



**NOAA Teacher at Sea**  
**Jill Stephens**  
**Onboard NOAA Ship *Rainier***  
**June 15 – July 2, 2009**

**NOAA Teacher at Sea: Jill Stephens**

NOAA Ship *Rainier*

Mission: Hydrographic Survey

Geographic Area of Cruise: Pavlof Islands, AK

Date: June 18, 2009

**Weather Data from the Bridge**

Position 55° 10.089'N 161° 52.801'W

Broken cloud cover

Wind variable and light

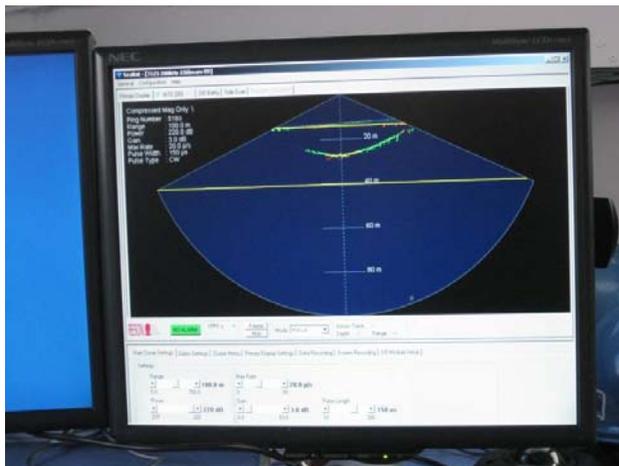
Pressure 995.9

Temperature: Sea; 6.1°C; Dry Bulb; 8.3°C; Wet Bulb; 7.8°C

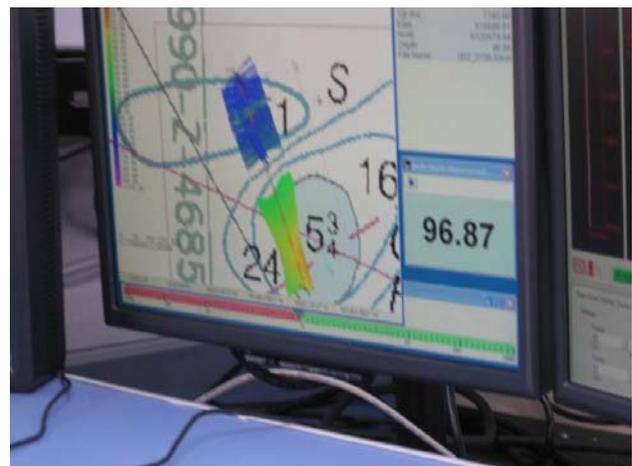
**Science and Technology Log**

The launch leaves the ship every day to go to spots within the survey area to collect data regarding the bottom for depth, possible anchorage sites and potential navigational hazards. Our boat was responsible for covering the long area referred to as the fairway, which is necessary in this uncharted area so that the launches can transit to and from the working areas safely, and move on to another area upon completion.

The inside of the cabin of the launch reminds me of *Star Wars*. There are pieces of electronic equipment everywhere! One of the survey team members sits in the command center to monitor and control the Reson collection and additional software that displays a 3-D image of the sea floor surface. As the coxswain pilots the boat over the surface of the water, low frequency sonar



The Reson monitor displays the sonar return captured by the receiver on the bottom of the boat.



The chart of the area is “painted” with color depicting the depth of the area based upon the return from the sonar. The goal is to “paint” your assigned area. The numbers in the lower right of the screen indicate the depth in meters.

is emitted from the transducers. The sonar hits the sea floor and is then bounced back to a receiver on the underside of the boat. The pings are recorded by the equipment and stored in the computer.



**The CTD is attached to a cable operated by a winch. The CTD acclimates to the water surface temperature before being lowered steadily to the bottom. The equipment is raised to the surface using the winch and then brought aboard. The CTD is connected to the computer for data retrieval.**

There are factors that affect the accuracy and quality of the information. Boat speed, conductivity of the water, pitch and roll, yaw, and tides must be accounted for in order obtain usable data. There is equipment on board that collects the pitch, roll, yaw, and geographic position information to correct merge with the data to make corrections. The CTD apparatus is placed into the water while the boat is stopped. The cast of the CTD will collect salinity, temperature, and pressure information at depths from the surface to the bottom. This information is also sent to the computer to provide a more accurate reading of the sonar data received by the Reson system. Casts of the CTD must be made a minimum of every

four hours to account for any changes between points in the survey area.

### **Personal Log**

Shawn, Todd, and Dennis were on my launch today. Once the equipment was powered up and the software programs selected, I was able to sit at command center and control collection and storage of data. The raw data is merged with the corrective information and submitted to Caris, another software program that also creates models of the findings. We were using a laptop to merge the data and begin field processing of the data. I was able to assist with this process too.



**Here I am manning the computers onboard the launch used to collect sonar depth and bottom information in the Pavlof Islands, Alaska.**

### **Animal Sightings**

This morning was a great day to see whales!! We spotted 5 blows! We were then able to see the whales



**Two whales surfaced near the survey launch early in the morning near Bluff Point in the Pavlof Islands.**

breach the surface at a distance. Three of the whales moved closer to us. There were two adults and a juvenile. The juvenile was very playful and kept poking his head above the surface. The two adults came closer to the launch and we were able to get some great shots of their bodies!! On the way back to the ship, we saw four more blows. Total sightings of whales: 9 Puffins as always are out there. They are very strange, somewhat silly birds....

### **New Vocabulary**

**Gain:** how hard an object is listening to the sound emitted by the sonar

**Sound Speed:** speed at which sound

is able to travel (This will vary in water depending upon the factors like salinity and temperature.)

**Absorption:** refers to how much of the sound is absorbed by the medium and varies with the medium's composition and other factors including temperature