Speed sells

Both the boat and the rule to which it was designed changed a lot during the evolution of the maiden STP 65. Dobbs Davis talked to Jim Schmicker of Farr Yacht Design who have created the first boat to this latest Box Rule class

Roger Sturgeon's commission of Westerly Marine in California to build his new Farr-designed *Rosebud* has at last prompted the 65ft offshore box rule to move from mere concept to reality. But the path has not been linear: the initial version of the box rule, conceived with help from Nelson-Marek, Reichel-Pugh, Farr Yacht Design, Mark Mills and Tripp Design and called the Storm Trysail Club (STC) 65, was modified into the STP 65 earlier this year to reflect the interests of the format's new West Coast partners at the Transpacific Yacht Club.

These differences made to the rule were subtle, but reflected an interest in creating a design that would be faster overall in offwind performance to meet the interests of the predominantly downwind-sailing Transpac YC constituency, but have enough stability to perform upwind as well. These changes include increasing BMAX by 5%, while BMIN has remained the same; DSPL (empty weight) has been reduced by 9%; draft is increased by 20%. Perhaps most significantly, the rig and sail dimensions are all larger: I by 4%, J by 1%, P by 6%, E by 6%, ISP by 7%, resulting in 13%, 8% and 7% increases in spinnaker, mainsail and jib areas respectively. And whereas the STC 65 had a 10m spinnaker pole, the STP 65 will now have a 10.3m fixed bowsprit.

This will be a much faster boat; the lessons of the TP52 concept have been absorbed – where the outright performance has attracted many unexpected admirers.

However, the increase in draft to 4.8m would have been prohibitively deep for many venues, so the STP 65 will now feature a lifting keel to reduce draft while in harbour but not during racing. *Rosebud*'s lifted draft will be at the prescribed maximum of 3.3m. Trim tabs are not allowed in the rule.

For sails the STP 65 will not allow masthead genoas, as a VPP study carried out by Jim Schmicker at Farr Yacht Design (FYD) revealed that the increase in sail area provided only very small increases in performance. Schmicker commented that 'while the relative reaching speeds with the masthead genoa are typically quicker than with the jib, those angles could be covered by a good reaching Code Zero that doesn't receive a big rating penalty like a masthead genoa'. These performance studies also suggest that while the STP 65 would appear not to have the same relative stability as a TP52, allowing for scaling, the boat is actually quite stiff and should achieve a VCG of at least –1.63. This in turn may influence sail design, prompting use of flatter, less twisted sails.

The finalised STP 65 rule will have also incorporated some improvements learned from problems encountered in the TP52 box. These include:

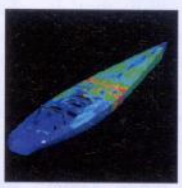
- modifying IMS to specify that the boat is empty during measurement
- allowing the designer's lines to be used in place of wanding the hull
- eliminating a controlling VCG for the first boats and not allowing the expensive process of placing lead into the fin
- keeping required crew to a minimum
- accurately describing interior volume to allow a functional deck layout...
- but also having an aesthetically pleasing cabin structure
- setting realistic mainsail girths so that the backstay does not overly interfere
- establishing girths for the jibs so that there is no need for curved spreaders
- limiting keel material to a strength of not greater than 900MPa (allowing steel, stainless steel, cast iron and bronze)
- a retractable propeller is allowed (the IRC rating difference is five points)
- composite standing rigging is allowed as long as the shrouds are circular in cross-section and material used does not exceed a tensile modulus of 310GPa
- up to 300mm of forestay adjustment is allowed while racing.

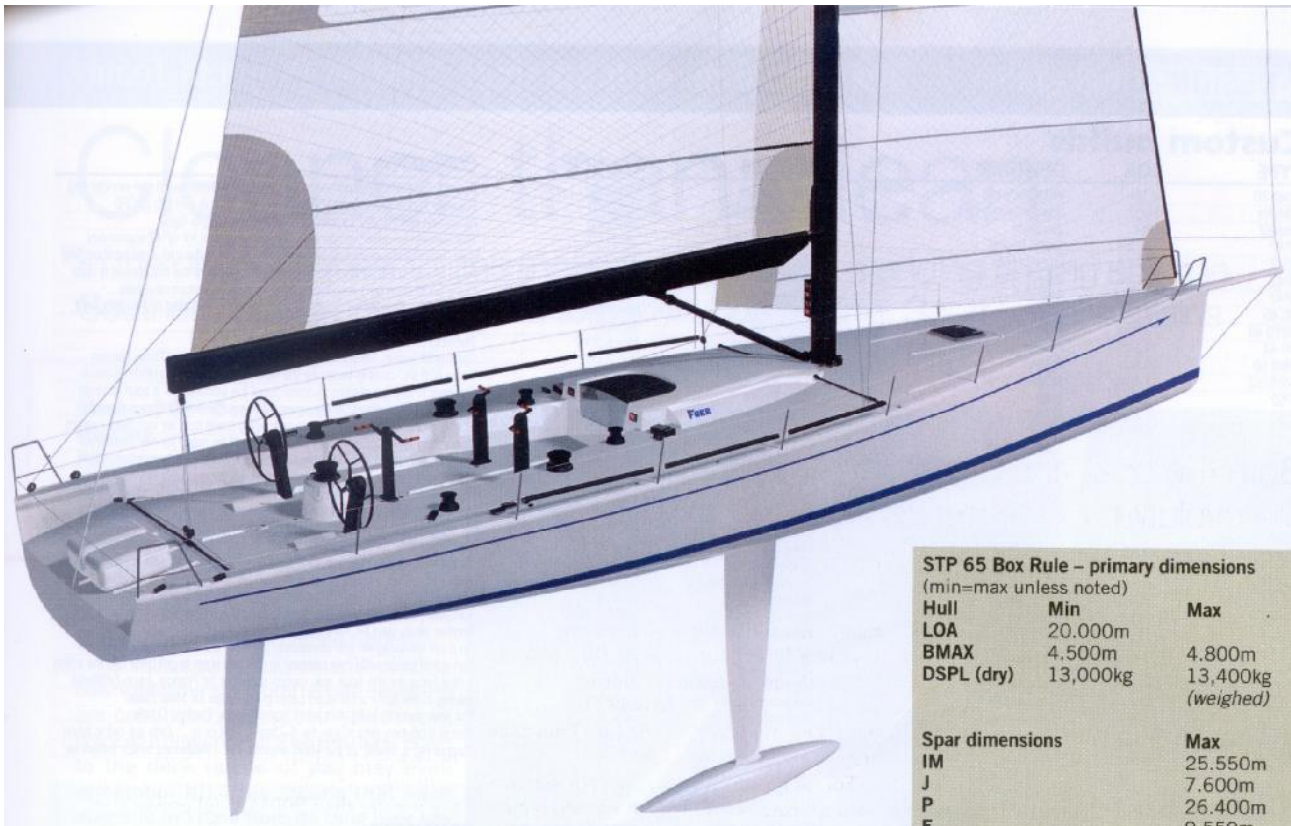
Using an IRC rating of 1.494, Schmicker at FYD has done an interesting performance analysis of the STP 65 expressed in terms of IRC rating deltas. This study was conducted for three different course types – windward-leeward 1:1, windward-leeward 2:1 and circular random – in winds ranging from 6kt to 30kt. The study reveals several interesting aspects of the boat's performance in the IRC space relative to a representative fleet of typical designs in an IRC fleet.

For example, in all but light air (6-10kt), the STP 65 will outperform a light-air optimised IRC 46 under IRC, with the crossover being about 11kt on a W-L course and 9kt on a circular random course. Furthermore, the study also shows that it should consistently outperform the original STC 65, TP52, Farr 52OD and Carroll Marine 60 in nearly all conditions.

Another example is that a 1.349-rated



FARR YACHT DESIGN

TP52 sailing a W-L course in 10kt will be 12 IRC points slower than the STP 65; the same boat on the same course would be 43 points slower in 20kt! The boat is fast.

Since Bob Towse's new Reichel-Pugh 66 *Blue Yankee* made its debut in June she has been winning consistently in nearly every inshore and offshore IRC contest that she has entered. So a comparison of a STP 65 box rule design against *Blue Yankee*'s measured dimensions might provide some insights into the suggested trade-offs in performance between the two boats, since the two rate within one rating point in IRC.

With a STP 65 at 13,300kg and beam at BMAX of the rule, *Blue Yankee* is 0.23m longer, and 0.02m narrower at maximum beam, but the STP 65 is 400kg lighter and 0.69m deeper; *Blue Yankee*'s spar is taller by 0.5m, but E is 0.2m and STL 0.25m longer on the STP 65, yielding 4% more sail area.

Without VPPs this is of course pure (informed) speculation, but on the surface these differences suggest that *Blue Yankee* is perhaps slightly faster upwind in light air, but all the time slower offwind. Upwind in more breeze the speed difference would be harder to discern, as *Blue Yankee* is slightly longer and may have more bulb weight; but the STP 65 has very slightly more beam and significantly greater draft, perhaps netting more stability.

Regarding VPPs, *Rosebud*'s optimum upwind and downwind speeds are impressive (*see box*). Schmicker comments, 'The deep bulb is extremely effective at helping the boat get uphill. But what is not shown on the VPP chart is how effective the deep bulb is at reducing leeway and the positive effect that has on VMG. Even though the total crew weight is only one person greater than on a TP52, the result is that the deep bulb reduces the need for a large crew acting as rail-meat. And downwind the boat is clearly on the step and on the plane before hitting 18kt TWS.'

According to *Rosebud* project manager Malcolm Park, the goal for this build is:
1) a rule that was tighter than the TP52 box, encouraging offshore sailing and which addressed the weaknesses in the measurement process of the TP52s.
2) gaining the backing and support of a box rule with the Storm Trysail and Transpac names attached.
3) a competitive design under IRC but still fast and simple to sail.
4) a rule and boat that did not require more than 16 people to sail inshore.

The sailing schedule for the latest *Rosebud* includes a short-term focus on US West Coast sailing, including probably next summer's Transpac itself, plus a longer-term goal to race in England, mainland Europe and in the Med.

In time, if enough East Coast owners commit to the new class, then further US East Coast venues will be added to the schedule as they appear. ❐

STP 65 Box Rule – primary dimensions
(min=max unless noted)

Hull	Min	Max
LOA	20.000m	
BMAX	4.500m	4.800m
DSPL (dry)	13,000kg	13,400kg *(weighed)*

Spar dimensions	Max
IM	25.550m
J	7.600m
P	26.400m
E	9.550m
TPS (sprit)	10.300m

STP 65 – Polar performance predictions

	TWS	TWA	V
OptUp	8kt	41	8.6kt
OptUp	10	40	9.1
OptUp	12	39	9.4
OptUp	16	36	9.8
OptUp	18	38	9.9
OptUp	23	38	10
OptDn	8	144	9.5
OptDn	10	148	10.3
OptDn	12	150	11.3
OptDn	16	150	14.1
OptDn	18	149	18.1
OptDn	23	154	19.9