

# CARBONICS

Advanced Composite Engineering & Manufacturing for Marine & Industrial Applications



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Photo: Cime van der Wal/www.vanderwal.com

*ACTAEA powers up at a recent Newport to Bermuda Race start. Her new GMT carbon rig has improved performance across the board (see story below).*

## CARBON MASTS AND THE RATING RULES

Ever since we built our first carbon mast fifteen years ago interested sailors have been asking us how the different rating rules deal with carbon masts. To get a sense of the penalties assessed to boats with carbon masts let's take a look at the two most frequently used handicap systems, PHRF and IRC. Under

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## CARBON REFIT: BERMUDA 40 REDUX

Over the years GMT Composites has performed more carbon spar refits than any other spar builder. Of the many beautifully designed and built yachts that have benefited greatly from the reduced weight aloft afforded by carbon spars, none stands out more than the legendary Hinckley Bermuda 40. With

it's long overhangs, narrow beam and shallow draft the B40 seemed a natural to realize the huge gains in performance, safety and comfort. So it wasn't a surprise when we built one of our first carbon spars for a B40 in 1991. The owner's comments underscored all that we felt he could expect from the refit. "The boat now has a new boat feel and sails better in all conditions. Most noticeable is that it accelerates faster and hobby-

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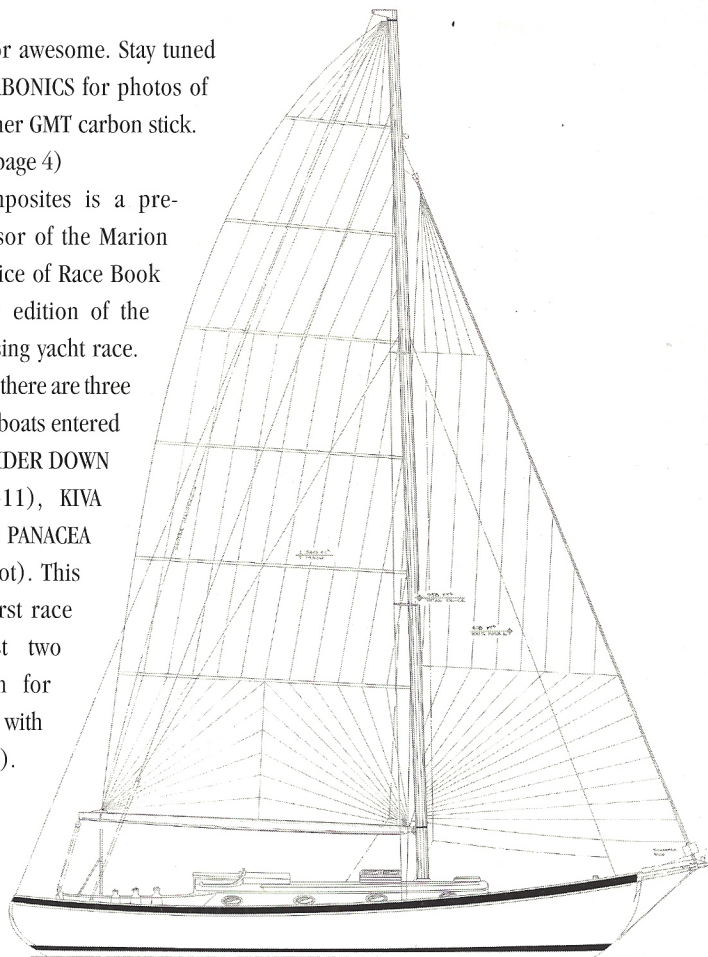
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# GMT NEWS

When one of the more famous racing yachts of the last 30 years, MERLIN (68 ft. ULDB), lost her rig hours into this year's Newport Beach to Cabo San Lucas race, GMT carbon was the clear choice. As is the case with most high profile race programs, time was critical to the re-sparring in order to minimize interruptions to the race schedule. GMT was able to respond with an expedited service enabling the mast (triple spreader all carbon componentry) to be completed in just six weeks, a major feat given the time of year. The mast and new rod rigging shipped the same day predicted six weeks earlier arriving in Marina del Rey, CA with enough time to step and prepare for the centennial TransPac race. The owner and captain visited GMT to inspect the rig and pronounced MERLIN's new blue mast "bitchin'", which is

Californian for awesome. Stay tuned to future CARBONICS for photos of MERLIN and her GMT carbon stick. (see sailplan page 4)

GMT Composites is a presenting sponsor of the Marion Bermuda Notice of Race Book for the 2005 edition of the biennial cruising yacht race. At publication there are three GMT sparred boats entered in the race; EIDER DOWN (Apogee 50-11), KIVA (SW 51), and PANACEA (Hinckley Pilot). This will be the first race for the first two and the fifth for PANACEA (4th with her GMT mast).



Bruce King Yacht Design

*WIND ROSE is sparred with GMT carbon. The 40 foot Bruce King design has been painstakingly crafted by Brion Rieff Boat Builder in Brooklin, Maine.*



Photo: John Baxter

*Noted yachtsman Jim Stephen's LANCASHIRE LASS designed by Dieter Empacher and built by Kanter Yachts. Jim "chose GMT for many reasons, reputation, experience and quality, to name a few."*

*"Regarding the mast and my experience with GMT I can only say "terrific and spot on". I could not have picked a better partner than GMT..."*

*- Jim Stephen*

## POCKET BOOM UPDATE

As time goes by the list of GMT Pocket Boom-equipped boats continues to grow. We recently shipped main and mizzen booms for CHUBASCO, an S&S 67 ft. yawl. WINDWALKER, a Lyman-Morse built, Hood/Fontaine designed 60 footer has completed her first winter in the islands with her new boom. Her captain reports the boom is performing well and a marked improvement over their previous mainsail handling system. Soon to begin production will be a fore boom on a John G. Alden designed 50 ft. schooner currently under production at Brion Rieff boatbuilders in Brooklin, Maine.

## NEW PROJECTS

Winter and Spring have been busy times for us at GMT. The month of March alone saw no fewer than 8 spar projects added to our spar orders backlog. While typically we see about a third of our spar business taken up by refit spar projects, we currently have more than four refits going on in the shop. In no particular order they are Bermuda 40 ACTAEA (see page one), new spar for SPARTINA, a 1981 Hinckley 41 preparing for the upcoming Marblehead to Halifax race, THUNDERHEAD a 48 ft. McCurdy & Rhodes design whose owner is planning for a circumnavigation (coming to us through Maloney Marine Rigging) and a new spar for MERLIN, which lost her aluminum rig just hours after the start of the Cabo San Lucas Race (see page two). Boats under construction which will be commissioned with GMT carbon include a 50 ft. Alden designed schooner underway at Brion Rieff Boat Builders in Brooklin, Maine being built for a longtime yachtsman... GMT won the contract to build all the spars for a Nigel Irons 62 foot "fusion schooner" building at Covey Island Boat Works in Nova Scotia. Also at Brion Rieff Boat Builder is the Intuition



*GMT carbon single piece passerelle deployed aboard a 50 meter motor yacht. These elegant custom boarding systems are also available in sectional, folding and telescoping configurations. Boarding surface options include teak decking (shown), teak grating and composite deck with non-skid Awlgrip.*



Zurn Yacht Design

**GMT won the contract to supply the carbon rig package for the Doug Zurn designed Bruckmann 42 day sailor. Watch for this beauty's debut at the Newport International Sailboat Show in September, 2005.**

42, a day sailor in name and displacement but designed (Brion Rieff as well) to endure much more than afternoon sails. Her owner has plans for Halifax and other points

in the Canadian Maritimes. Another 42 ft. day sailor, this one from the drawing board of Doug Zurn, is being built by Bruckmann Yachts in Ontario for a US client. GMT was chosen to supply the carbon rig package for this new entry to the growing day boat offering (see rendering above. Two projects slated to begin construction this summer at Brooklin Boat Yard will feature GMT carbon spars. One is a 34 footer similar to the Babson Island 35 built by BBY and sparred by GMT in 2002. The other project is a 48 ft. sloop designed by John G. Alden for a long standing client both of Alden's and Brooklin Boat Yard.

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## CARBON MASTS AND

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PHRF our experience shows that for the average 40 footer, the carbon mast penalty seems to be around 3 seconds per mile nationwide. For larger boats we see as much as 6 seconds per mile being levied on a rating. David Schwartz's Seguin 40 MISCHIEF's rating changed from 87 to 84. In the three seasons since making the change to carbon, MISCHIEF has had trophy winning finishes in 70% of her starts. David says that the carbon rig has enabled "MISCHIEF to really power up in a puff, something we weren't seeing with the old mast."

With the IRC rating rule making its debut on this side of the pond, the question has again surged to the front burner as sailors make plans for the coming season and beyond. The intent behind this new (US) rule is that it is a blind rule to keep it from being compromised by reverse engineering. The rule is also intended to be less subjective than other rules by using quantitative factors which apply to a wide range of boats. In attempts to be fair (by playing down benefits to deep pockets owners) IRC penalizes carbon masts on a sliding scale from smaller boats up.

Naval Architect Mark Mills oversaw a recent carbon mast refit on a 50 footer to his design. Following the refit the boat was remeasured to acquire a new IRC rating. The new rating with the carbon rig differed from the previous rating by 4 decimal thousandths. Converting from seconds per hour (IRC is time on time based) the carbon mast in this example was penalized 2.5 seconds per mile. Again this rule seems to assess a small penalty.

As we have learned through IMS and PHRF rating assessments for

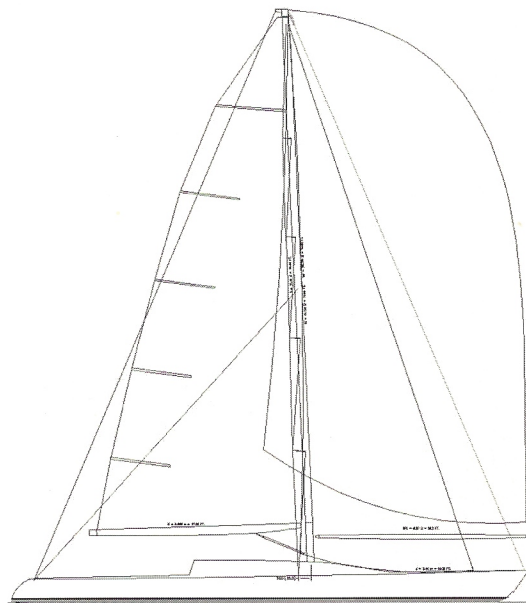
## CARBON REFIT:

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horses less. The lighter mast makes the boat stiffer and more powerful." Now, almost 15 years later it's time to highlight another mast for one of these classic beauties.

ACTAEA is a 1971 Bermuda 40 Mark III yawl owned by Connie and Mike Cone. As with many of these Maine pedigree classics, the Cones have maintained and upgraded ACTAEA over the years. Adding a GMT carbon pole in 2001 and a carbon boom in 2004 the main mast was the next logical area to

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Rig plan: Alan Andrews Yacht Design

**A new GMT spar now graces MERLIN, 68 ft. ULDB and three time winner of the Trans-Pac. The new spar was built and shipped in just six weeks providing sufficient time for race preparations for this year's Trans-Pac.**

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GMT sparred boats the penalties are well worth it on the race course. As evidence of this it is rare for a custom boat or full on race boat to choose an aluminum mast. As rating penalties are typically 2-6 seconds per mile, performance gains due to less pitching, less mast pumping, better sail shape, less weight aloft and less heel far outweigh the penalties.

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realize significant performance improvements. Working with Jim Ryan Development to optimize ACTAEA's potential with a new carbon mast, GMT began construction of the Cones' new mast over the winter.

Following a spring launch, stepping of the new carbon rig ACTAEA was readied for racing. Early results from two races couldn't be better. Two bullets by wide margins. Perhaps more telling however are the Cones' impressions of the changes to their boat's sailing characteristics. Mike credits the GMT rig as making a tremendous difference to the boat's performance. He felt the boat tracks better and is more responsive to changes in wind velocity and direction. In one race they sailed away from a J105 in conditions where that would have been impossible with her aluminum rig. Connie, who drives ACTAEA much of the time, says, "We're pitching much less with the carbon rig." She added that other helmsmen commented the boat feels "livelier" and stiffer making her more efficient on the breeze. Plans for the boat this season include Annapolis-Newport and Marblehead-Halifax races and cruising in Nova Scotia and Maine. Connie said they are hoping for favorable conditions to Halifax as ACTAEA will be defending her class victory from 2003. We wish them all the best and will keep you posted with results in the next issue of CARBONICS.

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