DANCING *THE* TEXAS·3·STEP *IN THE* HOUSTON SHIP CHANNEL

AS TOLD BY CAPTAIN MICHAEL MORRIS

Well I'd like to begin by extending a great, big Texas howdy to everyone! The Port of Houston, like the Panama Canal, opened its channel in 1914. The Houston Pilots were established in 1921 and have been dutifully serving the port every day since then, so we are always happy to share a taste of our experiences.

Many decades ago members of the Houston Pilots realized that to make the Port of Houston competitive, they needed to keep the channel open for two-way traffic, *always*. With a port stretching up to 55 miles from the sea buoy, this was the only option in their eyes. And in no small part, this foresight has paid off.

Today the Port of Houston has become the largest petrochemical port in the United States, and it is ranked first in foreign waterborne tonnage. It is the nation's leading break-bulk port, handling 65 percent of all major U.S. project cargo. It is the largest container port in the Gulf of Mexico. And finally, the Port of Houston is ranked first in the United States in total ship moves.

Over the years, we have perfected a narrow channel maneuver in our waterway. Somewhere along the way this operation became known as the "Texas Chicken." I suspect this label was probably used by some of the ship captains who visited our port and found the maneuver frightful to watch. It no doubt makes many masters uncomfortable, particularly in darkness. It is easy to understand their rationale when they write in their night orders to stay at least three miles from all traffic, and then they come to Houston where they pass another ship with only a 100 foot separation. Many pilots in Houston feel this is a bad name for what we do. This name seems to conjure up images of reckless shiphandling, when in fact, this is the safest type of maneuver when meeting in a narrow channel. As a Houston Pilot, I prefer to think of it as the *Texas 3-Step*.

A perfect combination of art and science create the *Texas 3-Step*. Performed as a well-choreographed dance, it is the safest maneuver for a narrow channel. A ship naturally likes the center of the channel where the hydrodynamic forces acting on her are in balance. Get over to one side, and you fight to keep it there with the rudder. Breaking too early in our intricate dance meeting is a dangerous error. Pilots can tell when we are off the centerline, and to what side, just by watching the rudder angle indicator. By not committing to the maneuver until necessary, we are better prepared to avoid one another if either ship loses engines or steering.

Phase One is being in the right position before the dance begins. At approximately one mile apart, both vessels should be in the middle of the channel. This is depicted below.

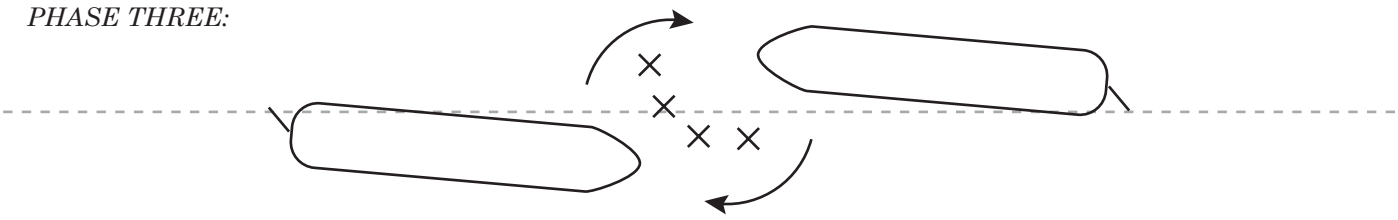
PHASE ONE:

In *Phase Two*, the first step of the dance begins when the bows of the vessels are approximately 0.6 miles apart. At this time both pilots will apply starboard rudder to bring their respective vessels to the right about three to six degrees. From this point until the end of the maneuver, most pilots feel it is safer to keep full control of the vessel themselves, versus giving a steady command or a course command to the quartermaster.

PHASE TWO:

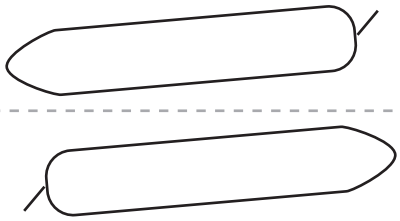
As the two vessels approach one another, we will each begin the second dance step by putting port helm on the vessels, as shown in *Phase Three*. This will start our movement back toward the middle, and applying the rudder just before the bows are even will counter any type of bow wave pressure wanting to push the bows further apart. The bow wave phenomenon is most noticeable on a small vessel when meeting a very large ship.

PHASE THREE:



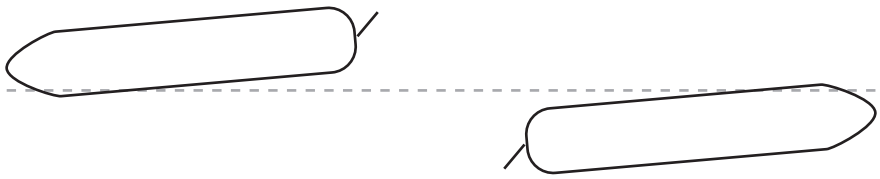
As both vessels begin their port swing back toward the centerline, it is extremely critical to keep the movement under control. This is the tricky part. The vessels usually want to move back to the middle very quickly. This is due to each vessel feeling stern suction from the bank, as well as the big low pressure area at the stern of the meeting ship combined with the attraction of open water toward the center of the channel. At this point, starboard helm is applied. As the two ships are abeam, they should be nearly parallel to one another. The port swing helps both sterns to clear, as depicted in *Phase Four*.

PHASE FOUR:



As the two vessels clear, each will over-shoot the centerline course so as to move back to the middle. And, again, having a controlled swing is absolutely critical. This is shown in *Phase Five*.

PHASE FIVE:



Finally, as the vessels approach the centerline, each will take the third dance step and swing back to starboard, so as to be in the middle and on the course for that particular reach, ready to meet the next ship. See *Phase Six*.

PHASE SIX:

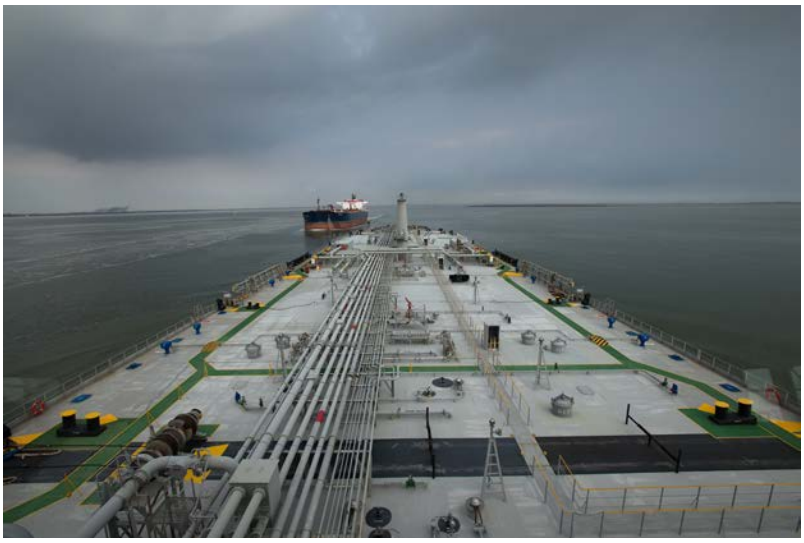
And that's the *Texas 3-Step*! One step to the right, one step to the left, and one more step to the right to get back to the middle.

A typical break is usually three to six degrees, but there are many factors at play in deciding when and how far we break for one another. These include:

- The draft, type and size of the two vessels meeting
- The controllability of the two vessels meeting
- The proximity of shallow draft tow traffic in our channel
- The speeds of the vessels meeting
- The distance the ships are apart when we start our maneuver
- The channel dimensions where the meeting is taking place
- The distance to the next vessel we will be meeting
- If the meeting is taking place at a turn in the channel

Timing is critical in the *Texas 3-Step*. In fact, this is partly why we have extended our deputy training program to three years. Just a few seconds off, and there can be a huge difference in how the meeting goes. Practice, practice, practice is what makes one good.

If there are concerns about a particular vessel's controllability, most pilots will slow down prior to the dance. This allows us to have a "kick" available in case we need it.



Today the channel is wider, but the ships we bring into port are much larger as well. We currently have a 530 foot channel for the first 45 miles, and we bring in ships up to 1,100 feet in length and 166 feet in beam. We use a maximum combined beam total of 310 feet that will meet in the channel. This is a ratio of 1.71 channel width to combined beam. The upper channel is only 300 feet wide, and there we presently work with a combined beam total of 210 feet when meeting. This is even closer with a 1.43 ratio of channel width to combined beam.

Many captains are surprised at how often we do this maneuver. I believe this is a reflection on how busy the port has become. On a busy day we might meet 15 to 20 ships in Galveston Bay. And each time we meet, we dance.

Our narrow confines mean that pilots have to work very closely with one another. Working in concert is essential, so we must be a team. Trust in one another to do the right thing is extremely important.

Over the years, I have had some funny stories while doing our ship dance. One evening just prior to starting the maneuver, I had a third mate shine a flashlight in my eyes as he asked me if I saw the ship ahead of me. I told him that up until he blinded me, I was seeing the ship just fine. On another evening with multiple ship meetings, a captain asked if he should be writing up a near-miss report for all the vessels that we met.

Because the dance can look ugly to someone who has never seen it performed, I always check with the captains and officers of the watch to see if they have been to Houston before. If they have not, I draw a picture and discuss the maneuver at length with the bridge team as part of the "Master-Pilot Exchange." This is critical today with our channel configuration. Our beacons are set 1,000 feet apart, which allows all the light draft tow traffic to stay out of the deep water and on the toe of the channel. We call this area the "barge lanes." Consequently, mariners not familiar with the channel see what looks like a much wider channel than we really have. Incidentally, for every ship moving on our waterway, there are eight to ten tows. The density of traffic along the narrow waterway makes navigation quite challenging.

I also love it when the helmsman does not have good visibility from the steering station due to cargo booms or cranes. When a quartermaster does have good visibility, many have wanted to steer to the right as they see the oncoming vessel, before I am ready to start the dance.

While on the subject of steering, we are not fond of the "closed loop system" for steering orders here in our channel. In fact, most of us ask the helmsman to repeat the order only once. We tend to give quick and rapid rudder orders while we are dancing. The helmsman repeating the order when the helm gets to the ordered location usually just causes confusion and more noise. But rest assured, we are always watching the rudder angle indicator!

And now you know how the Houston Pilots dance. We look forward to seeing you and your ship at the Port of Houston.

Captain Michael Morris, Houston Pilots

Photographs by Captain Lou Vest, Houston Pilots