



NOAA Teacher at Sea
Kristin Joivell
Onboard NOAA Ship *Fairweather*
June 15 – July 1, 2009

NOAA Teacher at Sea: Kristin Joivell

NOAA Ship *Fairweather*

Mission: Hydrographic survey

Geographical Area of Cruise: Shumagin Islands, Alaska

Date: Saturday, June 27 and Sunday, June 28, 2009

Weather Data from the Bridge

Position: East of Big Koniuji Island

Clouds: clear

Visibility: 10+ miles

Wind: variable and light

Waves: less than 1 foot

Temperature: 11.2 dry bulb

Temperature: 9.0 wet bulb

Barometer: 1019.2

Science and Technology Log

The engine room of the ship is a very important place. If the machines located there aren't working, the ship isn't going to be going very far. I took a tour of engineering and explored the area with one of the engineers.



The engine room is a busy, confusing, and crowded place, but the engineers know how to maintain every one of the machines.

The first impression that I got about the engine room is that you really need to be good with your hands and mechanically minded to work in this area. There are so many different machines that must be maintained, repaired, and monitored that it seems pretty overwhelming when you first walk in. Even though much information about the machines is displayed on a master control board overlooking the engine room, it's difficult to figure out where each of the machines is located. It's almost like a whole other world under the floor where the majority of the crew works and lives.



Here I am climbing out of the engineering department using an escape trunk. This pathway is centrally located for easy escapes.

If there is a problem in engineering like a fire or water leak, there are self sealing doors to

isolate and contain the problem. The situation is contained to the lower levels of the ship and spread is limited and slow. The engineers can escape from the area using hatches. Crew members are very careful not to place anything on the escape hatches just in case an accident occurs. Safety plays a big part in the engineering department and in the entire ship. It is very important to follow certain procedures for everyone's safety.

The ship has two engines and two generators. Each of these pieces of machinery is large and extensive. Much of the control panel is dedicated to information about their state. Interestingly enough, the two engines are actually train engines and the generators are from General Motors. Both of these, especially the generators, seem to be larger versions of the same land based machines. The engines have seven oil filters apiece. These, naturally, must be changed similar to your personal vehicle. Each of the oil filters is almost two feet long! Many are kept in supply for maintenance purposes.



This is one of the unused oil filters for the main engines of the ship. You can see other filters in the storage room as well.

But, the engineers are not just in charge of the engines, generators, and the other machines that make the ship move through the water. They also must maintain, repair, and monitor the refrigeration, air conditioning, heating, electricity, and plumbing on the ship. Additionally, they



I'm lending a hand to repair a boat engine. The batteries must be disconnected for safety when working with the starter and other electrical equipment.

are in charge of keeping the five small boats on the ship operating correctly. The ship has two launches, two smaller boats, and one skiff. Each of these presents its own specific problems to maintain. Each of the boats has an engine system that must be maintained. They must be fueled and checked after each day's work. Anything that breaks must be repaired immediately so that the work on the ship can continue on schedule.

I helped repair one of the smaller boats that was not starting correctly. First, the problem must be diagnosed. So, we used a multimeter to get readings from electrical connections. Salt water corrodes wires quickly. Even though

most of them have sealant covering them, the salt still creeps in and causes damage. The

engineer decided to try to clean the components with a wire brush and a knife to create better connections. We cleaned the existing corrosion, but the boat still did not start properly. Next, the engineer predicted that the starter could be the problem since much of the connections to it were very rusty and dirty. We took out the starter and replaced it with a new one; the boat started! It was a relief to be able to use the boat the next day. Without the work of the engineers, the ship would have been short one boat for a period of time. This would prevent work from being completed and put the ship behind schedule; a lot of money would be wasted on operations being incomplete.

Personal Log

Safety on the ship is something that is not taken lightly in engineering or anywhere else. Drills are conducted periodically to ensure that crew members know what to do when an emergency occurs. There are drills for fire, man overboard, and abandon ship. For each drill, each person on board is assigned a meeting spot, called a muster, and function. There are also alternate musters for each emergency in case the first muster is compromised in some way.

Fire drills are important to practice. It's interesting to note that even though the ship is surrounded by water, fire is one of the most difficult problems to deal with onboard. The ship basically has mini fire stations set up throughout the ship to deal with the emergency. Standard firefighting gear is located at these stations. Certain crew members are assigned to wear the turnout gear and



Practicing the proper technique with a fire hose. These hose stations are located in a variety of spaces all around the ship.

operate the hoses or extinguishers during the drills. Recently, a burned bag of microwave popcorn set off the fire alarm, so these alarms are sensitive!



Practicing using the line launching device. This tool is helpful in getting help to a man overboard quickly and efficiently.

Another situation that can occur is when someone falls overboard. Quick retrieval is very important especially here in Alaska due to the cold temperatures. Different crew members are assigned to be lookouts during a man overboard drill to help with the location of the man overboard. If you see someone when you are a lookout, you must point and alert the bridge to the person's location to ensure a

speedy retrieval. Life preservers are on hand at a variety of locations to throw to the person in the water. The ship also has a line launching device that you can use to shoot a line a lot further than humanly possible. This device is powered by compressed air and shoots the line quite far from the ship.

The last resort in an emergency is to abandon the ship. Since the waters here are so cold, we must be ready to don our emergency suits. I had the chance to practice putting on my suit during a drill. The suit is made of special material that can protect you even in the coldest water. Some of the material seemed similar to a thick wetsuit. You must be able to don the suit quickly and efficiently. The feet are part of the suit, but the arms have tight seals and then you put on mittens separately. There is even a cover for your face that only lets your eyes peek out. As I practiced putting mine on, I got very sweaty, so it seemed to be doing its job already.

Create Your Own NOAA Experiment at Home

The crew of a NOAA ship practices emergency drills and you can do these at home, too. In the unlikely event of an emergency, your family can be well prepared and organized. It is always good to be prepared for an emergency; you think more clearly when well prepared.



Here I am in my emergency suit. This suit can protect you even in the coldest waters. Along with life preservers, hats, and coats, suits must be brought to life raft musters during abandon ship drills.

Did you ever stop and wonder what you should do if your house is on fire? How will you get out of the house? You should have more than one way to get out just in case the first path is compromised. Do you have a meeting place, or muster, for your family? Where is it? Who will bring the pets outside with the family? Where will you call 911 from? Remember, you shouldn't call from your house if it is on fire; call from a neighbor's house or cell phone outside your house. You can create an emergency plan for your family and have fire drills periodically.

What about if there is a homeland security emergency? Who is going to pick you up from school? Where will you go to wait for the emergency to be over? Do you have supplies like food and water ready? Who will get the pets and bring them with you? You can create a plan and have drills for this type of emergency as well. That way, if something happens, nobody gets left behind and your family will be comfortable and secure.