



NOAA Teacher at Sea
Susan Smith
Onboard NOAA Ship *Rainier*
June 1 – 12, 2009

NOAA Teacher at Sea: Susan Smith

NOAA ship *Rainier*

Mission: Hydrographic survey

Geographical Area of Cruise: Prince of Wales Islands

Date: Thursday, June 4, 2009

Weather Data from the Bridge

Visibility: 10 nautical miles

Wind: light

Sea Weather: Temperature 11.1 C (52 F)

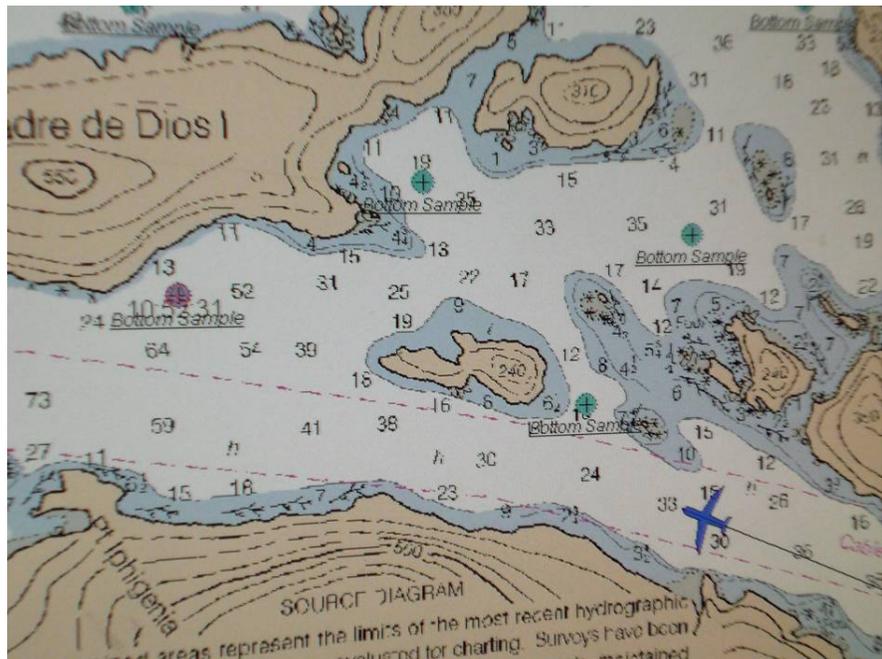
Cloud Cover: FEW 1/8-2/8

Science and Technology Log: Bottom Sampling

This morning I spent time in the Plot Room, and on the Fantail, involved in bottom sampling.

The Plot Room has nine work stations with at least two screens per technician. The airplane symbol is the location of the *Rainier* and the colored dots show locations of bottom sampling areas. One purpose bottom sampling serves is to determine areas suitable for anchoring.

The chart to the right shows there is an underwater cable area (pink dotted lines) from which we cannot take samples, because it could accidentally get damaged, thus rendering residents without power. The numbers shown on these charts indicate water depth in fathoms (1 fathom=6 ft.). As you can see there are drastic dropoffs in some locations.



A nautical chart indicating underwater cables



The clamp shell being retrieved

When the ship takes bottom samples, from the Fantail, it uses a spring loaded clamp shell device. It is attached to an A frame and uses a winch to lower it into the sea by cable. The operator calls out the depth, using a cable counter, as it is lowered into the water and when it raised. This enables the plot room to know when a sample is coming and it verifies the information received remains accurate.



If the cable is not straight down, the ship must move around it, avoiding the screws (propellers) at all costs. When the clamp hits bottom it scoops up the debris under it immediately and is brought back to the surface.

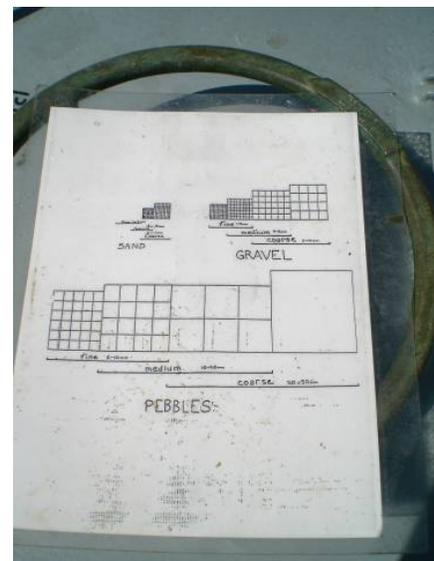


Identifying the samples: small coarse pebbles

When the sample arrives at the top it is shaken to release a majority of the water. Then it must be dismantled to see the solid matter inside. This is a two person job, as it is heavy and impossible to control for just one person. One holds the spring loaded clamp shell, the other takes off the sample section by pulling on either side of the device. Because safety is always an issue the clamp

must be kept from swinging once the collection unit is removed.

The items found in the sampler are placed on the chart (shown to the right) to make sure identification is accurate. The chart is divided into sand, gravel, and pebbles. Each type of rock found is divided further into fine, medium, and coarse. This information is relayed to the plot room where someone labels the survey chart in the appropriate location.



Identification chart for the samples



This sample was full of sand and some pebbles.

In the first four samples green, sticky mud was identified near the coastline of Ladrones Island, Madre de Dios Island, and on the southwestern arm of the Prince of Wales Island. These were deep areas where people are not likely to anchor their boats.

In the sixth sample we were in fairly shallow water and sampled gritty sand and small pebbles.

Sometimes the water arrives only with living things in the sampler. Samples eight through ten provided us with living things. Shells with little creatures inside were found in one sampling, and in another the

only item was a black sea star. Finally after three such samples in the same location we moved on to the next location.

This is a somewhat tedious process when the samples do not provide a great deal of useful data. However, that in itself gives sufficient information as to what is NOT in a location. Now imagine being charged with this assignment in an area where surveys have either never been done, or it has been decades since the previous survey. Remarkably the survey charts are fairly accurate, even from when lead weights and ropes were used to survey. NOAA certainly has a daunting task when it comes to surveying Alaska.



This sample had only a little black sea star!

Personal Log

Yesterday, and today, allowed me the opportunity to see the technical aspects of the *Rainier's* mission. Small sections of the oceans and bays are meticulously mapped and charted for use by recreational boaters, the fishing industry, large shipping companies, and the military. Without the information gleaned by the people and ships of the NOAA Corps our waters would continue to go uncharted, perhaps unused, and remain hazardous to all. I am amazed at the patience needed for this work, but it is well worth their efforts to provide the necessary tools to keep our waterways safe for everyone.

I was discussing interesting things I noticed on the *Rainier* with several of the officers. Did you know there are two flags we fly on the NOAA ships? There is the **Jack**, a flag with the 50 stars and blue field, and the **Stars and Stripes**, our nation's flag. When it is flown on a ship it is

called an **Ensign**. The Jack is flown on the Jackstaff (origin 1865-1895) located on the ship's bow. The Ensign is flown on the fantail while in port or anchored at sea. I suppose I have now become a student of **vexillology**, the scholarly study of flags.



Jack on the bow



Ensign on the fantail