



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

**Log 7**

**NOAA Teacher at Sea:** Eric Heltzel  
NOAA Ship RONALD H. BROWN  
Mission: Stratus 6  
Tuesday, October 4, 2005

**Weather Data from Bridge, 07:00**

Temperature: 25.5 degrees C  
Clouds cover: 6/8, stratus, altocumulus  
Visibility: 12 nm  
Wind direction: 245 degrees  
Wind speed: 13kts.  
Wave height: 3 – 5'  
Swell wave height: 3 – 5'  
Seawater Temperature: 28.7 degrees C  
Sea level Atmospheric pressure: 1005 mb  
Relative Humidity: 82%

**Science and Technology Log**

Today Senior Scientist Bob Weller and Senior Engineer Assistant Paul Bouchard showed me the acoustic releases. These are devices that are placed on the tether that holds the Stratus Buoy to its anchor on the ocean floor. At the deployment location the ocean depth is 4425 meters. The acoustic release will be placed 30 meters from the anchor. Attached to the tether will be 35 instruments placed at a particular distance from the buoy. Their attachment distance will determine the depth at which they are located and will allow scientists to gather data about conditions at these particular depths of the water column.

The job of the acoustic release is to detach the buoy and tether from the anchor. When we arrive at the currently deployed buoy a digitized acoustic signal will be sent through the water. The acoustic release will “turn loose” of the anchor and allow our team to retrieve the buoy and the instruments attached to the



Acoustic releases

tether. This is important because some of the instruments contain a year's worth of data that must be downloaded and analyzed. Another reason is the cost of the buoy itself, all of the instruments, and the cable and line that have held it to the anchor. These things are worth about \$500,000 dollars and would be difficult to replace. All of the instruments can be refurbished and used again.

When we arrive at the currently deployed Stratus Buoy the acoustic release that was put in place last year will be activated. This should allow us to retrieve the system and replace it with the one we are carrying on board the ship. The acoustic releases we are carrying will be placed in the tether holding the new buoy and will not be activated until next year when that system is recovered. Acoustic releases are also used on drilling platforms and other objects tethered to the sea floor. These machines allow the objects tethered to be freed without the need to dive into the water and cut the line. These are an ingenious piece of technology that improves the safety and convenience of oceanographic research teams.



Cornell Hill making a line splice

### Ship Crew Activity

I had the opportunity to watch Boatswain Group Leader Cornell Hill making a line splice. He took the end of the line around a metal eye that is built with a groove on the outside. The line comes back on itself and Cornell braids the strands into the main part of the line. He has a knife with a spike on it to help lift the strands so he can braid it together. What results is a closed loop with metal lining at the end of the line. It's very strong and is used as an attachment point. I have long wondered how this was done so it was very interesting to see the skilful way Cornell accomplished this feat.

### Terms

Acoustic signal – a particular blend of frequency and pattern of sounds that sends a message through the water to instruct a device to perform its operation.

Example is the signal sent to activate the acoustic release.

Acoustic Release – a device that releases a line when given the proper sound signal. Used in the tether system of the Stratus buoy.

Bosun – crew member in charge of deck operations

Line – rope

Line Splice – Braiding stands of a line back into itself.

Tether – attachment to a fixed object. This may be a combination of cable, chain, line, or wire. Example is the attachment of the Stratus Buoy so that it doesn't drift away.