



**NOAA Teacher at Sea
Anne Marie Wotkyns
Onboard NOAA Ship *Pisces*
July 7 – 13, 2010**

NOAA Teacher at Sea: Anne Marie Wotkyns

NOAA Ship *Pisces*

Mission: Reef Fish Survey

Geographic Area: Gulf of Mexico

Date: Monday, July 12, 2010

Latitude: 28°33.5532 N

Longitude: 089°44.8634 W

Weather Data from the Bridge

Air Temperature: 30.6°C

Water Temperature: 30.54°C

Wind: 9 knots

Other Weather Features:

Humidity: 69 %

Cloud cover 15%

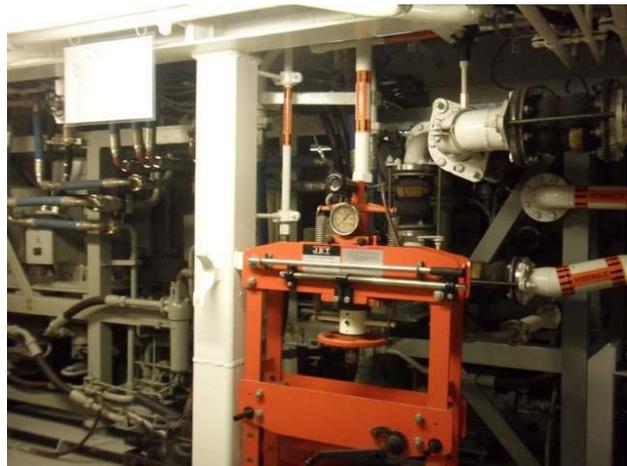
Swell height: .5 meter

Wave height: .3meter

Science and Technology Log

The *Pisces* is the newest ship in NOAA's fleet and she utilizes some of the newest technology available. On Sunday, Liz and I were given a tour of the engine rooms and much of Decks 2 and 3 (below the main deck) where the propulsion, cooling, plumbing, winches, and other mechanical and engineering systems are located. The *Pisces* has an integrated diesel electric drive system with two propulsion motors that generate 1,500 horsepower each.

There are 4 generators on board, two 16 cylinder and two 14 cylinder, which power the motors and the "hotel load" as Chief Engineer Garret Urban calls the systems that keep us comfortable on the ship -electrical, cooling, etc...A really cool thing about the *Pisces* is that it was designed to be quieter than many other vessels, especially important for a fisheries research ship because noise can influence how ocean animals behave and can limit what the scientists are able to study. The International Council for Exploration of the Seas (ICES) established standards to improve the noise onboard research vessels and the *Pisces* was designed to meet those standards.





Throughout the engineering room there are giant electrical boards and computers that are constantly kept cool by the ship's strong air conditioning system. An interesting aspect of the air conditioning system is that ship's interior rooms are kept cool using cold water running through a closed system of pipes. The water is cooled using a Freon system located in the engine room. The labs and common rooms were kept so cool that we wore long sleeves most of the time indoors, but then took them off when going outside. On the days we did the fish survey activities, this meant pulling a sweatshirt on and off over 20 times a day!



The technology that keeps the *Pieces* running smoothly is amazing!

When we entered the lowest deck of the ship we were given earplugs for protection from the engine noise. The earplugs were dispensed from a machine that looked like a candy machine! Garret showed us that if the bridge ever lost power that there is a secondary way to steer. The crew steers using a hydraulic steering system rather than the electrical one on the bridge. The crew uses a hand telephone to communicate with the bridge during any power outages (or drills).

One very important piece of the engineering deck is the freshwater system. The ship pulls in sea water and uses heat from the engines to make freshwater through distillation. The sea water is heated and the steam and water vapor is contained and collected as fresh water. There are two distillers on board and they can make 1,850 gallons a day. When we were down there we witnessed Junior Engineer Steve repairing the blown diaphragm that had interfered with the water system. When we are in the area that NOAA has labeled as a 95% uncertainty zone regarding the presence of oil, the ship does not take in water as it could be contaminated and damage the system. This is why on the first two days and the last two of the cruise we were asked to conserve water.



The saltwater-freshwater conversion system



Chief Engineer Garrett with the rudder angle indicator system – this showed the angle of degrees of the rudder which determines the direction the ship sails.

Today while we were working in the dry lab, a “Steering Drill” was announced. The simulation



Steering the ship using the secondary system.

was that the bridge had lost control of the ship’s steering so she would need to be steered using the secondary system in the engine room. The captain then announced that the “teachers” should head down so we could steer! Thanks to our earlier tour, Liz and I knew just where to go. And because we had already steered the ship from the bridge, now we understood how the secondary system operated. Instead of a steering wheel, there are two joysticks with rubber buttons at the top that you push down to change the angle of the rudder. Each button steers the ship either left or right. However, the left hand button steered to the right and the

right hand button steered to the left – got that?



The rudder angle indicator and course heading display

Monday was our last day at sea and since the *Pisces* was heading back towards Mississippi everyone was busy with computer work and clean –up duties. Scientist Kevin generously made us a DVD of camera pictures, resources, and information we will take back to our classrooms. We cleaned up the lab, packed our bags, took pictures, exchanged emails, and hurried to finish our last log entries. The crew spent time checking over the ship, inside and out, looking for any problems that needed to be addresses or equipment that needed maintenance or repair. Because a ship is constantly exposed to corrosive sea air and salt water, cleaning, painting, and repairs are always ongoing.

Tomorrow, the recordings from the camera drops and the red snappers we caught (now in the lab freezer) will be offloaded and taken to the NOAA labs for further analysis.

Personal Log

I find it very interesting how doing scientific research at sea seems so different than doing research on land. On land, many researchers work steadily in a lab, 8 hours a day. Out here, the last 3 days were 13+ hour “work days,” with the main work only occurring every 45 min or so when the camera array was deployed or retrieved, and the 4 different times during the day when the chevron fish trap or bandit reel fishing line were “dropped” or brought back in. The timing was crucial because the research protocols regarding “soak time” (time in the water) needed to be followed to the minute to ensure collected data was accurate. So we alternated short bursts of slightly hectic work with longer periods of computer work, reading fish identification books, taking walks around the outer decks, checking on the Ron and Scott, the bird observers working up on the topmost deck, and eating. Let me tell you about the food...

Kevin calls living onboard being “lovingly incarcerated” because you are stuck here, but you are well taken care of. The Chief Steward, Jessie Stiggins, prides himself in keeping everyone well fed. Every morning he posted the meal menus in the mess, and we were always curious to see what he had planned for us. We learned from C.O. Adams that food on the ship is very important and is actually a part of the crew’s union contract. For example, in the contract it states that, “lunch and dinner must include a prepared dessert. Plain cake shall not constitute a prepared

dessert, but a cake with icing shall,” and “Liver and onions can only be served once a month.



Pascy wants a bite of Liz's amberjack with orange sauce and almonds – the same fish he saw Ryan catch the other night!

Turkey must be served once a week.” We have had dessert every lunch and dinner, and last night's turkey, mashed potatoes, gravy, and yams were delicious! Some of the desserts have been coconut crème pie, French silk pie, white cake with fluffy whipped cream frosting and strawberries, cookies, and pecan pie to name a few.



Chief Steward Jessie serves his lobster tails.

Plus there is a freezer full of ice cream, great for late night snack. Liz is in seafood heaven-there has been halibut, calamari, catfish, the amberjack Deckhand Ryan caught the other night, and even lobster! Me, the non-seafood eater, has enjoyed stuffed chicken breasts, filet mignon, a taco bar, and pulled pork. And even out here, in the middle of the ocean, we've had raspberries, blueberries, watermelon, cherries and a great salad bar! Jessie is saving the menus for us so we can show them off when we get back. And I'm already planning on visiting the gym daily as soon as I'm back home!

Pascy toured the engine room with us and this is what he saw.



Lot and lots of computers help keep the *Pisces* running smoothly!



Ear protection is a must in the noisy engine room.



The teachers got to wear these soft foam earplug that came out of a cool dispenser that looked like a candy machine.



Pascy liked "chilling" on the cold water pipes of the air conditioning system!

I cannot begin to express my thanks and appreciation to the wonderful officers, the science team and the crew of the *Pisces*, as well as the Teacher At Sea staff who made this trip possible. Going to sea is a magical experience and I hope I can convey this to my students, as well as use my new science knowledge to revise and invigorate my science curriculum. I can't wait to share more about this experience with my family, friends, colleagues, and students. I think teachers must be lifelong learners if they want to be effective educators, and Teacher at Sea is a wonderful way to improve science teaching through hands-on research experiences.

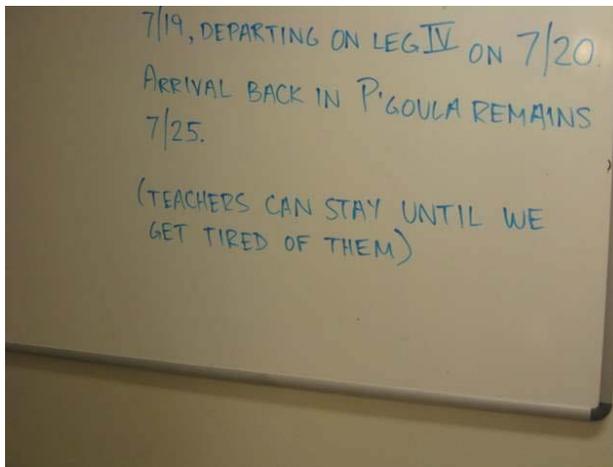


THANK YOU EVERYONE!!!

The science team – special thanks to Chief Scientist Kevin Rademacher and Field Party Watch Leader Joey Salisbury.



Everyone should be so lucky to experience sunset out on the open water!



Captain Jerry says the “Teachers can stay till we get tired of them” – We’d LOVE to stay longer!!



Pascy reluctantly packed his bags and said goodbye too! His next adventure? Travel with Anne Marie on the Swedish icebreaker Oden from Chile to Antarctica in December and January – stay tuned for his next adventures! Maybe he’ll get to see his long-lost cousins!