



**NOAA Teacher at Sea
Beth Carter
Onboard NOAA Ship RAINIER
June 25 – July 7, 2007**

NOAA Teacher at Sea: Beth Carter

NOAA Ship RAINIER

Mission: Hydrographic mapping of Bay of Esquibel, Alaska

Day 2: Tuesday, June 26, 2007

Weather Data from the Bridge:

Visibility: 10 nautical miles

Wind Direction: 132 degrees, from the Southeast

Wind Speed: 6 knots

Sea Wave Height: 0-1 feet

Swell Wave Height – no swell

Seawater Temperature: 11.7 degrees Celsius

Sea Level Pressure: 1018.8 millibars

Cloud Cover & Type: 7/8 coverage, mixed cumulus and stratus

Air temperature: Dry Bulb: 15 degrees C, Wet Bulb: 10 degrees C

At anchor, water depth: 32 fathoms

Science and Technology Log:

At 8:00 this morning, our CO (Commanding Officer) held a safety and mission briefing on the fantail of the ship. The fantail is the back open area of the ship. The RAINIER's main mission is to conduct hydrographic mapping surveys from its six small launches that are carried aboard the RAINIER. Each launch has equipment that transmits sound waves that are directed toward the floor of the bay, or area to be mapped. The sound waves bounce back to a special receiver on the launch, and the depth data is recorded on the launch. These depths are plotted as dots, and so later in the evening, the technicians basically "connect the dots" to form a picture of the ocean floor in the area that was surveyed that day. When the RAINIER finishes this 3-week leg of its mission, all of this data will be given to the NOAA Office of Coast Survey, Pacific Hydrographic



NOAA Teacher at Sea, Beth Carter, prepares to set sail on NOAA Ship RIANIER.

Branch, in Seattle, WA. They take the data and create digital terrain models, or DTM's, which are color-coded maps of the sea floor. The maps look very cool...the deepest waters are shown to be dark blue, lighter blues show shallower water, and hazards and rocks and sand bars are shown in various shades of green, yellow, red and orange. The resulting DTM's represent the most probable bathymetry of the area. The maps are so detailed you can see the outlines of sunken ships and large rocks on the bottoms of the bays. The information from our leg will be compiled for chart 17404, and for smaller scale charts.

If you are interested in seeing two maps that show the areas we are charting, try these two sites:

<http://chartmaker.noaa.gov/staff/NHSP.html>

<http://chartmaker.noaa.gov/staff/NHSP/AK-Southeast-07.png>

Creating these maps is important because current maps of the waterways in Alaska are outdated – some of them very outdated. Yesterday, the CO showed me some sections of map that were created as long ago as 1834-1899, with more of the maps being created between 1900-1939, or 1940-1969.



**Crew of the NOAA Ship RAINIER
prepare to deploy a launch.**

It is interesting that NOAA (National Oceanic and Atmospheric Agency) is using sonar in much the same way that whales and dolphins and bats use sound waves for echolocation so that they can determine locations of the sea floor, obstacles, or other animals.

I asked about the current debate over the Navy's use of sonar, and the belief that its sonar is interfering with the whales/dolphins' abilities to use their sonar. Vincent Welton, our Electronics Technician, explained to me that NOAA uses a higher frequency, less amplified type of sound waves that will not confuse the marine mammals. The Navy sometimes uses a very low frequency sonar to detect submarines.

Today, two of the launches are out doing the hydrographic mapping. Later in the day, two divers will go out to check the bottom of the hull, and I will go out on a small skiff to watch some of the technicians gather some data on

tides. It appears that some of the equipment to measure tides is working erratically, so we will go check that out.

Personal Log:

I enjoyed watching the crew deploying the four skiffs and launches that are going out for today's work. Everyone has to wear hard hats and float coats to stay safe when out on the fantail. The best part of the morning was when Steve Foye, the Boatswain Group Leader, pointed out to me that a humpback whale was swimming near the ship. I saw the whale spout several times, and twice, he seemed he rolled on his side, as I saw a fin pop up. Then, his fluke appeared above the water, and he slapped the water and disappeared. Steve told me he was "diving down to check out the groceries...he knows which aisle to shop on." He also said he'd be down a long time, as he'd taken a big breath and was going to go to be eating until he needs to come back up to breathe.

If you are a CFCI student (or any student!) and have a question for me, please E-mail this address: teacheratsea.rainier@noaa.gov. I'd love to hear from you, and promise to try to respond in my logs.

Terms Used Today:

1. Fathom: 1 fathom equals 6 feet
2. Sea level pressure: Barometric, or air pressure. When air pressure is high as it is today (over 1000 millibars or mb) it indicates that the weather is sunny or overcast, with little threat of rain. When the pressure drops, it often means a storm or rain is on the way. The eye of a hurricane can have a barometric pressure reading as low as 875 mb.
3. Cloud cover: expressed in terms of portions of the sky covered out of 8 parts (whole coverage)
4. Wind direction: indicates which direction the wind is blowing FROM. 0 degrees is North, 90 degrees is East, 180 degrees is South, and 270 degrees is West.

Questions of the Day:

1. Why is it important to have updated maps of waterways in Alaska, or anywhere? Who needs to use these maps? Why?
2. Before this sonar technology was developed, how were depth maps created?
3. We are anchored today. How deep is the water under the ship? (1 fathom equals 6 feet, and the water is 32 fathoms deep now)