



**NOAA Teacher at Sea
Dan Steelquist
Onboard NOAA Ship *Rainier*
July 6 – July 24, 2009**

NOAA Teacher at Sea: Dan Steelquist

NOAA Ship *Rainier*

Mission: Hydrographic Survey

Geographical area of cruise: Pavlov Islands, Gulf of Alaska

Date: Tuesday, July 21, 2009

Weather Data from the Bridge

Latitude: 55°10.84' N

Longitude: 161°41.87' W

Visibility: 10+ Nautical Miles

Wind Direction: 220° true

Wind Speed: 16 knots

Sea Wave Height: 0-1ft.

Swell Waves: 1-2 ft.

Water Temperature: 9.4° C

Dry Bulb: 10.0° C

Wet Bulb: 9.4° C

Sea Level Pressure 980.0 mb



NOAA Ship *Rainier* from the shore of Wosnesenski Island

Science and Technology Log

NOAA Ship *Rainier* is an important workstation used for gathering hydrographic survey data. *Rainier* is able to cover large distances in order to get to remote places where charting information is needed, but there are no communities from which hydrographers and crew can work. Therefore *Rainier* herself is a compact city. The science of operating a small city might seem simple enough, but a closer look at the major parts and it becomes obvious that there is much involved. Two of the areas I have found to be very interesting would be the bridge, where the ship is operated when underway, and the engineering department (the “public works department” of this small community).

The bridge is the command center of the ship. While tied to a pier or at anchor, there are many responsibilities for those on duty on the bridge. Weather data is gathered every hour and radios are monitored for any emergencies that might come up on other ships in the area. While at anchor, the ship’s position is closely watched using radar and GPS to be sure the anchor is holding fast. While underway, the bridge has direct control of the engines and steering. Safe navigation and following a predetermined sail plan are also the responsibilities of those on the bridge. Getting this small city safely and directly to the places it needs to work is critical to the mission of the *Rainier*.

The engine room is also a very important and interesting area on board this ship. *Rainier* has two large diesel engines each capable of producing over 1,200 horsepower. A typical automobile produces between one hundred and two hundred horsepower. Those two engines can push this 231 ft ship at a cruising speed of about thirteen knots per hour. The engineering department can be compared to a public works department of a city because they provide many of the same services. All of the electricity used by *Rainier* is generated on board. The engineering department is also responsible for making fresh water from salt water using evaporators capable of producing one hundred fifty to one hundred seventy gallons per hour. Any wastewater created on the ship is also treated on board *Rainier* before it is discharged. The engineering department is also responsible for all of the heating and cooling systems onboard the ship including a large walk-in refrigerator and freezer. *Rainier* is capable of carrying a crew of over fifty people on hydrographic survey missions for up to three weeks at a time. To make that operation possible, this ship is a floating city complete with all the services and utilities any small town would need to function effectively.

Personal Log

I’ve been on board *Rainier* now for almost three weeks. I have seen and learned many things. The work of the hydrographers is very important. The ship provides an excellent work platform from which to gather data and each of the different departments contributes greatly to the mission of the ship. There is quite a bit of quality science and mathematics going on everywhere on board. I have had a chance to watch these people work and I have seen science and math being applied everywhere. What has stood out to me the most over these weeks has been that even with the variety of types of work being done on *Rainier* everyone works together to get the mission completed. I am excited to share all my experiences on board with my students back home. Perhaps one day some of them will have a chance to be a part of a ship like this.

Something to Think About

The *Rainier* has many different types of work on board that require many different types of knowledge. If you want to apply navigation interest, work with computers, become an engineer, work as a deck hand, become a cook, or become a scientist, why not do it on a NOAA ship like *Rainier*?