

# CARBONICS

Advanced Composite Engineering & Manufacturing for Marine & Industrial Applications



GOETZ MARINE TECHNOLOGY PRODUCT BULLETIN • NUMBER FOUR 1992

## SEA STORIES

*Interviews by Bill Biewenga*

Like a movie reviewer at the Premier of a new movie, I set out to interview boat owners who had decided to buy carbon spars manufactured by GMT. How did they like the new rig? Did the boat feel any different? How about the speed? How was GMT to work with? What were the problems?

I called Ed Aronson, the owner of RESPONSE, a meticulously maintained 27 year old Hinckley 41. I asked my first question: "So Ed, did the boat feel any different after the carbon spar replaced the alloy section?"

"An ENORMOUS difference!" were his first words as Ed launched himself into a 45 minute monologue on how "utterly satisfied" he had been with both the new spar as well as the way in which GMT had conducted itself throughout the retrofit. There was no interview - only me listening to and sharing the positive experience Ed Aronson has had as he changed from an aluminum furling section to a lighter carbon mast. He flies more sail without the rail going under the water. The boat speed is up 20%. Aronson went on to say, the carbon spar also enhanced the safety of the vessel. The boat was faster to get out of bad weather, the stability was improved, and the crew felt less fa-

*Continued on Pg 3*



Photo: Jim Fox - Bass Harbor Marine

**Hinckley 41 RESPONSE.** "The boat was faster to get out of bad weather, the stability was improved, and the crew felt less fatigued on longer passages." Ed Aronson, owner

## 68 FOOT SPEEDSTER: CRUISING IN THE FAST LANE

If you wanted to build a cruising boat capable of hitting 30 knots, where would you go? After our heavy involvement with all the American contenders in the recent America's Cup competition, it's not surprising that

---

*GMT will be supplying many of the novel composite structures that will reduce weight and make the boat capable of fast, comfortable passages.*

---

the owner of this new, light weight speedster chose the Goetz Team. The

*Continued on Pg 4*

## SPEED WITH CLASS

There's something crisp, clean and original about the lines of a Deerfoot Yacht that says "speed without effort". Norwegian designer, Ulf Rogeberg believes that his latest creation, the Deerfoot 67, represents the latest thinking in performance cruising yachts. Gone is deep draft and extreme beam. In are easy lines, moderate sailplan, and comfort. As anyone who has sailed aboard a fully laden cruising sailboat knows, there's no free ride when it comes to power and stability. Yet these at-

*Continued on Pg 4*

## WE DO IT YOUR WAY

This seems like the year that everyone has decided to have a new rudder built at GMT. Our America's Cup foils proved very successful. Our rudders have won major events in IMS, IOR and PHRF. When a cruiser or racer wants a rudder that is the ultimate in light weight and high strength we recommend a carbon/ epoxy post and blade. The benefit of carbon is



8 year old Nicholas Walton demonstrates the versatility of carbon fiber with this 22 lb rudder for their Hinckley 41

Photo: Martha Walton

usually dramatic. The total weight of a new carbon rudder for a Hinckley 41 was 22 pounds while the original foil tipped the scales at 102 pounds. In addition, since the composite post is so strong and stiff, the thickness of the foil can often be reduced to minimize flow induced drag. If a boat is going to be raced under the IMS rule,

composite rudders made from S-glass/epoxy are a good choice. These rudders may weigh 15% more than a carbon blade but are still significantly lighter than rudders with metal stocks. Nautor chose S-glass for their new Swan 40. GMT has been providing the rudders for this production racer/cruiser. This and all GMT rudders are shaped on computer controlled machinery to assure symmetry. GMT also supplies rudders with

stainless or aluminum stocks and S-glass or carbon blades. The right steering system can dramatically improve steering and increase speed. By carefully selecting the post, blade, bearings and other components GMT can build and deliver a system that will enhance the enjoyment from any boat.

## GMT FIXES FLORENCE'S WAGON

Florence Arthaud, world-famous French woman multihull skipper has been breaking speed records, stereotypes, and boats for a long time. But when she breaks her boats, it's in an all-or-nothing attempt to win. Her current boat is a state-of-the-art Van Peteghem/ Lauriot-Prevost designed 60' trimaran. Florence began to experience problems during the 1990 2 STAR. She requested that GMT help repair a few structural problems on the carbon boom and mast. It was her first experience with GMT.

Disaster struck Florence again during the 1992 Europe 1-STAR (Singlehanded Trans-Atlantic Race). While racing along at over 25 knots in steep Gulf Stream seas, GROUPE PIERRE 1er pitchpoled. Her boat was recovered and towed into Halifax. Again, GMT was called to repair the damage. There wasn't much time before the Quebec - St. Malo Race, and she knew whom she could trust. GMT quickly surveyed the boat and sent a team up to Halifax to make the repairs. It took working 80 hours per week, but everything was done on time. Arthaud, neither easy on her boats nor with her compliments, offered high and unsolicited praise of the work accomplished by the GMT team. "They did an exceptional job," Arthaud said.

The Quebec to St. Malo Race was a rough one with some of the boats being blown apart by the conditions they met. Arthaud had few problems and went on to finish second. GMT's timely repairs had not only made it possible for Arthaud to get to the starting line, but the reliability of their workmanship was such that the crew had the confidence to once again push their boat to the limit.

### GET MORE FIBER (CARBON THAT IS) IN YOUR DIET

Owners sailing with their new GMT carbon fiber spars will readily tell you that the weight saved aloft makes for a healthy boat with a measurable difference in stability. The amount of weight saved could hardly be detected in the way the boat floats; it's where the weight is located that makes such an astounding difference to the overall stability, motion, speed, and comfort. Proving that confidence is built from experience, here are 18 spars that show why GMT is leading the world in carbon spar design and construction.

BOAT	WEIGHT SAVED	BOAT	WEIGHT SAVED
Route 66 .....	260 lbs	Quadrielle .....	230 lbs
Deerdancer .....	400 lbs	Black Magic .....	151 lbs
Windchimes .....	350 lbs	Response .....	158 lbs
Artemis .....	500 lbs	Windswept .....	122 lbs
Red Herring .....	140 lbs	Hinckley 35 Pilot .....	150 lbs
Principles .....	530 lbs	Bestyet .....	33 lbs
Custom 45 .....	280 lbs	<b>Total weight saved .....</b>	<b>3,304 lbs</b>

Naval architect, Henry Scheel conducted a pitch and roll test on his own 25 footer Best Yet with both an aluminum and a carbon spar. Call us for the results.

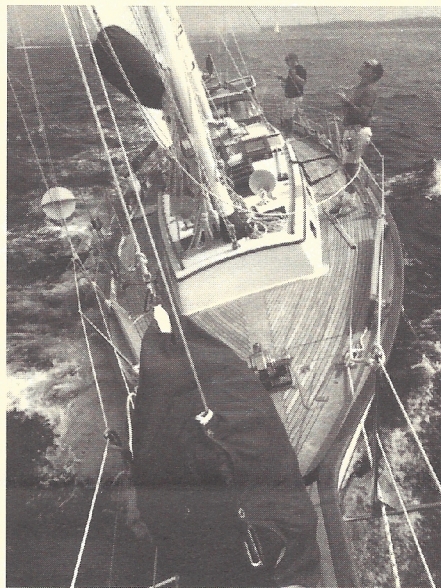
**Sea Stories** *Continued from Pg 1*

tigued on longer passages. Not only is the performance enhanced, the mast is quieter, and the painted carbon section looks beautiful at the end of the season compared to the “more shabby appearance of his earlier alloy spar.”

The positive experience he had during the change over, went beyond just the difference in spars. He was completely impressed with the devotion to detail by both GMT and Bass Harbor Marine. Doing a “good enough” job was not at all the approach taken; the various individuals took pride in a job properly executed. In conclusion, Ed said that he had no desire to buy a better boat; because of the carbon fiber mast he now has one.

“Well, O.K.,” the critic in me said, “one happy customer does not make for a trend. With whom else should I talk?” I called Lee Cherubini.

Cherubini builds some of the finest traditional yachts in the world. Their attention to detail is almost legendary, and they are not a company propelled



**Cherubini 48 PRINCIPLES**

by the mere fact that a particular technology is new; it must be a better way and that's why after a thorough investigation Doug Aron's Cherubini 48, PRINCIPLES, received two carbon spars. Lee voiced a concern that he held prior to the sea trials: “I was afraid that the motion might become too snappy with too little weight aloft.” But he went on to say, “While the boat was stiffer and there was a boost in performance, there was no sacrifice

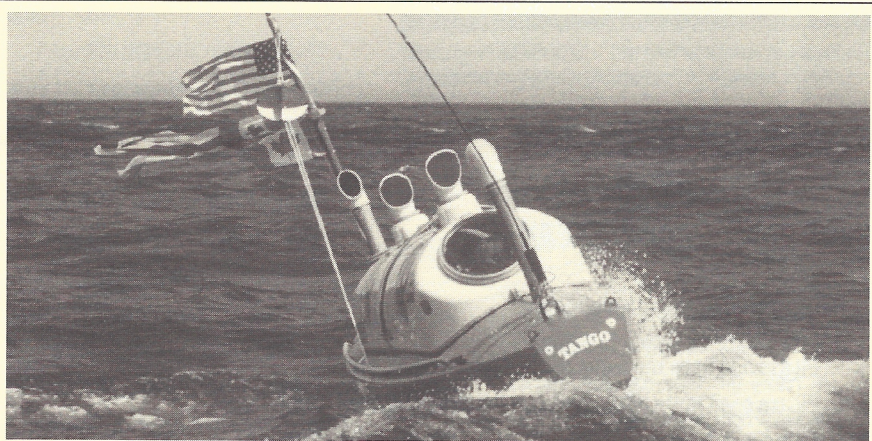
in the motion. I was really surprised at how good it was.” The owner of the vessel was pleased as well. So pleased that on a long passage, he called Lee to tell him about the 12 knot boat speed he was doing and the 200 mile days he had enjoyed. “He seemed like a kid at Christmas”, Cherubini mentioned. “The relationship with GMT has been very positive,” Lee mentioned. “They really take care of the details and the workmanship is great.” And that, from Lee Cherubini is high praise, indeed.

The owners of the new carbon spars were certainly enthusiastic. They had literally no reservations or regrets about their change from alloy to carbon and the relationship that was created with GMT. Certainly, there must be another view. I decided to talk with Dr. David Walton, owner of BLACK MAGIC, a 23 year old Competition 41.

“We decided to add 3' to the height of the mast, lengthen the boom 5 1/2", and take 200 lbs out of the keel. The boat is faster while remaining just as stable. The most dramatic improvement is in light air sailing because of the combination of changes, but even in moderate conditions the boat speed of BLACK MAGIC has gone from 6 1/2 kts to 7 1/2 kts.

A self-proclaimed stickler for detail, Dr. Walton feels that the people at GMT were the nicest part of the story. “They became friends, recognized their responsibilities, took care of problems in a business-like manner, were honest, reliable, communicative, and informative. I enjoyed working with them through the entire project.”

Well, like the movie critic inundated by the audiences applause, the only appropriate review seems to be to give GMT and carbon spars three thumbs up based on these sea stories. But there's no need to rely solely on this review; call and talk with the owners yourself.



**Blue Water Biking – GMT Built Pedal Craft Smashes Human Powered Transatlantic Record by 13 days!**

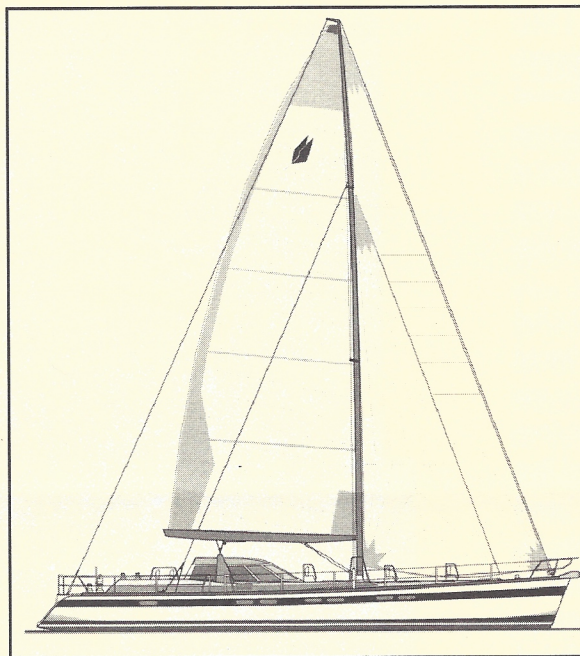
On July 14 Dwight Collins pedaled the 24 foot TANGO into Plymouth, England after a 41 day Atlantic crossing from New Foundland. The crossing was a severe test of Man and equipment; the equivalent to running 3 marathons a day for 41 days. The Bruce Kirby design was constructed at GMT from cedar strip, carbon and foam core composites. Despite several gales, Collins reported the boat performed beautifully and inspired absolute confidence. Our hats are off to Dwight Collins for a tremendous accomplishment.

Photo: Mark Greenberg

**68 foot speedster** *Continued from Pg 1*

boat, designed by Lars Bergstrom and Richard Whalen, will be built of carbon fiber by Eric Goetz Custom Sailboats. GMT will be supplying many of the novel composite structures that will reduce weight and make the boat capable of fast, comfortable passages. Cruisers often have to sacrifice stability and sailing performance in order to keep draft within reason. This boat will sport a 16' deep keel fin constructed from 350# of carbon/epoxy. A 6600# lead bulb is located at the bottom of this composite structure. When it comes time to sail in thin water, hydraulic actuators will pivot the keel until it nests just under the hull. In this position, the boat draws just 5 1/2'. Hello, Eleuthera!

The boat also features a GMT carbon fiber mast. This 70' tube will weigh just 250 pounds. A carbon tripod will support the butt of the mast 7' above the cabin top. According to the designer, the tripod transmits the mast compressive loads to the hull structure while opening up the living space down below. GMT will also be supplying a retractable carbon bow sprit. The sprit can be deployed so that its tip is 11' ahead of the bow. This gets the tack of the 2000 square foot asymmetrical spinnaker out ahead of the boat where it can do the most good. GMT has designed the pole to be light yet stiff. You don't want extra weight on the bow when you're surfing along in large seas. You also don't want the pole to break in the middle of the Pacific. With our design and construction expertise, the final product will reflect a perfect balance between these two considerations.



*The new Deerfoot 67 will feature an 80 foot 400 pound GMT carbon spar. With sights set on remote parts of the globe, the carbon spar is considered part of the safety equipment.*

**Speed with class** *Continued from Pg 1*  
tributes are so desirable for cruising. So Rogeberg and the owners decided early in the planning stages to investigate carbon as one alternative to boosting stability while keeping draft, wetted surface, and displace-

ment in check. After consultation with the engineers and sailing experts at GMT, it was decided a carbon spar would not only contribute a 400 pound weight saving but that rig height could be increased by four feet to boost power in the medium wind range. All this sounds pretty hot if you race. It's ironic that in the end, the decision to go with carbon was based as much on safety as on performance. The owners intend to bluewater cruise

their new Deerfoot with their young family as crew. The rig would have to be built with this in mind; rugged and forgiving without being too heavy.

GMT became an integral part of the decision making process. The owners and the Deerfoot team felt comfortable relying on the experience that only thousands of sea miles and 12 years of designing and building composite parts can bring.

**GMT Response Card**

Name .....  
Address .....  
City ..... State ..... Zip Code .....  
Telephone .....

Please add/keep my name on the Carbonics mailing list  YES  NO  
Please send more information on the following GMT products  
Composite rudder ..... Carbon spinnaker pole .....  
Carbon fiber mast .....  
Boat Type .....



**Goetz Marine Technology**

**14 Broad Common Road  
Bristol RI 02809  
Tel: 401.253.8802  
Fax: 401.253.9395**