sites.

19 November Conducted coral investigation south of Oahu near Waikiki. The AUV

suffered problems while travelling against the current, and fail safe issues were discovered when the mission ended early.

20 November Integrated BotCam and AUV for the second time. Morning departure was delayed to troubleshoot fail safe issues. Extended our day to include the day plan of two AUV deployments and four BotCam drops.

21 November Disassembled and stored AUV and acquisition equipment.

### 3. Field Party

Name	Role	Organization
John Rooney	Chief Scientist	JIMAR
Jeremy C. Taylor	Vessel Operator-in-Charge	JIMAR
Jeffrey Anderson	Alternate Deck/Lab Leader	JIMAR
Elizabeth Clarke	AUV Team	NWFSC
Erica Fruh	AUV Team	NWFSC
Mary Yoklavich	Observer	SWFSC
Jeff Drazen	BotCam Team Lead	UH
Chris Demarke	BotCam Team	UH

### 4. Results

1. Data were collected in order to test the Delta T multi-beam equipment. The system appeared to function properly. Multi-beam data were sent to SAIC to help integrate the AUV multi-beam data with the current RESON 8101 and Kongsberg multi-beam data. The raw Imagenex 837 Delta T sonar get recorded in 837 format. SAIC has been contracted to develop a utility to enable converting raw 837 files to a GSF format to more easily integrate into existing multibeam processing methodologies.

2. Data were collected during two days of joint AUV and BotCam operations designed to test our ability to conduct joint operations aboard the *M/V Huki Pono*. Joint operations were found to be feasible, but the BotCams can be deployed and recovered in rougher sea conditions than the AUV, at least aboard the *M/V Huki Pono*. Still photos and CritterCam videos collected by the AUV will be compared to the BotCam videos collected at defined BotCam sites south of Magic Island, with the long-term goal of developing methods for using both tools for fishery-independent stock assessment.

3. Benthic and demersal coral reef ecosystem communities below conventional SCUBA depths were surveyed off the south shore of Oahu using the SeaBED AUV. Some data were collected during the missions, but the AUV experienced difficulty navigating against the current, possibly due to battery or thruster

problems. The AUV also failed to respond to recall signals. These problems are currently being investigated. Partly in response to these issues the deep Submergence Laboratory at the Woods Hole Oceanographic Institute (which designed and built the SeaBED) has agreed to send one of their scientists and a complete second SeaBED on an upcoming cruise to the Marianas.

**5. Attachments**

None.

**6. Approvals**

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John J. Rooney  
Chief Scientist  
Pacific Islands Fisheries Science Center

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Date

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Samuel G. Pooley  
Science Director  
Pacific Islands Fisheries Science Center

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Date

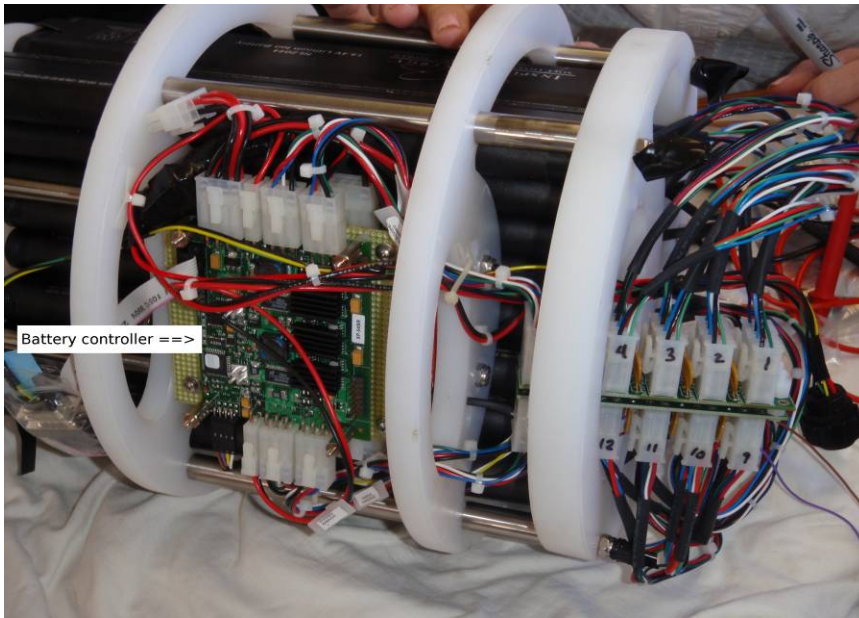


Figure 1.--Battery Controller.



Figure 2.--AUV's Thruster Shaft.