



**NOAA Teacher at Sea**  
**Jessica Schwarz**  
**Onboard NOAA Ship RAINIER**  
**June 19 – July 1, 2006**

**NOAA Teacher at Sea: Jessica Schwarz**

NOAA Ship RAINIER

Mission: Hydrographic Surveys

Day 3: Wednesday, June 21, 2006

**Science, Technology and a Little History...Log**

I am very proud to say I was onboard RAINIER (the world's most productive coastal hydrographic survey ship), as well as a part of an eleven hour day of surveying, on the first annual World Hydrography Day! Yep, that's right. According to a message sent by NOAA Administrator Conrad C. Lautenbacher, Jr., (a retired Vice Admiral in the U.S. Navy), the United Nations General Assembly adopted Resolution A/60/30 in November of 2005 to acknowledge the International Hydrographic Organization's role in advancing global navigation safety and protection to those at sea, making today World Hydrography Day!

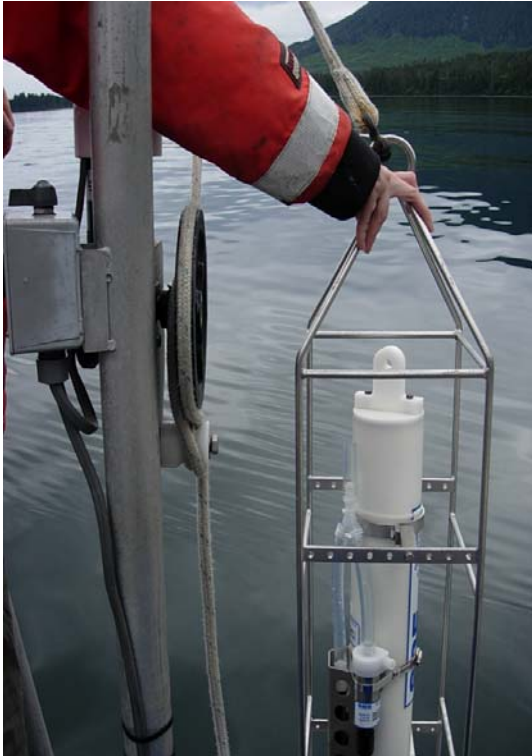
I like the way Commander Guy Noll put it: "We hit rocks so that you don't have to". That gave me a new found appreciation for the work the crew is doing on the RAINIER. I must admit this was not exactly a reassuring thought just before I was heading out for a full day of hydrographic surveying. But hey, it's World Hydrography Day...I needed to celebrate appropriately.

I didn't realize the real history and purpose of hydrography until talking with Ensign Sam Greenaway and Junior Survey Technician Tonya Watson on the survey launch today. Hydrographic surveying in the United States actually dates back to 1807 when Thomas Jefferson established the "Survey of the Coast" to produce nautical charts for US coastal waters. The Survey of the Coast evolved in the current NOAA Office of Coast Survey (OCS). OCS is the oldest scientific agency in the federal government, and was established primarily to encourage commerce. Jefferson was looking to support a growing economy in a safe and efficient manner.

According to Peter J. Guthorn, author of [United States Coastal Charts, 1783-1861](#), the production and distribution of charts was delayed until 1843, with the first publication of the New York Harbor chart. This was due to the War of 1812, political disagreements (imagine that) and a lack of trained hydrographers. Before the publication of government charts, there were private publications adapted from British and French charts with updates from local shipmasters and pilots familiar with the coasts of North America.

Check out NOAA's link at <http://chartmaker.ncd.noaa.gov> for more information on the work NOAA is doing. I find the history very interesting. It's really given me a sense of the global importance of the surveys conducted and the charts being produced. I'm

excited to be a part of it for these two weeks. It's only taken 200 years to come up with World Hydrography Day. I think the recognition is very well deserved and obviously overdue!



Junior Survey Technician, Tonya Watson is getting ready to lower the CTD, Conductive Temperature and Depth tool.

As for my time spent on the launch today: Well, we left at 8:00 in the morning. Within minutes the survey team onboard, ENS Sam Greenaway and JST Tonya Watson, were getting to work. The first thing they did was use the Conductivity, Temperature and Depth instrument to determine the variation of temperature, salinity, and density in the water. This helps determine the speed and path of the sonar energy through the water. A CTD measurement is taken once every four hours for each survey period.

After the CTD measurements were taken, they began running lines and logging sonar data. Today we were focusing on holiday lines. Holiday lines are basically holes in the data or areas where previous surveys may have missed collecting information.

From my understanding, there is a sonar transducer on the bottom of the survey boat. The Reson 8125 that I mentioned in my previous log (remember 120° of coverage

using 240 individual beams) is mounted on survey boat RA4. RA4 is the launch I was on today (World Hydrography Day).

While the boat is moving at a speed of no greater than 8 knots along the charted line, this transducer is sending out multi-beam sonar to the ocean floor. Steering the launch to remain on the line is not easy. Deck Utilityman (DU) Ken Keys, the coxswain of the boat for today, let me give it a shot. I was steering more on a zigzagged line rather than a straight one. It was actually kind of stressful because the



Having her hand at the wheel, TAS Jessica Schwarz steers launch boat, RA4 during a productive day of hydrographic surveying.

accuracy of the sonar data is affected by how well the person steering stays on the line.

While cruising down the line, data is continuously collected on the amount of time it takes the sonar to echo back from the ocean floor to the transducer. I was able to view rocks on the ocean floor from the display on the computer screen. As you can imagine, in shallower water this information came in handy to the driver of the boat, which ultimately was helpful to all of us onboard 😊

### **Personal Log**

I am having an incredible time on the RAINIER! Last night I was able to go for a run on the treadmill they have onboard. I along with Survey Technician, Erin Campbell decided to call the workout area Club RAINIER. It basically consists of three machines, a rowing machine and free weights, down in what looks to me like a storage space. I was very excited to hear about the equipment onboard! I think it's impressive they have it available.

Something interesting that is NOT available to the RAINIER crew is a bathroom on the survey launch boats. Hmm? Needless to say, on days I am out on a launch I'm taking it really easy on the coffee and any other beverages throughout the survey.

Check in with me tomorrow!

Jessica Schwarz

### **Calling All Middle Schoolers-We Need Help Answering a Few Questions!**

These questions come from one of the Junior Survey Technicians onboard the RAINIER, Tanya Watson.

What do you suppose the affect of high frequency sonar, such as the sonar NOAA uses in their hydrography surveys, has on the marine mammals living in the sea? Do you suspect there to be a difference between the affects of low frequency sonar vs. high frequency sonar? Let me know what you think! [Jessica.Schwarz@noaa.gov](mailto:Jessica.Schwarz@noaa.gov)