Single-handed Sailor

BY JOE ROCCHIO • C470 • *ONWARD*

The Mind Game. The big challenge in single-handed sailing remains a personal challenge. Sailing single-handed can readily be done with low risk – but there is little room for error and, obviously, no one to help with the recovery. Serious problems are usually the result of error stack-up as several small errors combine to make a threatening situation. The best way to avoid this is to prevent as many small errors as possible. My experience is that the best way to do this is to develop well-considered procedures to operate on a daily basis – and use them. Key rules for developing these procedures are:

- Make a goal of making as many procedures as possible a habit – so they can be readily done right when fatigued, preoccupied, distracted or stressed.
- If it is going to be done regularly or many times – work out a good way to do it, refine the process, and stay with it.
- Small additions of equipment or technique can make a huge difference – look for opportunities to hone things.
- Do it right this time – don't take that tempting shortcut; a moment saved now will usually cost hours later.
- Always ask the question: What have I missed? And: Is there any way I could have screwed this up?
- Murphy's Law reigns and it has a corollary: all physical things on a sailboat are perfidious as they actively seek out a way of causing problems – so look for these and correct them before they get a chance to act.
- Do it now – it will be forgotten later.
- Memory is good; a notepad is better.
- A strange unknown sound on a boat is usually bad – check it out, Now.
- Trust instinct – when it doesn't feel right there's a 99% chance it isn't right.

***Mainsheet* Editor's Note:**

Joe Rocchio is the technical editor of the 470s. This article was submitted for the tech section, but we found it to be of common interest and good information for any sailor. Part 1 was in the Fall 2012 issue of *Mainsheet*.

Crew Safety. The paramount issue for any sailor and particularly for the single-hander – there's no one around to help recover from a threatening error. The principal safety decision I made is to choose and set up equipment so that it is unnecessary to leave the safety of the cockpit to work on deck. In the previous segment I discussed several approaches to furling, rigging, anchoring, etc. that were designed to achieve this goal.

But, *&^% does happen. If the first rule is "Stay in the Cockpit," the second is "Stay on the Boat". To that end, jacklines of heavy-duty nylon strapping are located on port and starboard sides from bow to stern. They are as taut as possible but allow working around equipment at the toe rail. Writing this article caused me to reconsider this arrangement and as a result I intend to re-rig the jack lines closer to the foredeck's centerline so as to make it very difficult for me to be thrown overboard when clipped on. I will also rig a two-step webbing ladder to allow me to climb back aboard unaided if I ever do go over the side.

A high-end inflatable PFD with integral harness is kept readily available and is fitted with a tether that has two running ends to allow clipping around deck components if necessary. The key issue here is the discipline to don the PFD and harness while underway, whenever it is necessary to leave the cockpit and go on deck. The harness is worn and the tether clipped on – no matter what the sea conditions; the act of clipping on has to be an automatic habit.

Several heavy-duty D-rings have been installed just outside the companionway steps and at the stern end of the cockpit itself so it is possible to move about the cockpit while tethered.

Another very important rule/habit is never to go out of the cockpit without shoes that offer toe protection from voracious deck hardware. This is another discipline issue; the rule must be followed under all conditions so it is an automatic habit.

Handholds. The handholds at the forward and rear end of the cockpit table are critical for moving safely around the cockpit. They must be kept unobstructed. As they see a lot of stress, the mounting studs on the stern handhold were replaced with larger diameter, ½" studs. The C470 has a good layout of handholds in the interior. However, *Onward* has an extra teak handhold installed just to the starboard side of the door to the forward stateroom to make the transition between the standard handholds on both sides of the bulkhead.

Emergency Signaling Equipment. The forward locker on the starboard side of the salon has been dedicated to safety equipment – a one-stop source centrally located and easy to access. A full complement of USCG recommended emergency flares and other signaling devices are carried and replaced as required by expiration date. Other equipment includes signaling mirror, strobe light, light-sticks, whistles, etc. *Onward* also carries a 406 EPIRB in this location for manual deployment. A SPOT satellite position reporting and emergency alert system is also part of the safety equipment as is a DSC VHF and SSB connected to the GPS.

Lifesaving Equipment. The port stern seat locker is dedicated to PFDs and a throw line for man overboard retrieval. *Onward* has a dinghy on davits but does not carry a life raft. I have read many times where vessels were found doing just fine after the crew abandoned them to board life rafts. Given the robustness

of the C470, I have made my decision to focus on staying with *Onward* and taking care of each other. Should *Onward* go into longer distance ocean crossings, I will reevaluate.

Navigation Equipment. Perhaps the most important piece of equipment for the single-hander is the autopilot. The modern chartplotter, when integrated with a sturdy autopilot system, makes long-distance cruising an enjoyable versus an exhausting activity. While advances in technology make possible plug-and-play connectivity of instruments from different makers, I spent too many years in my professional life working very hard to try to get research laboratory equipment from different sources to play nicely together so I opted for an integrated suite from Raymarine. Raymarine Tech Support, while good, may not always know the answer – but they can't say it's the "other guy's equipment".

Current equipment includes an E120 chartplotter, ST60 boat speed, wind speed and direction, depth, multi, SPX30 autopilot, ST7002+ autopilot control head, ST600R wired autopilot remote, wireless autopilot SmartController, SR100 Sirius weather receiver, and AIS250 AIS receiver, ST125 GPS and Pathfinder 4-kw radar with mast mounted scanner. The autopilot control head is at the stern of the center console above the chartplotter. This enables ready access from either helm.

The chartplotter is mounted in the aft end of the console at eye level when seated at the helm. Other captains have chosen to mount it in pods that are closer to eye level when standing at the helm. I find this tends to obstruct the view forward. If needed, an A90D mounted on a stalk at the starboard helm can provide excellent chart visibility when standing at the helm. However, in >30,000 nm of sailing *Onward*, I have seldom needed to use it in this manner.

Radar. Radar integrated with the chartplotter so radar returns are overlaid on the chart is an invaluable safety tool particularly at night, in fog or other low-visibility situations. The fact that it is used in a relatively limited set of sailing conditions necessitates setting it up and becoming familiar with its operation under benign conditions. Then, with limited visibility, the Captain is thoroughly familiar with its use and interpretation. In fog, it is critical to develop the skill to readily differentiate from random noise those faint returns that are persistent in location. These must be tracked and the radar should have MARPA - Manual Automatic Radar Plotting Aid - capability. Such returns often mark a vessel with low radar cross-section. (Many large modern sports fishermen appear extremely "stealthy" when viewed bow on!)

Onward has spent many hours safely navigating foggy New England waters with < 0.25 nm visibility using integrated radar and chart data. A radar reflector that offers many corner reflectors so there is always one that is effective regardless of the angle of heel and observation azimuth is a must – it doesn't pay to take the cheap approach here; *Onward* has a Firdell "blipper" reflector mounted above the radar dome on the mast.

Redundant Navigation Equipment. Redundancy for electronics is a fundamental principle. A stand-alone (internal GPS and charts) Raymarine A90D chartplotter is carried as backup and can be mounted on a secondary equipment "stalk" by the starboard helm. This is normally just connected to a 12-V power plug but can be fully integrated into the system in an emergency. It is often mounted next to the Captain's berth during "exciting" weather at night so he can monitor boat position. A backup Raymarine GPS for the main system is aboard as well as others for the laptop and in smart phones, etc. (at least seven GPS units are aboard at last count).

Navigation Procedures. When *Onward* moves through unfamiliar coastal waters, a route is first laid out on the chartplotter. Then this route is inspected at high resolution (3 nm or less) to be sure there are no threats like rocks or shoals that are hidden at larger scales. With this route available, I am confident *Onward* can be safely navigated by the autopilot without my intervention should anything require my immediate attention elsewhere. All captains should inspect at high resolution the vector charts presented by chartplotters. The problem of small but dangerous navigation hazards not being shown on vector charts at scales >3 nm is a suspect in the 2012 loss of the sailing vessel Aurora off the US Pacific coast.

Paper charts are still a must! Electronic charts are wonderful but whenever *Onward* moves, the relevant paper chart is available at the helm for quick reference as it is my experience that they still provide the best situational awareness. In addition to the E120's Navionics charts, NOAA ENC charts are carried on my laptop and my iPad. The iPad also has the same Navionics charts as the E120 and I use this for planning purposes. Tablet computers such as the iPad have rapidly become an extremely useful tool for the single-handed sailor because it provides facile and rapid access to vast stores of information. I have set up the iPad with a complete library of USCG coastal pilots, notices to mariners, rules of the road, Chart 1, as well as operation/owners manuals for most equipment so they are easily accessed and searchable. Many apps are available that provide charts, weather, tides, AIS and other data that make the cockpit iPad even more useful. The tablet has made the internet a component of navigation and a handy source of local knowledge. And it is a great companion on a long passage.

Cockpit Equipment. During the second month of cruising full time, my daughter and I had a bit of a scare in Narragansett Bay. As soon as we had calmed down, Laura took out her pad and pen and began an after-action-review with me to identify what went wrong and outline strategies needed to prevent this scare again. The results of this analysis were quickly implemented and are followed daily. Many have been covered throughout the two parts of this Tech Note but two very useful items will be covered here: the Nav-seat and the Nav-box. The primary problem was a dangerous hazard being hidden when the course was reviewed at 6nm resolution (see above).

Nav-seat. A removable "Nav-seat" was fabricated to sit in the space between the stern helm seats when underway. This seat is raised a few inches above the level of the two helm

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Onward called 911 to help rescue a 50' motor yacht that was swamped in the Chesapeake during a fireworks display; there were many emergency vessels nearby but the communication noise due to managing the fireworks made them incapable of being raised on VHF. The 911 system was able to coordinate between organizations and marshal them to the rescue.

seats and provides much better visibility with its elevated, unobstructed, central view. When underway in any but the most familiar waters, the rule is that the Captain must sit here so he has good situational awareness and control of all navigation equipment especially the chartplotter and autopilot that are within arm's reach.

Nav-box. When navigating through tight areas like the ICW, there is little opportunity to for the single-hander to leave the autopilot unattended to get a needed piece of equipment or reference – and these seem always to be needed at a stressful time with no one to fetch it. A large, rugged covered plastic storage box was turned into the Nav-box by installing a set of StarBoard dividers. Here, all equipment that is regularly used is stored and placed next to the Nav-seat. Stored items include: binoculars, laser rangefinder, hand bearing compass, emergency electric and air horns, rigging knife, digital voice recorder for capturing notes or VHF emergency broadcasts, LED flashlight, stop watch, cruising guides, logbook, notebook, cell phone, handheld VHF, autopilot wireless remote, cell phone, magnifying glass, rule, pens, iPad, etc. The drill is to be sure to return all these items to their place each time they are taken out for use – this precludes a desperate search for them in a stressful situation. The exterior of the box hold caddies for the autopilot remote, handheld VHF, cell phone and a water bottle. An emergency snack is also put in the Nav-box at the start of the day. The Nav-box can be closed and quickly put below for security when in an anchorage.

Communications

VHF. A Raymarine 218 ship station is connected to the masthead antenna with its Raymic remote in the cockpit by the helm station. A second Raymarine 215 ship station is carried as backup and can be mounted on the backup equipment stalk at the starboard helm station where it is connected to a separate VHF antenna mounted on the solar panel mount frame. A third emergency VHF antenna is also available. At least two handheld VHF radios are carried at all times – one of these is a floatable model.

SSB. An ICOM IC-M802 SSB DSC transceiver provides long distance communication capabilities.

Cellphone. Within 15 to 25 miles of the US coast and along the ICW, the cell phone is becoming the emergency communication system to go to as soon as, or concurrently with, making an emergency VHF broadcast. VHF is a must and it is great for alerting nearby vessels – but if you want to communicate the facts to the right people quickly and efficiently – use the cell phone. *Onward* called 911 to help rescue a 50' motor yacht that was swamped in the Chesapeake during a fireworks display; there were many emergency vessels nearby but the communication noise due to managing the fireworks made them incapable of being raised on VHF. The 911 system was able to coordinate between organizations and marshal them to the rescue. Even in the Bahamas, a cell phone is often the most effective way to reach authorities when VHF communication becomes problematic. *Onward* has not found a cell phone booster necessary, but this might add useful range.

Crew Comfort. *Onward* has a full cockpit enclosure with D-shaped doors on the port and starboard sides to allow rapid deck access. They can be partially opened to control cockpit temperature and airflow. In cold and stormy weather the three stern panels are kept in place, otherwise they are rolled and stored in a bag next to the side of the dodger. The ability to control cockpit conditions albeit with a small tradeoff in reduced visibility is more than offset by the big difference in comfort and reduced fatigue during long days on duty. Foulies may be photogenic but shorts and Tees (or less) are more comfortable. The dodger, bimini, and connector are always in place to provide maximum protection from UV due to the long hours spent in the cockpit.

Weather. If someone had told me before I started cruising full time that gathering and review of weather information would occupy about an hour a day for 4 to 5 months a year, I would have found it hard to believe. For cruising in the Bahamas, that is about what happens. The best way to sail safely is to avoid weather conditions that are threatening or simply uncomfortable – and that is what the time spent studying weather provides. Sirius Weather displayed on the E120 chartplotter is very useful – particularly in parts of the Bahamas where internet access is hard to come by.

The SSB is a very important tool for gathering weather information offshore and no offshore passage should be undertaken without at least an SSB receiver aboard. In the US and coastal waters where internet access is readily available via a cellular modem, there are myriad sources of good information. For offshore routes and crossings, a weather service such as the Caribbean Weather Center is invaluable because these experts have access to more extensive resources AND they have the vast experience to know how to interpret it to forecast hazards, which a less expert person would readily overlook. *Onward* would not leave home without it!

Maintenance. As a person whose leisure life was run by the motto "Never put off for tomorrow what can be put off for the next day," regular maintenance doesn't come easy. One important habit employed is that the engine is never started until it has been inspected, oil and coolant levels checked, fan belt checked, and fuel filter bowls and cooling water strainer inspected. Good notes on major systems that enable inspection and maintenance to be done on a regular basis are critical.

If all this sounds like common sense combined with self-discipline – you've got it. Hence the conclusion that sailing single-handed is truly a personal challenge.

Eternal vigilance is the price of sailing single-handed.