

Power in the Rough

Boat handling techniques – along with vessel design, size and construction – are a key to a powerboat's rough-water performance

By Capt. Bill Brogdon

We dream of those days of slight seas and moderate winds, when handling a powerboat at sea is merely a matter of holding course, and the motion is easy. But inevitably the wind picks up, adding progressively to our task and beginning to affect the boat's motion. By the time the wind is up to a level that we would truly enjoy under sail, we're having to compensate for its effects on a powerboat.

The wind causes waves, beginning with little ripples from a light air and growing to truly impressive waves from strong winds. Those waves are the primary consideration in handling a boat at sea. Winds in the local area soon build up waves called "seas." Seas are relatively steep for their length and affect boats directly. The other factor is the boat — her size, design, speed and course with respect to the seas.

A wind of a steady velocity builds up a sea to a characteristic height, when it continues for a suitable duration and over an appropriate distance (fetch). A strong wind blowing offshore leaves the sea relatively calm near shore and progressively rougher farther away from the sheltering land.

It doesn't take very long for winds in the 15- to 20-knot range to build up a sea that affects boats. As soon as you see whitecaps — at around 12 knots wind speed — the wind-driven seas will start to gain notice. A little spray and an occasional slap are more inconvenient than uncomfortable, but with another few knots of wind speed, the seas will make themselves felt [see accompanying story].

The boat in the seaway

A boat's design, size and construction play major parts in her ability to handle speed and seas. A displacement boat, one that never gets up on plane due to having a hull that tapers toward the stern, can handle large waves well. Life boats, boats adapted from older, slower fishing-boat designs, and a few trawlers are typical seaworthy displacement boats.

Most boats today are designed to plane. Their engines are powerful enough and their hulls are designed to allow them to rise in the water with increasing speed. But there are huge differences in planing boats. Generally speaking, those with relatively flat bottoms and wide beam for their length don't perform well in rough conditions. More slender, deeper hulls do better at speed in a seaway.

As seas grow, you pay more attention to steering. Avoid the temptation to try to stay exactly on course with frequent rudder action. It's better to let the boat yaw naturally, and apply relatively small rudder angles for a longer period of time. As the old skipper said, "Let her swim through the seas." Then there comes a time when an occasional wave requires helm action. Watch the incoming waves carefully; they may require some action to ease your passage.

Headseas

Let's think about seas from ahead. A boat usually takes seas best "on the bow," or at

about 45 degrees from dead ahead. Naturally your course with respect to the seas determines the angle at which you meet them, until you have to alter course due to the sea conditions. If conditions aren't bad, it often helps to steer away from the wave a bit as you meet it. With a smooth-peaked wave approaching on the bow, a small and quick turn away from the wave allows the boat to meet the wave more slowly and with less chance of slamming. But this is not a good idea with steep, large waves. Large waves with the potential to break give the boat a severe roll if you turn away from them. At worst, you might even contribute to a capsize.

At some point, very large waves require individual attention and alert rudder action. Experience reveals when this is necessary. When meeting a very large wave, it's best to do so head on — and at very slow speed. Obviously, if you go too slowly you can lose control of the boat's heading. You may have to use some throttle along with hard rudder if the boat's head starts to fall off, reducing throttle as you regain control. In a smaller, open boat, everyone should have their life jackets on well before it gets this rough. Sometimes the problem isn't the usual gradual increase in wave height due to increasing wind speed, but an immediate change as you approach a rip. A moderate seaway with rounded swells becomes a short, steep, nasty one in a rip. That requires a quick change in tactics: slow down, hang on and work your way through carefully. Fortunately, rips occur in specific, well-known places and at certain stages of the tidal current.

Speed

Speed is another major factor, at least as important as steering. As the boat begins to slap or slam into occasional waves, slow down. If you hit too many of them, sooner or later you will hit one wrong and the boat will decelerate instantly. That's when you or a passenger can get hurt.

Then as the seas become larger, reduce speed more. It's both safer and more comfortable to meet waves at reduced speed. Engineers know that the energy varies with the square of the speed rather than linearly. If boat meets wave at a combined speed of 30 knots rather than 15, the energy of that slam is four times as much, not twice as much.

You often can find a reasonably comfortable speed just below planing. The bow is high, an advantage in meeting waves, and you can cut speed quickly when needed. At some point, you are much better off going at subplaning speed. This can be quite comfortable in a seakindly boat. Many small boats can operate in relative comfort at displacement speed when they would be miserable if planing. It takes longer, but so what? You don't collect bruises or cracked teeth along the way. Nor will you damage the boat by letting her pound too long.

Running down-sea

Quite often you will have the seas astern or nearly so in rough weather. At first, there is just the increased effort in steering. Many boats that handle well going into a seaway yaw all over the place when running with the seas. Your first tactic is just letting the boat yaw and making slow corrections.

As the seas get rougher, you must pay more attention. A substantial wave shoves the stern away from itself, and you must quickly counter with rudder to keep from being turned toward the wave. Otherwise, the boat will take a sharp roll. If you can keep the stern pointed more directly toward the wave, the boat will not roll as badly. In heavy seas this is vital. You do not want to be parallel with a large wave, or "in the trough." That's a dangerous situation, perilous for both you and your boat.

Speed becomes important running down-sea, as well. Outrunning a large wave in a relatively small planing boat can be hazardous. The boat speeds up rapidly on the front of the wave. Then the bow tends to dig in, turning the boat very quickly to an undesirable angle with the wave. With a small planing boat in large waves, you have to be on the throttle as well as alert on the helm.

It is better with many hull designs to slow to the point at which the waves are overtaking the boat. (Sometimes you can't outrun them in your particular boat in any event.) You can goose the throttle a bit as a wave overtakes the boat. This both reduces the speed of the wave hitting the boat, and gives better rudder control.

Running with gigantic waves in our old double-ended 44-foot Coast Guard motor lifeboats, the coxswain sometimes backed the engines as a wave hit the boat from astern. That kept the boat more or less perpendicular to the waves. Remember, these were very tough, steel-hulled boats in conditions that were extreme. (Don't try this at home.)

Seamanship

Handling a boat in a seaway is an important skill, one that grows with practice. Naturally it is best to gain skill in moderate conditions, then tackle progressively rougher seas. If possible, avoid rough inlets — a separate subject — until you have plenty of boat handling in a seaway under your belt. The same applies to bad storms. Until you have plenty of confidence built on experience in handling your boat in rough conditions, avoid long trips offshore where you might be caught out. Extreme storms, like inlets, are a field of study all their own.

Flat weather at sea is rare. Moderate weather affects a boat significantly, and gradually building experience in progressively rougher weather gives you the ability to handle the boat well in a variety of conditions.

Capt. Brogdon is a retired Coast Guard officer with many years of ship and boat experience. He has been writing for boating magazines for more than 20 years, and International Marine has just published the second edition of his book, "Boat Navigation for the Rest of Us," (January 2001, \$19.95).