



The Professional Captain

Large Ship Handling Techniques

What the responsible small boat captain needs to know

By Captain Don Fleming

As I mentioned at the beginning of last month's culminating article on "Engine Room Quick Checks," I had coincidentally just finished a pre-voyage check of a client's 46 ft. Grand Banks trawler that was to be delivered to Norfolk, Virginia. Well, that particular vessel is now safely tucked away for the winter in a quaint marina along the Virginia Cut which connects Norfolk with Albemarle and Pamlico Sounds, which lie behind the Outer Banks and Cape Hatteras. Safely tucked away, this is after an exciting 14 hour roller coaster ride off the Jersey coast to Cape May with 25-30 knot north wind kicking up following seas of 6-8 feet. This was followed by a second day of steaming up Delaware Bay in patchy fog and drizzle with a light 1-3 ft. chop off the starboard bow into 15 to 20 knot head winds, then through the Chesapeake and Delaware Canal, and then running down to Annapolis with the same conditions blowing behind us before dark. The planned third day run to Norfolk had to be extended to a fourth day when we ducked into a cove on Windmill Point after nine hours of plowing into 4 - 5 ft. head seas on the way down from Annapolis.

Delaware Bay And The Hudson River

The reason I'm telling you all of this is because while I was steaming up Delaware Bay I was thinking about the series of articles we are kicking off this month regarding large ship handling techniques. Delaware Bay is not unlike some very familiar parts of our own Hudson. For one thing, there is a tremendous amount of large commercial ship traffic following a relatively narrow and shallow channel. The edges of this channel shallow out very quickly, and although these shallower edges are often safe for the pleasure boat to operate in, they would obviously be disastrous if a large ship strayed onto them. Although the names seem strange and exotic, like Miah Maul and Ship John Shoals, and the coastline, which is 'a bit further away in the lower bay, lacks the dramatic beauty of the Palisades, there is still a great similarity between running the Delaware and running some of the wider stretches of the Hudson like Tappan Zee, Haverstraw, and Newburgh Bays. The large commercial ship traffic may be somewhat heavier on Delaware Bay, but it tends to be spread out more than it is on the Hudson. However, in both areas one finds significant numbers of large commercial ships converging and changing course in some pretty narrow channels.

Needless to say, this entire part of my recent delivery along with our negotiating the traffic laden C & D Canal with its blind turns, busy Norfolk Harbor with its massive naval fleet, and the Virginia Cut with its narrow channels, refreshed my awareness of the need for those of us who consider ourselves to be responsible small boat captains of the Hudson River to have a greater understanding of the restraints inherent in the operation of the large commercial ship and towing units that share the waters with us.

A Simple Rule With a Deeper Understanding

It is one thing to simply say that these vessels are greatly restricted in their ability to maneuver and that the pleasure craft, power or sail, should make every effort to keep out of the way in anything that can even be remotely construed to be a narrow channel. And that this remotely construed narrow channel ought to be defined from the point of view of the larger vessel with its restricted maneuvering ability, and not from the point of view of the smaller pleasure boat captain. This is not only true; it is in fact, the law!

Beyond this simple rule of thumb is a deeper understanding and appreciation of exactly what the restrictions are that effect the maneuvering of larger vessels. If we, the responsible small boat captains can increase our awareness, we can spread the word around so that we can reduce the number of incidents where an irresponsible or inexperienced operator puts himself and other craft in grave danger by getting involved in a close encounter with a large ship or towing unit.

Computerized Ship Handling Simulator

In order to increase my own knowledge and awareness in preparation for writing this series of articles, one of the things I did was to visit the Seamen's Church Institute (SCI) of New York and New Jersey at the new SCI Seafarer's Center at 241 Water Street, New York City, right in the heart of the bustling South Street Seaport district. Their Maritime Training Division, headed by Director, Captain Eric Larsson and ably assisted by Captain Jim Fitzpatrick, Director of Operations, uses the very latest state of the art Transputer Generated Imaging System to create extremely realistic simulations of commercial ship bridges and ship handling characteristics in amazingly life like maritime settings. Through the use of their computers, they can recreate approaches to harbors, channels, and commercial docking facilities anywhere in the world as well as simulate the handling characteristics of nearly any type of ship imaginable. There are only about 8-10 of these sophisticated simulators currently in existence in the country, and the Maritime Training Division of the Seamen's Church Institute uses theirs primarily to train and upgrade the skills of various commercial shipping interests in and around New York Harbor.

The Invisible Distance

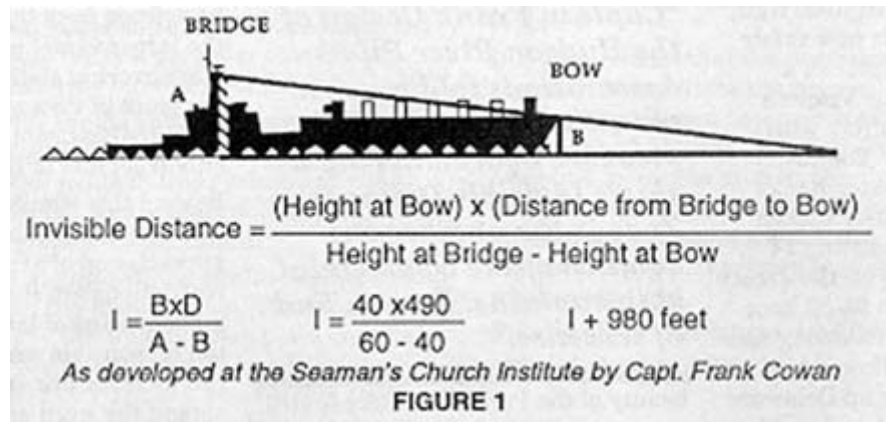
Let's begin our understanding of Large Ship Handling by considering the concept of "Invisible Distance." Large ships, and tugs pushing barges ahead, have an area of restricted visibility in front of them known as the "Invisible Distance." Anything that enters into this zone is totally invisible to the personnel on the bridge of the ship or tug. Typically a pleasure boat skipper will maneuver

into this dangerous zone feeling completely safe and confident because he can see the oncoming ship or towing unit, and he feels he can judge for himself if the commercial unit is getting too close.

Needless to say, the pleasure boat skipper is not leaving any margin for error regarding the sudden mechanical failure of his boat or the possibility of hitting a piece of debris in the water. Also, not taken into consideration by the pleasure boat skipper is a phenomenon called "interaction" which cause some weird things to happen when either a large ship and a smaller craft or two large ships get in close proximity of one another. I plan on writing a future article devoted solely to the explanation of interaction in a later issue.

The most dangerous part of this entire scenario is that the guys running the commercial unit have no idea where the pleasure boat is. They are in a situation where there is little they can do except pray that the pleasure boat makes it out to the other side of the invisible distance zone. Needless to say, this creates a very anxious and stressful time on the bridge of the ship.

Captain Frank Cowan of the Hudson River Pilots Associations told me in a recent interview that pleasure boats entering a ship's Invisible Distance Zone is the number one concern of the commercial ship captains. Period. End of Sentence. He later went on to explain through the accompanying diagram that he developed for the Commercial Tug and Barge Handling Training Course he co-teaches at the Seaman's Church Institute, that this "Invisible Distance" calculation is routinely determined aboard commercial ships (See Figure 1).

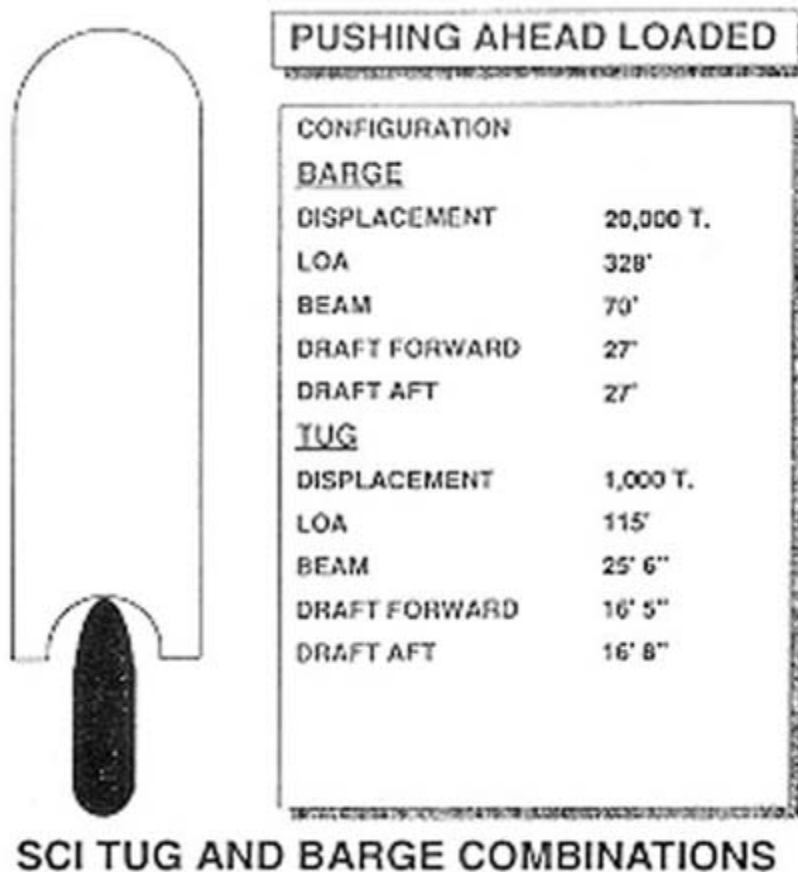


Captain Jim Fitzpatrick, Director of Operations, at the Seaman's Church Institute went on to explain how this is done by stating the following:

"Making an 'Invisible Distance Table' is a simple task that can be done using the ship's plans, or simply lowering a heaving line to measure the height of the bridge above the water and the height of the bow above the water. Do this when the ship is loaded and again when in ballast. The three values needed are the height of the bridge to the waterline, the height from the bow to the waterline, and the distance from the bridge to the bow."

On one of the days I visited the Institute, there was an actual Tug and Barge Handling Training Session in progress. The participants were a group of rather "salty" tug boat captains from Spentonbush/Red Star, a division of Amerada Hess Oil, which operates out of Kill Van Kull and Arthur Kill. They keep the S.C.I. under contract to train and upgrade the skills of their professional crews. These highly experienced captains all had numerous stories and deep concerns about pleasure craft entering their "Invisible Distance Zone."

The accompanying diagram which details the specifications of a typical tug and barge unit helps to give a better appreciation of the momentum and inertia forces that go into attempting to turn or stop a unit like this. (See Figure 2.1 Captain Ed Kessler of the tug Spartan told me that his unit needs a mile and half stopping range when pushing a loaded oil barge in a fair tide. Captain Stan Chellick General Manager of Spentonbush/Red Star, told me that the pleasure boat skipper should always keep visual contact with the man in the wheel house of the tug, and that this is the only sure way to be certain of not being in the "Invisible Distance Zone." He went on to point out that this bare minimum range should be avoided whenever possible in favor of longer and safer distances.



SCI TUG AND BARGE COMBINATIONS

FIGURE 2

Anxiety Over Possible Collision or Loss of Control

When I asked these professional mariners what they could do to avoid a pleasure craft in their "Invisible Distance Zone," they indicated that it takes between 1/4 to 1/2 mile depending on the weight of the barge and the set of the current to execute a 20° course change! It doesn't take a rocket scientist to figure out that the towing unit is not going to be able to avoid a pleasure boat sitting dead in the water inside the "Zone."

The Spentonbush/Red Star team at the Seamen's Church Institute that day strongly recommended that all pleasure craft keep at least 20° off either side of the bow of an on-coming unit. They pointed out that their biggest fear is that they will start to overreact to the pleasure craft in the "Zone," and lose control of the unit in the process. This can happen easier than one might imagine at first. There are tremendous forces and stresses on the cables and lines joining the units when a sharp collision avoidance maneuver is executed. More over, once the inertia of a turn is started, it is difficult to stop. The unit that goes out of control trying to avoid an unaware or over-confident pleasure boat operator can then become a serious hazard to shoreside facilities and/or other commercial ships and pleasure craft in its vicinity as it could take a couple of miles to get the unit back under control again. This would be true whether the pleasure craft responsible for the potential catastrophe was run down in the process or was able to simply proceed along its course completely unaware of the disaster it caused to happen.

Think about it! Spread the word!

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