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Read the Waves Like a Pro

By Capt. Bill Brogdon

Seas may have relatively smooth peaks, or they may break when the conditions are right. Wind-driven seas in deep water usually spill over their crests when they become steep. These are called “spilling breaks.” In shallow water, waves slow down. They thus become tall for their length, and break by curling over. These are called “curling” breakers and are the most dangerous.

In a curling breaker, the water at the crest moves forward with great force. It is best to avoid them like poison. A curling break of sufficient size can capsize a boat, even a large one.

In evaluating waves, height is important, as are length and period (the time between successive peaks). The height is measured from peak to trough, usually of the highest one-third of the waves. Estimated heights are notoriously poor. People tend to underestimate small waves and overestimate large ones. It isn’t uncommon for one person to judge a huge wave as 40 feet, while another on the same ship believes that it is 80 feet.

If you practice estimating wave heights, you will develop a scale of your own. It will not be precise, but it will allow you to compare one set of conditions with another. Estimation is complicated by the fact that seas are not regular like corrugated roofing, but are a mixture of growing and decaying waves of various lengths proceeding in one or more directions. They also interact, with heights being added when the peaks arrive at the same place simultaneously. The waves cancel each other when the peak of one meets the trough of another.

Estimate the period of time between successive wave peaks, too. Watch a bit of flotsam or foam as waves pass under it, and time the interval. It isn't valid to time the wave period by the boat unless you are drifting. Long-period waves are comfortable, while those with short periods and the same heights are bothersome.

Short, steep seas are characteristic of shallow water, such as found in much of Chesapeake Bay, Buzzards Bay and Pamlico Sound. These and similar places have a well-deserved reputation for uncomfortable conditions. In addition, a current running in the opposite direction to the seas makes them short and steep. Be alert to rips where the tidal current is constrained in narrow places, running against the seas. These rips require extra caution.

On the other hand, as seas travel from the area in which they are generated, they become lower and longer. A huge wave at the center of a storm becomes a long swell hundreds of miles away. Swells have smooth, rounded tops and typically have long periods. A 6-foot, wind-driven sea can be most unpleasant, while a 6-foot swell with a long period (and length) causes a smooth up-and-down motion.

Swells are more conducive to analysis than seas. The length of a swell in deep water is about five times the square of the period in seconds. Thus, a swell with a period of eight seconds is about 5×8^2 or 320 feet long. The speed of a swell is about three times the

period, so the same wave would be moving at about 3 x 8 or 24 knots.

A good skipper makes it a habit to estimate the sea conditions — wave height and direction, and wave period. Naturally he or she also estimates wind speed and direction, and especially changes in wind speed.