



NOAA Teacher at Sea
Eric Heltzel
Onboard NOAA Ship RONALD H. BROWN
September 26 – October 22, 2005

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NOAA Teacher at Sea: Eric Heltzel
NOAA Ship RONALD H. BROWN
Mission: Stratus 6
Saturday, October 11, 2005

Weather Data from Bridge, 07:00

Temperature: 17 degrees C
Sea level Atmospheric pressure: 1018 mb
Relative Humidity: 72%
Clouds cover: 8/8, stratocumulus
Visibility: 12 nm
Wind direction: 140 degrees
Wind speed: 10kts.
Wave height: 2 – 3'
Swell wave height: 2 - 4'
Swell direction: 130 degrees
Seawater Temperature: 18.3 degrees C
Salinity: 35 parts per thousand
Ocean depth: 4424 meters

Science and Technology Log

The throbbing heart of the RONALD H. BROWN is the engine room and the associated systems. Last night Assistant Engineer Wayne Smith gave me a tour. I was impressed with the complexity and effectiveness of the systems.

The core of the power is six Caterpillar diesel engines. These function as electric generators for the ship's systems. The three largest of these are dedicated to the propulsion of the ship. The ship is propelled and maneuvered by two aft thrusters and one bow thruster. The thrusters are propellers that have the ability to be rotated 360 degrees. Each thruster is driven by an independent Z-Drive that is actuated by an electric motor and shaft. Under normal sailing only the two aft thrusters are in use. The bow thruster is engaged when the ship is maneuvering into dock or holding a position. As I write, we are holding position 0.25 nautical miles from the Stratus buoy. By engaging the Dynamic Positioning System a location for the ship is established via GPS and a computer controls the direction and rpm of the thrusters. This allows the BROWN to hold a position without having to drop anchor. I was surprised to learn that this ship has no rudder—it is steered via the Z-Drive of the thrusters.

Since the BROWN is a research vessel it has on board many sophisticated electronic instruments. The current running through its wires is like our household

current, about 115 volts. Because of the sensitive nature of some of the equipment there are outlets labeled “clean power”. This current runs through a secondary motor which ensures that there will be no power spikes that could damage electronic equipment.

Ventilation is very important and there are several air conditioning systems that control the temperature in most of the ship. Different areas have independent thermostats so the ship is quite comfortable. The science labs are generally kept quite cool. Freshwater is supplied by using heat from the engines to evaporate seawater. The condensed steam is run through bromine filters to ensure no bacteria in the water tanks. The water is extremely soft, having no salts in it. Wayne chuckled at the idea of people buying bottled water to drink on ship because the water provided is as pure as water gets.

The NOAA research vessel RONALD H. BROWN was launched in 1997. It is the largest ship in the fleet and provides a state of the art research platform. The versatility and capabilities of this ship and expertise of the crew allow up to 59 people to sail for extended periods of time and perform sophisticated oceanographic and atmospheric research. I feel privileged to be along on the Stratus 6 cruise.

Personal log:

Wow! I can see my shadow. This is cause for staying out on deck. We have been sailing under overcast skies since we crossed the equator. I'm sitting out on the bench on the 03 deck beneath the Bridge. There's a breeze blowing from the southeast but I'm comfortable in a light jacket and shorts. It has been a surprise to be traveling in tropical waters with overcast skies and cool temperatures. It makes me realize that we get a lot of sunny days in Wyoming.

At 1415 today we had a meeting outlining the program for tomorrow. Jeff Lord from WHOI is coordinating the buoy recovery program. He is very organized and has gone through step by step how it will be done. It will be a very interesting, very busy day tomorrow. It is very important to the success of this cruise that we recover all of the instruments and buoy safely. At 0640 the acoustic release will be activated and the floats attached to the mooring will be released from the anchor. The depth here is 4400 m and it will take the floats about 40 minutes to reach the surface. This will be a major operation involving everyone on the ship.