

December 23, 1996 F/SWC2:RWB:FLF  
CR9612-2.RWB

### CRUISE REPORT

**VESSEL:** *Townsend Cromwell*, Cruise 96-12 (TC-215)

**CRUISE PERIOD:** November 1-28, 1996

**AREA OF OPERATION:** Leeward coasts of Oahu, and Kona Coast, Island of Hawaii

**TYPE OF OPERATION:** Measurement of acoustic properties of the *Townsend Cromwell* and development of a new ultrasonic telemetry system for tracking large pelagic fishes.

#### ITINERARY:

- 2 November - Departed Snug Harbor, Honolulu and proceeded to area off Waianae Coast of Oahu. On board Bruce Deffenbaugh, Rachel Hatt, Carina Taxboel, Randy Chang, and Richard Brill.
- 2-4 November - Arrived Waianae Coast of Oahu. Performed range tests of VEMCO telemetry system. Completed fabrication of new tow body and performed static stability tests.
- 5 November - Moved to area offshore of Haleiwa to find lee from strong southerly winds. Picked up Frank Parrish from Haleiwa Small Boat Harbor and conducted and videotaped static stability and tow tests of new tow body. Returned Fran Parrish to shore.
- 6-7 November - Continued refinement of tow body design and refinement of bow harness for the new tow body. Departed for area offshore of Hawaii Kai to avoid increasing winds and large swell.
- 8 November - Continued refinement of tow body design and performed acoustic spectral measurements with

ship's main engines and generators on and off. Departed for Waianae Coast to avoid deteriorating weather conditions.

- 9 November - Arrived Waianae coast. Continued refinement of tow body design. Repeated acoustic measurements of noise produced by *Townsend Cromwell*. Tested deployment and retrieval procedures for bow towing of the new tow body. Began final fabrication of electronics housing section for the new tow body.
- 10 November - Disembarked Rachel Hatt and Randy Chang; embarked Kathy Cousins and Dan Curran from Barbers Point Deep Draft Harbor. Completed redesign and retesting of bow towing system.
- 11 November - Continued fabrication and testing of new hydrophone system and associated electronics.
- 12 November - Suspended all at-sea operations due to deteriorating sea conditions (20-35 knot winds, 1-2 meter seas). Returned to Snug Harbor, Oahu.
- 13 November - Remained at Snug Harbor because of continued adverse weather conditions.
- 14 November - Departed Snug Harbor, Oahu and proceeded to area off western shore of Oahu. On board were Richard Brill, Kathy Cousins, Tim Lowe, and Bruce Deffenbaugh.
- 15 November - Arrived area offshore of Lanikai, Oahu. Completed final fabrication and stability tests of the tow body. Continued fabrication of the new hydrophone system and associated electronics. Forced to return to Snug Harbor to effect repairs to one of the ship's main generators.
- 16 November - Remained at Snug Harbor to complete repairs to generator.
- 17 November - Departed Snug Harbor, Oahu and proceeded to area off southern shore of Oahu. On board were Richard Brill, and Bruce Deffenbaugh.
- 18-20 November - Completed final fabrication of the new hydrophone system and associated electronics, instrument pod for the tow body, waterproof electronics cable, and towing bridle. Performed towing stability and acoustic range

tests. Returned to Honolulu Harbor and tied up at Aloha Tower.

- 21 November - Held "open house" for visiting NOAA officials from Washington D.C. Departed for area off Kailua-Kona, Island of Hawaii. On board Richard Brill, Kathy Cousins, Bruce Deffenbaugh, Tim Lowe, Holly Shiels, Paul Shiota, and Carina Taxboel.
- 22-27 November - Arrived area approximately 10 miles off the Kona Coast, Island of Hawaii. Deployed longline gear twice (approximately 300 hooks each time) to test feasibility of future acoustic telemetry study of adult bigeye tuna (*Thunnus obesus*). The second longline set was at night and employed light sticks above each bait. Took tissue samples for various physiological/biochemical studies from all billfishes, tunas, and mahimahi landed. All remaining fish were released. Continued development of electronics and associated computer hardware/software for new telemetry system.
- 27 November - Departed for Snug Harbor, Oahu.
- 28 November - Arrived Snug Harbor. Off-loaded all scientific personnel.

#### **MISSION AND RESULTS:**

- A. Develop and test new acoustic telemetry receiving system including new tow body, hydrophones and associated electronics, and necessary computer hardware and software. Make acoustic spectrum measurements of noise produced by *Townsend Cromwell*.
1. Successfully completed fabrication and testing of new tow body, bow towing system, new hydrophone system and associated electronics.
  2. Completed fabrication of prototype new ultrasonic acoustic receiving system and associated computer hardware and software.
- B. Gather preliminary information with regard to feasibility of acoustic tracking project of adult bigeye tuna to be conducted off the Kona Coast of the Island of Hawaii.
1. Captured two bigeye tuna (one was eaten by sharks) during the second (nighttime) longline set. This supports the feasibility of a bigeye tuna tracking

project off the leeward coast of the Island of Hawaii.

C. General observations and miscellaneous activities.

1. Bird flock, fish schools, and marine mammal sightings were recorded by the ship's officers and crew during daylight hours when possible.
2. Standard weather observations were made at 0000, 0300, 0600, 0900, 1200, 1500, 1800, and 2100 (G.M.T.) each day as part of the SEAS project.

**RECORDS :**

The following forms, logs, charts, and data records were kept and given to the Honolulu Laboratory upon termination of the cruise. These include all data captured onto computer storage media during the cruise. All the records are filed there unless indicated otherwise in parentheses.

ADCP DOPPLER ping data files on 10Mb BERNOULLI disk cartridges  
 Deck Log - Weather Observation Sheet  
 Marine Operations Log (NOAA)  
 Occurrence of Birds, Aquatic Mammals & Fish Schools  
 Pacific Dolphin Project - Marine Mammal Sighting Form  
 SCS MicroVAX data files on magnetic tape  
 Station Number and Activity Log

**SCIENTIFIC**

**PERSONNEL:**

Richard W. Brill (Senior Fellow, Joint Institute for Marine and Atmospheric Research (JIMAR), School of Ocean and Earth Science and Technology (SOEST), University of Hawaii, Chief Scientist, National Marine Fisheries Service (NMFS), Southwest Fisheries Science Center (SWFSC), Honolulu Laboratory (HL)  
 Randolph Chang, Fishery Biologist, NMFS, SWFSC, HL  
 Paul Shiota, Fishery Biologist, NMFS, SWFSC, HL  
 Dan Curran, Research Associate, JIMAR, SOEST, University of Hawaii  
 Tim Lowe, Research Associate, JIMAR, SOEST, University of Hawaii  
 Kathy Cousins, Research Assistant, JIMAR, SOEST, University of Hawaii  
 Holly Shiels, Graduate Student, Simon Fraser University  
 Carina Taxboel, Graduate Student, University of Copenhagen  
 Bruce Deffenbaugh, Volunteer, Tuna Movements and Distribution Project, JIMAR, SOEST, University of Hawaii  
 Rachel Hatt, Volunteer, Tuna Movements and Distribution Project, JIMAR, SOEST, University of Hawaii

Submitted by:

Richard W. Brill  
Chief Scientist

Approved by:

R. Michael Laurs  
Director, Honolulu Laboratory

Attachment