



**NOAA Teacher at Sea
Kimberly Wolke
Onboard NOAA ship RAINIER
July 24-August 11, 2006**

Mission: Hydrographic Surveys of the Shumagin Islands, Alaska

Day: Wednesday, August 9, 2006

Weather from the bridge at 1300:

Skies: Cloudy (CL)

Visibility: 10 nautical miles (nm)

Wind Direction: South/Southwest (SSW)

Wind Speed: 12 knots

Waves: 1 foot

Sea Water Temp. (°C): 11.7

Sea Level Pressure: 1014.5 millibars (mb)

Temp. (°C): 12.8 (air temperature)



Port-side engine on the NOAA ship RAINIER

Log 13

Science and Technology

Since I've been aboard the RAINIER, I've wondered how the ship has been able to go for so long on fuel and water given that we are at sea for 19 days. I also wanted to know



One of the two evaporators on the NOAA ship RAINIER which processes salt water into fresh water

what happens to all of the sewage we've been creating. I spoke with 1st Assistant Engineer Glen Quintino and General Vessel Assistants (GVA) Chris Zacharias and Milton Ellison from the Engineering Department to find out.

There are 2 engines on the ship, one on the starboard side and one on the port side. The engines run on diesel fuel. There are 26 diesel fuel tanks on the ship with a total capacity of approximately 114,000 gallons. Since there's a lot of added weight from the fuel, as it's used, the fuel needs to be moved around from tank to tank to keep the weight evenly distributed. Although the RAINIER does not use all of the fuel on a leg as long

as this one, they do re-fuel when they get into port.

Fresh water is made on board the ship. There are two water tanks, each with a capacity of about 8000 gallons. Salt water is pumped into the ship from below and heated to a very high temperature in the evaporator in order to evaporate the water and leave the solid salt behind. Once the salt is removed and disposed of, the desalinated water is then further purified by the addition of bromine and used as fresh water on the ship for drinking, cooking, and bathing. I've been dinking it since I arrived and it's great! The toilets do not use freshwater; they use salt water to flush everything out.

Any of the sewage waste created aboard the ship is also treated. The sewage is literally electrocuted using a Marine Sanitation Device (MSD). Between the salt in the sewage water and the electricity, sodium hypochloride (essentially chlorine) is created. The treated sewage is placed in a holding tank and then pumped into the sea.



The Marine sanitation Device (MSD) which treats the sewage produced aboard the NOAA ship RAINIER

Who's Who On the RAINIER?

In the Engineering Department, the 1st Assistant Engineer is Glen Quintino. Currently a resident of Seattle, WA, Glen is originally from California. He has been with NOAA for six years, first working on the NOAA ship MacARTHUR before joining the RAINIER. Glen went to a trade school in Denmark to study being a machinist. He then worked for a



NOAA ship RAINIER's First Assistant Engineer, Glen Quintino

company that made non-ferrous propellers, oil filters, and ship windows before joining NOAA in 1998. Glen was recently married in February 2006.

Engineering GVA Chris Zacharias and GVA Milton Ellison were both in the Navy in their former lives, each for 10 years. Chris is from Kansas where he still resides with his wife. Milton is originally from Tennessee, however, his residence is currently Michigan where his wife's family is from. Milton has been with NOAA and on the RAINIER for 4 months. His prior experience was working in Engineering on commercial vessels in the Great Lakes area.

Many of the crewmembers, like Glen, Chris, and Milton, are married or have significant others at home. Almost everyone I've spoken to agrees that one of the most challenging

parts of their job is to be away from their loved ones for extended periods of time, especially the ones on board who are newlyweds.

Personal Log

We continue our journey back to Seward, AK traveling at approximately 13 knots. It feels like we're speeding compared to the speeds we were going for the past few weeks. Although cloudy, the water is still amazingly calm which I am very grateful for. It seems we may have left the blue skies and sunshine back in the Shumagin Islands since the extended forecast for the Seward area calls for rain or showers. We're currently scheduled to actually arrive early in Seward if the weather and mechanics of the ship cooperate. I'm looking forward to being back on land and checking out Seward before I depart for Anchorage Friday evening and a short excursion up to Denali National Park before flying home next Monday. Keeping my fingers crossed and eyes open for more animals!

Kim Wolke
Teacher at Sea ☺