



NOAA Teacher at Sea
Tamil Maldonado
Onboard NOAA Ship FAIRWEATHER
July 18 - 28, 2005

Log 11

Thursday July 27, 2005

NOAA Ship FAIRWEATHER:

Day: Thu July 27, 2005	Present Weather: PC	Sea wave height: 0
Time: 8:00 a.m.	Visibility: 10+	Swell wave height: 1
Latitude: 55 ⁰ 32.7'N	Wind direction: 320	Sea water temperature: 13.4
Longitude: 159 ⁰ 18.8'W	Wind speed: 7 knts	Sea level pressure: 1013.6

During the day I talked with the captain about boat stability. Stability is defined as the ability of a vessel to return to its original condition or position after it has been disturbed by an outside force. Anyone who has been at sea and felt the vessel roll, for example, and then right itself (only to roll in the opposite direction and right itself again) has seen stability in action.

Outside forces include wind seas, adding/removing weight, and free surface. The six Motions of a Vessel in waves are rolling, pitching, yawing, heaving, swaying, and surging. Rolling is the motion about the vessel's longitudinal axis. Pitching is the motion about the vessel's transverse axis. Yawing is the motion about the vessel's vertical axis. Heaving is the vertical bodily motion of the vessel (whole vessel moves up and down together). Swaying is lateral (side to side) bodily motion. Surging is the longitudinal (fore and aft) bodily motion. All or most of the motions can occur simultaneously and have their effect on the efficient operation of a vessel. While the ship's officer cannot completely control these motions, there is much that can be done to diminish or alleviate their effects.

Motions of the Vessel and Governing Stabilities include: Roll- Transverse Stability, Pitch- Longitudinal Stability, Yaw- Directional Stability, Heave - Positional Motion Stability, Surge - Stability in motion Ahead or Astern, Sway - Lateral Motion Stability. The way a vessel rolls is a direct indication of her stability.

The condition of a vessel is determined almost solely by the location of two points: the Center of Gravity (G) and the Center of Buoyancy (B). G is the point at which all vertically downward forces of the vessel can be considered to act. In other words, the ship will behave as though all of its weight were acting downward through this point. B is the point at which all the vertically upward forces of support (buoyancy) can be

considered to act, or, the center of volume of the underwater portion of the vessel. In other words, the ship will behave as if all of its support is acting up through this point. There are a lot of mathematical concepts and processes to compute stability. Theory of Moments, Inclining formula, Trigonometry, Change in Mean Draft are also implied in vessel stability.

During the afternoon I worked on the computer, and I put all my pictures on the FAIRWEATHER's computer network.

We also had the drills: 1) Men on Board, 2) Abandon Ship, and 3) Fire and Emergency.