HANDS-ON SAILOR

Practical solutions and techniques for the bluewater sailor

SEAMANSHIP BY JOSEPH HUBERMAN

A Compass (Still) Saves the Day

Current and fog conspire to confound a cruising couple steering by their GPS

STRONG CURRENT, BLUSTERY breezes, and lots of boat and ship traffic often make the entrance to the Cape Cod Canal from Buzzards Bay "interesting." But then add fog, which we encountered while motorsailing on a trip to Boston, Massachusetts, and this patch of water can be downright baffling—as my wife, Ruth, and I were to discover.

On this late afternoon, the fog was thick, and the visibility fluctuated between 100 and 300 feet. The water outside the channel is shallow, and we had 3 knots of favorable current helping to push us along.

We originally planned to anchor our 43-footer, *Prestissimo*, in Onset Bay, near the west end of the canal, spend the night, then get an early start through the land cut the next morning. The Hog Island Channel, leading to the canal, is about 500 feet wide, but the channel to Onset that branches off it is only about 100 feet wide.

We were navigating with a GPS/chart plotter, sounding our horn at regular intervals, and using our radar to keep track of nearby boats. Before reaching the channel into Onset, we noticed a steady stream of boats heading slowly toward us from the direction of the canal. They were traveling against the current, and according to our radar readings, many were acting strangely, wandering around almost aimlessly in the channel as if they were lost. We dropped our sail and stayed well over to our side of the channel to keep out of their way. Visibility was too poor to see from one channel marker to the next, but the accuracy of the chart plotter made it easy to hold our course just a few yards from the edge of the channel. As the buoys appeared through the fog, they were precisely where the chart plotter indicated. This increased our already high confidence in our instruments.

We were tired, tense, and very much wanting to get out of the channel and into the anchorage. The fog remained thick, but we confidently motored on at 2 knots. With the current, our speed over ground, or SOG, was about 5 knots. Still, it was unnerving seeing the other boats appearing to move aimlessly on the radar as they approached us.

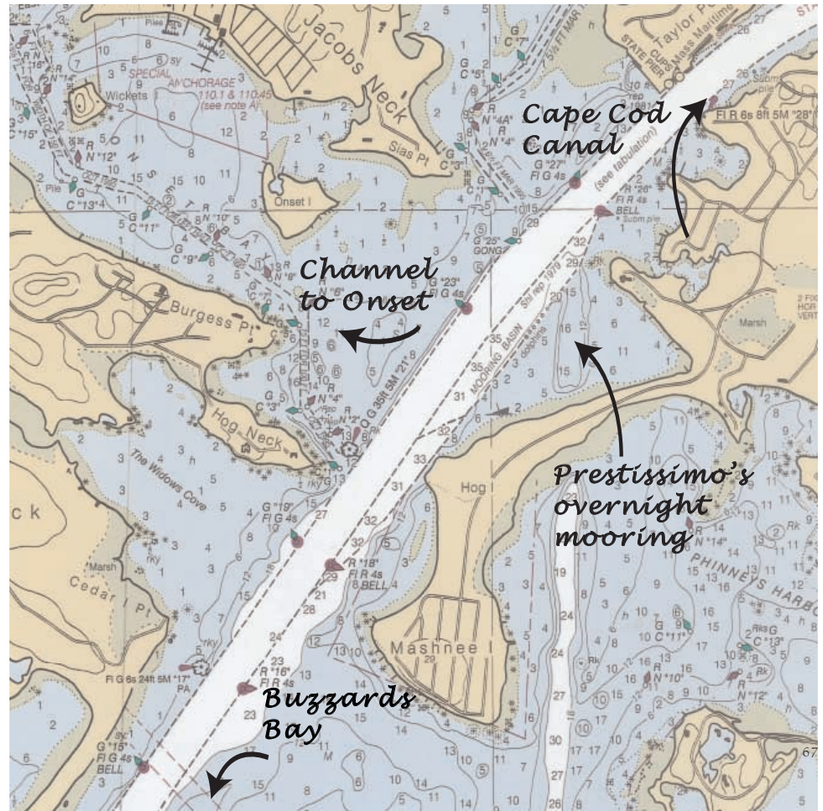
As luck would have it, just as we got to the turnoff to Onset Bay, one of these wandering boats was directly in our way and blocking the narrow entrance to the channel. For safety reasons, we continued past and waited for that boat, then another, to pass before turning around and heading back against the current.

As we turned around, we became disoriented in the fog. We increased our speed through the water to about 4 knots to fight the current. Suddenly, the depth alarm went off, signaling that we were out of the channel. The chart plotter now showed us heading perpendicular to the channel. I called to Ruth to turn 90 degrees to starboard to get us back on course. She turned what, in the fog, seemed like 90 degrees, and a few seconds later the chart plotter showed us heading *northeast* up the channel to the canal *with* the current—when we expected to head southwest against it.

I called out, "Turn 180 degrees port!" A few seconds later, our GPS/chart plotter showed our course-over-ground, or COG, heading to be again perpendicular to the channel and heading for the other side. After a few more of these wild turns, a glance at our track showed that now we, too, were wandering back and forth in the channel and getting nowhere.

Ruth finally said, "You take the helm. See if you can hold the course."

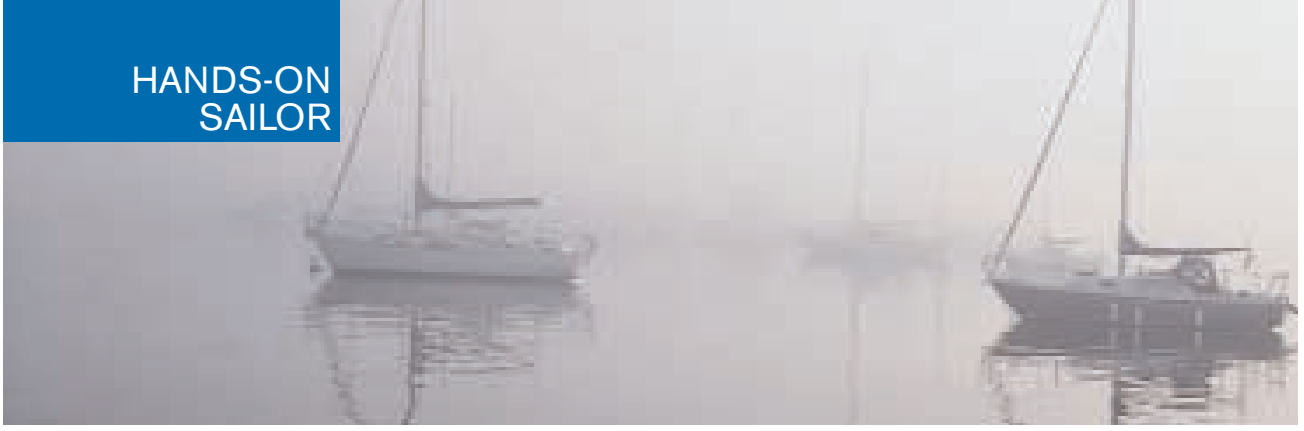
As the depth alarm sounded again, I took the tiller and swung the boat 90 degrees to get our course roughly southwest and again up current in the channel. After completing



NOAA CHART

A notorious current runs between Buzzards Bay and the entrance to the Cape Cod Canal in Massachusetts, making the entrance channel to Onset (marked by the cans and nuns, above) a dicey affair in even the best of weather. Add fog to the mix, and you have a devilish brew with which to contend, thanks to narrow and unforgiving channels (see chart, right). The route to Onset runs along the north shore of Hog Neck and around Burgess Point.

MARY JANE HAYES



Fog in the waters around Massachusetts' Cape Cod and Buzzards Bay is a common challenge for U.S. East Coast sailors. It can sock in seemingly without warning, so it pays to heed chart and compass and be ready when Mother Nature puts the blinders on.

what seemed a 90-degree correction, our chart-plotter course changed 270 degrees, and we were traveling northeast, with the current—again.

Suddenly, the situation became clear. Under these conditions, steering by the GPS/chart plotter's COG reading was getting us in trouble. The speed and direction of the current, boat speed, the time delay in getting a COG reading, and our own disorientation in the fog all combined to make it impossible for us to hold a course while heading into the current. We had no reliable visual cues, and as a result, we were now another boat traveling aimlessly in the channel.

It was then we realized that we had to return to the time-tested, low-tech standard of piloting: the compass.

Over the years I, like so many people I know, had come to rely heavily on COG piloting, which tells me where my boat's going, not necessarily which way it's pointing. The compass, on the other hand, tells me where my boat is pointed, not how it's making progress over the ground. While often these are different, usually the differences are slight.

Ruth took back the helm and held a compass heading of 230 degrees magnetic to point us directly against the current and toward the Onset channel, and I went back to the chart plotter. As Ruth announced that we were on our compass heading, the chart plotter showed us to be on the port side of the channel. To test my theory, I told her to turn 5 degrees to starboard; our COG changed by about 20 degrees to starboard. I then asked her to turn back to 230 magnetic. Now we were heading smoothly up current in the channel. As we navigated back toward Onset, the COG fluctuated as much as 20 to 40 degrees, and we corrected it with 5- and 10-degree course adjustments.

As we approached the Onset Bay channel, I realized we'd never make it safely to our planned anchorage. The entrance channel was perpendicular to the current and flanked by rocks, and I didn't think we'd be able to navigate in the much narrower channel under our present circumstances. Checking the chart for a place to anchor away from this confusion, I found some dolphins, or large pilings, for barges and ships that the Cape Cod Canal Authority had placed near the canal entrance. To reach them, we turned around; steering easily with the current, we left the wandering boats behind.

When the pilings came into sight, we found they were way too big to tie up to unless we used the dinghy to loop a line around one of them. However, upon approach, we noticed mooring balls maintained by the Massachusetts Maritime Academy and intended for smaller boats. We picked up one and spent a restful night in the company of another stranded boat.

What changed our aimless wandering in the channel to a relatively steady course against the current? Let's review what happened: We were motoring at 2 knots, with the 3-knot current giving us a SOG of 5 knots. When we turned back against the current and increased our speed to 4 knots, our SOG was only 1 knot.

Traveling with the current, a slight change in heading results in small COG changes, given our total speed of 5 knots. When making headway of only 1 knot in a 3-knot current, a small heading change results in a much larger change in our COG.

When we were making our trip toward the Cape Cod Canal, while our heading was about 20 degrees off the current, our COG showed us heading 90 degrees off—directly for the edge of the channel. Our COG, which has faithfully guided us through difficult situations, was now playing tricks on us. We'd traveled against currents before using COG, but always in good visibility, so we knew on those occasions in which direction we were pointing and whether we were crabbing across the current or not. Now, in the thick fog, there was no way to see our surroundings and no visual cues between our heading and our boat's COG.

Compounding this disorientation was the necessity to keep our speed down in the thick fog. Thus the current was fast in relation to our speed over the ground, magnifying the angular difference between our course and the direction the boat was pointing when it wasn't heading directly into the current. Further, the combination of a several-second delay in the COG display and the extreme sensitivity of the heading in relation to the current meant that by the time our COG indicated where we were going, we were already way past that direction. Not until we started steering by the compass to maintain our heading, using the COG to factor in the drift from the current, were we able to control our boat in the fog and against the current. (Refresh your current-vector and piloting skills by reading "Practice Up for Fog and Current" on page 70.)

The next morning dawned bright and clear. To our amazement, the "miles" it felt like we'd traveled during our struggles in the fog the previous afternoon were all right there in plain sight. In a single panoramic view, we could see the entrance to the Cape Cod Canal, the pilings, more than a dozen channel markers, the channel to Onset, and the anchorage in Onset Bay. After breakfast, we had a pleasant trip in a swift favorable current through the Cape Cod Canal on our way to Boston.

Joseph Huberman took 18 months off from his Raleigh, North Carolina, business (which manufactures orienteering equipment and makes sculptures for festivals and special events) to build *Prestissimo*, a 43-foot sloop that he and his family sail along the U.S. East Coast.

MARY JANE HAYES