Editor's note: An abridged version of this article was published in the February 2013 edition of the magazine Ocean Navigator. Rich Feeley has been kind enough to allow us to post his article on the Cruising Club of America's Safety-at-Sea webpage.
There are really three great stories here: the first about saving the mast, the second about boat-to-boat transfers, and the third about the seamanship and preparation exhibited by the skipper and crew of Lora Ann. I learned a lot by reading every word!

DISASTER AVERTED by Frank "Rich" Feeley

THE VOYAGE

I always look forward to the return passage after the Newport Bermuda Race. It can be a pleasant cruise, usually well off the wind, without the constant pressure to make the last one hundredth of a knot or change sails at the first (or last) possible moment. For me it is a chance to catch up with old friends in the crew. Even the Gulf Stream might refrain from one of its malign moods.

Two experienced sailing friends from college years, Lee Reichart and Bill Rapf, joined me and Rich du Moulin (all age 65-67 but fit) to bring his Express 37, *Lora Ann*, back to New York. This crew had more than 50 Bermuda races plus return passages. Rich is a prime mover in Safety at Sea training, so we knew that *Lora Ann* would be well found and well prepared for the passage. In the exhilarating reach that was this year's race, she finished third in her class to *Carina*, which won the St. David's Lighthouse Trophy. *Lora Ann* has been on the podium for six straight Bermuda Races.

On Saturday, the day before our planned departure, the briefing room at the Royal Bermuda Yacht Club was packed for the presentation by the Bermuda Meteorological Service. The weather in Bermuda was benign, but the forecast showed two worrisome features. In the Gulf of Mexico, a developing low seemed destined to become a tropical storm, and perhaps a hurricane. A shower of computer projected tracks splayed out from its center. Most headed north to the Gulf Coast, but some crossed the Florida Peninsula and moved out into the Atlantic, crossing the homebound course late in the coming week. In fact, this low developed into tropical storm Debby and did follow the less probable track out into the Atlantic.

The other prominent feature was a strong cold front moving off the US coast. As it closed in on Bermuda in the daily projections, it squeezed the isobars against the amoeba shaped western extremity of the Bermuda High. If we left on Sunday, southwest winds would increase to 25 to 35 knots on Monday night as we intersected the front----conditions *Lora Ann* had encountered many times. It would be a bit bumpy on Monday night perhaps, but preferable to a delayed

departure that might encounter a developing hurricane later in the week. The skipper's subsequent conversations with a private weather routing service confirmed the projections, and we left St. George late on Sunday afternoon.

Two hundred miles out of Bermuda, as the wind was building, crew member Lee Reichart, a veteran of 20 years racing on Lora Ann and many Transatlantic and Bermuda races, slipped and fell against the primary jib winch on the port side. Once home, X-rays confirmed a broken rib on his left side. As we reached further away from Bermuda, Lee found it more and more difficult to move without severe pain, and by Tuesday as the seas built he was confined to his bunk, the pain buffered by Oxycodone and Valium. Rich had emailed his wife, Ann, a registered nurse, who advised us on the drugs. She also gave us the symptoms for a punctured lung which fortunately were not present.

As Lee's condition worsened, so did the weather. Throughout Monday afternoon and evening, we shortened down from the Number Three jib to the Solent to reefed Solent, and from full main to one and then two reefs. By dusk on Monday night, we were sailing with only the double reefed main.

A small boat that does a lot of around the buoy racing, *Lora Ann* has a mainsail fitted with a boltrope and slot - no slides. Her reefs are secured by shackling each reef tack to a strop near the gooseneck rather than hooks that tend to release the sail as it is doused. But above the second reef the luff can blow away as the sail drops out of the slot. With one man down, and one having to steer in the big seas (the autopilot was struggling at that point), two crew would be hard pressed to control the mainsail when doused, so we deferred putting up the trysail.

However Lora Ann sails remarkably well with a double-reefed main alone, and we had been through 50 knots with this rig on many occasions so we did not change to the trysail. Lora Ann powered on into the night on a close reach at full speed. As forecast, the winds built above 30 knots. The seas were clearly building to impressive heights, and the self steering gear could not cope, so we steered by hand. We were almost glad we could not see the full height of the waves. One boarding sea threw the helmsman across the cockpit, but the two men on deck were safely strapped in and Lora Ann held her course. Rich has a strict policy of all crew tethered from the time one begins to ascend the ladder to the cockpit until back down below standing on the cabin sole. There is a big padeye near the companionway for this purpose.

THE DAMAGE

By dawn on Tuesday the seas appeared to be running 20 feet, with the wind holding the anemometer well up in the 30's. Bill and I were on watch. As the grey light grew, there was a sharp crack, like a rifle shot. I looked up from my cockpit reverie to see the lower windward shroud flapping free, and the unsupported mast violently flexing from port to starboard about 1-2 feet at the first spreader. The shroud had broken off near the deck. I yelled "tack" and Bill

immediately put the tiller down. *Lora Ann* promptly tacked to starboard, putting the load on the new windward side, taking the pressure off the port shrouds.

This tack brought us into the heart of a passing squall, sending the wind speed well up into the 40's. For the moment, we were safe, but we were heading back for Bermuda. Could we keep the rig in the boat, repair it and return to our course for New York?

As shown in Picture #1, the port lower shroud turnbuckle threaded stud broke when the forged lower eye cracked. Fortunately the chainplate and barrel of the turnbuckle were undamaged. At the spreaders, the mast was bent 12 inches out of column but did not appear fractured or dimpled. Being so out of column, the compression of the rig and seas could bring down the mast any moment. The mast would have broken quickly if we hadn't tacked, but it was still in danger of collapsing.

THE REPAIR

The first task was to reconnect the remainder of the shroud to the chainplate. Rich leaped on deck, and using a short piece of green Spectra line saved for damage control, fished the chainplate and stropped the turnbuckle back together (Picture #2). In order to tension the shroud, he secured a second (red) line to the turnbuckle, led it down through the chainplate, through a large block (also kept for emergencies) back to the primary winch (Picture 3). With this winch, we were able to tension the shroud and take up slack in the strop. *Lora Ann* now had all of her rigging, but we were unsure how much load it could take.

With a temporary repair in place, we reported our predicament to other boats during our planned morning SSB radio contact. All offered help. After considering the option of returning to Bermuda, potentially encountering tropical storm Debby en route, with Lee's encouragement from his bunk, Rich decided to carry on for New York. We tacked back on to port, watching nervously as the load from the reefed mainsail came on to the repaired shroud. It held but we decided to motor until the seas subsided. With the mainsail down we were able to take a spinnaker halyard under the lower spreader and around the back of the mast to the port rail and winch it tight. The mast was now supported by the two lines to the turnbuckle and the halyard.

When the storm subsided the following morning, crew member Bill Rapf, sporting a helmet and PFD as a flak jacket, was hoisted to the lower spreaders to inspect for cracks (none) and attach a strong Spectra line to the babystay toggle fitting which we also led to the rail and aft to another winch. The babystay was perfectly located to support the lower shroud and bring the mast back into column (see photograph 4). We then unrigged the supporting halyard and hoisted the reefed main and Solent jib. Nervous but comfortable with our jury rig, we revised our plans to put as little pressure as possible on the mast. This meant carrying less sail area than optimal, and motorsailing when necessary. We carried extra jugs of fuel, but not enough to reach New York.

TWO PIT STOPS

Choucas, double-handed friends of Richard, was the nearest boat on our radio net, so arranged to meet us and transfer ten gallons of diesel on Tuesday evening. By the time we rendezvoused, a little before sunset, the wind was down but the seas still high. We motored cautiously under *Choucas*' stern as they floated a line down to us. Once we snagged it, they released the other end attached to a five gallon jerry jug of diesel which floated easily. We pulled in the line and hoisted the jug aboard. We threw back the line and repeated the maneuver to obtain five more gallons of fuel. *Choucas* exhibited excellent seamanship and did not hesitate to come back four hours to help us.

It was clear that we could not maintain our original schedule of two man watches. Lee was confined to his bunk, and the skipper was navigating, doing damage control and maintaining constant communications links. Fortunately, *Lora Ann* has an excellent hydraulic self steering gear that does as well as a skilled helmsman in all but the highest seas. Bill and I shifted to one man watches, letting the autopilot steer. The man on deck maintained the look out and adjusted sails. As we gained more confidence in our jury rig, we added more sail, striving to maintain six knots plus with sail and power, but never pushing the boat to its normal performance. When we entered the Gulf Stream on Wednesday night, we shortened down to the storm jib in case we should encounter a Gulf Stream squall.

By Thursday, we were through the Stream and making nearly seven knots on a pleasant beam reach with just the Solent jib and double reefed main. Still, if the wind died, we would not have enough fuel to reach New York and get through the Harbor. Just before dusk, friends on the Tartan 47 *Glory* overhauled us and transferred an additional ten gallons of diesel fuel. In snagging the floating jerry can the telescoping aluminum boat hook parted but we were able to successfully complete the transfer.

Glory had internet access and was able to track *Lora Ann* on Yellowbrick for the three days after the shroud incident. When we broke the shroud they were 80 miles astern. Our Bermuda Race navigator John Storck, Jr in Huntington knew of our problem via email from *Lora Ann*, and visiting the Yellowbrick site, identified *Glory* as the boat behind us on our track. He emailed both *Lora Ann* and *Glory*, putting us in email and satphone touch with each other. Like many newer boats, *Glory* had no SSB. Thereafter they were kind enough to act as our "security blanket" and follow us until rendezvous 3 days later.

The reaching wind angle held through Thursday night, enabling us to maintain nearly seven knots with minimal pressure on the rig and no motoring. We raised the New York Harbor approach early on a steamy Friday afternoon, and were safely secured in New Rochelle before dinner, only a little more than five days out from Bermuda.

OTHER YACHTS

We later learned that *Lora Ann* was not the only yacht to suffer damage in that squally front. The C&C 41 *Avenir* lost her rudder at nearly the same time. Unable to steer or control the boat with a drogue or a spinnaker pole steering oar, the boat wallowed in the tumultuous seas. The crew eventually elected to abandon ship and was picked up by a passing cruise liner. *Avenir* was later recovered.

The well-sailed J-120 *Mireille* owned by Hewitt Gaynor is a regular competitor of *Lora Ann* in double handed races. She was about 40 miles to the east during the storm sailing under full mainsail (she is a much stiffer boat). In one squall she was knocked down beyond 90 degrees by a sea. Water from the boarding sea flooded out the navigation station. *Mireille* also hit some floating object and her retracted sprit was shoved aft through a bulkhead. Fortunately no one was hurt and our Black Seal rum on board was unharmed.

There were also serious injuries to crew members on the return passage in three other Bermuda competitors. *Convictus Maximus* sent a crew member with a spinal cord injury back to Bermuda on a merchant ship, while the US Coast Guard extracted injured crew members from *Barleycorn* and *Conviction* for medical treatment.

LESSONS LEARNED

Several lessons emerge from our experience and exchanges with others who had injuries or damage.

1. Preparations- Both crew and vessel need to be fully prepared for emergencies. On *Lora Ann*, two crew are safety-at-sea instructors, and a third had recently taken both the classroom and in-water safety courses. *Lora Ann* carries a spare rudder, an extensive damage control kit, drill and angle grinder,and power paks, and even 2x4s. Anticipate, anticipate! Consider possible disasters and carry the parts or items that can be used in a repair. Rich saved a short length of extremely strong spectra that some meticulous housekeepers might have sent off the boat to save weight. Not only did he have the right item, he knew right where it was and directed the crew to it immediately. The basic repairs were in place within a half hour of the accident

2. Inspections- Every year inspect all standing rigging and keep a log. Rich had replaced all the shrouds and turnbuckles three years ago, but was not sure if he had replaced the lower studs.

3. Communications- Plan regular radio or satphone contact with boats that will be near you. SSB is the best because all boats can hear each others' reports, and chat for free as long as they wish. We also find that background noise like engines, wind and waves don't interfere with hearing your radio speakers, but challenge your hearing on the satphone with its weaker speaker.

Prior to departure, RIch had arranged a radio schedule with six boats, including *Choucas, Mireille, and Next Boat*. This enabled *Next Boat* to let the US Coast Guard know our situation while we worked on repairs. An hour later Rich talked with the Coast Guard and told them that our situation was stable and we would contact them if we needed assistance. The SSB net also enabled us to receive a fuel transfer from *Choucas* as soon as the seas had calmed. The Yellowbrick tracking device installed for the race made it possible for others ashore and at sea with Internet access to follow our track. *Glory* easily intercepted us for the second fuel transfer.

4. Sail Handling- When shorthanded, shorten sail earlier than seems necessary. The crew of *Lora Ann* did this through successive of jib changes and reefing. The weather forecast called for winds in the front that could be managed with the double reefed main, but at the upper end of the safe range. With one crewman injured, there were only three of us left to swarm down the main and get it lashed. By the time it was clear that the storm trysail was the better sail, it was dark, rough, and hand steering was required. So there were only two men left available to manhandle a flogging mainsail. In hindsight, we should have switched to the storm trysail before dusk on Monday, even though *Lora Ann* would have been underpowered for most of the night with the forecast winds. Instead of a double-reefed main, we could have had the trysail and either Solent or storm jib. That would have given us one more "step down" if we needed by dropping the headsail. For the return trip Rich stripped off the headfoil and used hanked jibs – an excellent seamanlike practice.

5. Mainsail Setup- Most large racing boats are rigged with luff slides , but many smaller boats like *Lora Ann* use boltropes and slotted masts.. Nevertheless, a "delivery main" could be made with slugs for the slotted track. At one time, serious ocean racing boats (particularly those built by Robert Derektor) had separate mast tracks on which a storm trysail could be "pre-loaded." Once the main was down, and safely furled, the track would be switched and the trysail hoisted. A track starting from the deck removes the need to stand exposed on the cabin top in heavy seas. Any of these arrangements would make it easier to get a trysail up in the bad conditions when it is really needed.

Since our trip, Rich has sewn a grommet every two feet up the luff above the second reef. Thru the grommet is a small rope with a bowline. The bowline is snapped into a clip near the gooseneck as every two feet of boltrope comes out of the slot. Problem solved!

6. Crew Selection- Remember, just because the return passage is not a race, it is not a lark. In windy conditions on the return in 2008 and again this year, several sailors on other boats were injured when they were thrown around the boat. Lighter weight modern racing boats are faster, bouncier, and tougher on their crew. Those who are new to offshore sailing may not have the strength, balance or stomach for the rough ride that results. We were fortunate to have four experienced crew who could cope even when one was injured. If two or three of Lora Ann's

crew had been offshore "newbies." the result might have been very different. Test all potential return crew in a rough environment closer to shore before signing them up for the return from Bermuda. Have them take seasick medicine before departing port. Experienced ocean crew should outnumber newbies.

7. Boat-Boat Transfers- In transferring fuel or other items at sea (even a person in a dinghy or raft), the leading yacht should tow a line astern for the receiving yacht to snag. A small cushion or PFD can help keep the end afloat. Then the receiving crew hauls in the heavy payload attached to the line. We did this the first time we received a fuel transfer from *Choucas*. The second transfer with *Glory* was more difficult. *Glory* towed the diesel jug astern, with cushions attached to assure that it would float high. It was easy to snag the line, but because it was stretched out to *Glory*, it was harder to pickup and required more careful positioning of the boats. Also, our telescoping aluminum boat hook pulled apart under the load. A one piece boathook would be better, but we recommend the first method of transfer- floating the line back and then pulling in the load.

Preparation, practice, forethought and determination – all building blocks of good seamanship- are pre-requisites for a successful voyage. Or as the late, great John Bonds said: prepare, adapt, prevail! We were fortunate to save the rig on *Lora Ann* and bring her safely home. Losing the rig in the big seas might have meant losing the boat. The Bermuda race organizers are currently surveying race participants about their experiences on the return voyage, and it is likely that an analytic report with important findings will be available later this year or next.

Picture 1 Bottom of turnbuckle on lower port shroud showing where the forging cracked.

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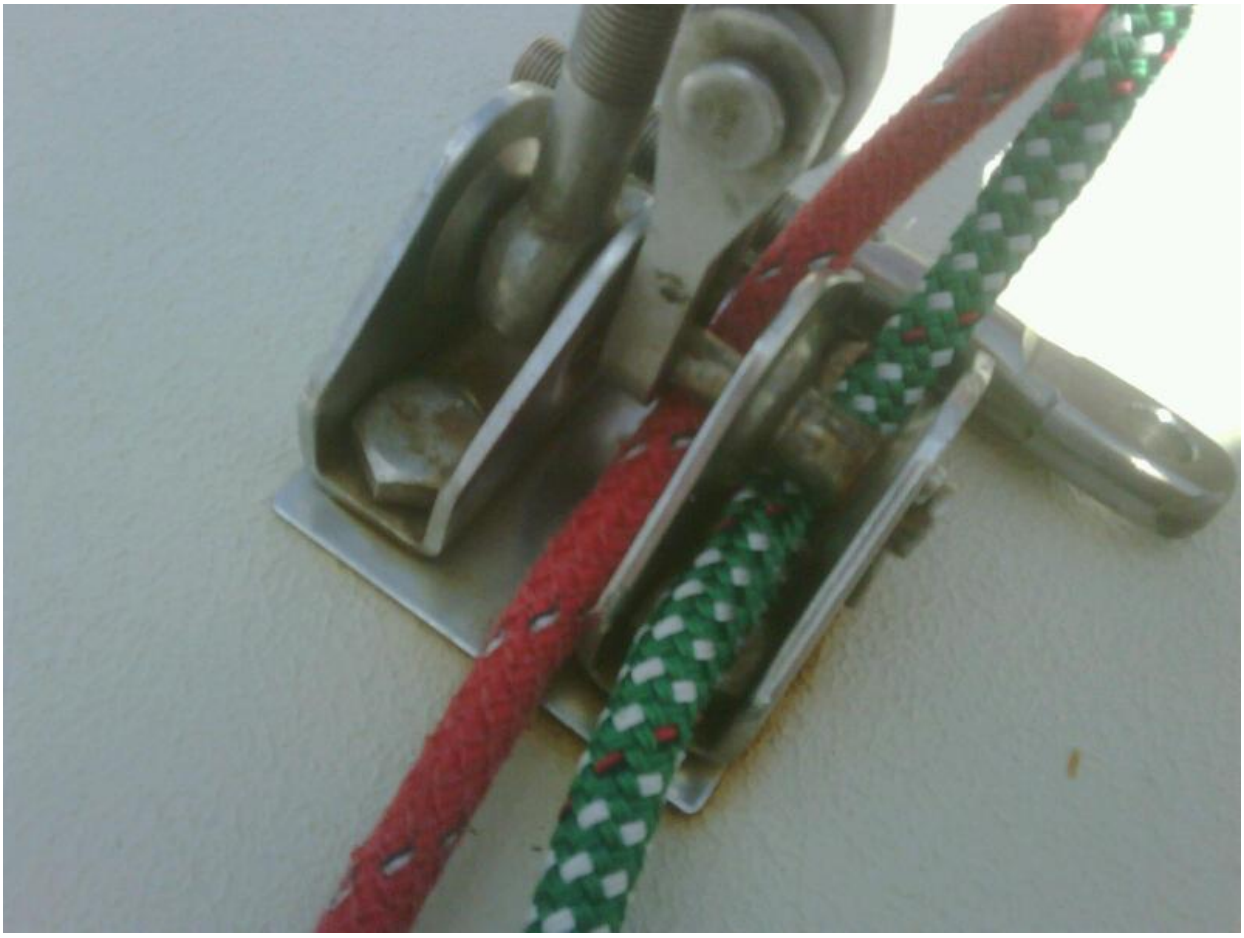

Picture 2 The green line is a strop rigged immediately to connect the turnbuckle to the chain plate. The red line was also attached to the turnbuckle, then led aft to a winch to tension the repaired shroud.

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Picture 3 . The red line leading through the block flat on the deck tensions the shroud. The second red line leads to the mast at the spreaders and provides further support.

Picture 4 The mast, taken from behind. Shows the bend in the mast after we minimized the bend by leading a masthead halyard under the convex side of the bend and up to port, then winching the mast back into column. Note supplementary shroud (red line) that we led once seas had calmed.

Ed. Note. One of the reasons for the success of Lora Ann's crew is the skipper, CCA member Rich DuMoulin. As Rich Feeley notes, Rich DuMoulin is one of the most thoughtful and organized people regarding Safety-at-Sea. He is especially focused on damage control. How many boats do you know which carry an entire separate rudder in case of steering system failure? This is not to belittle the work of all in the crew as they all demonstrated their experience, but DuMoulin's extra forethought and preparedness helped make this incident a success.- RY

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