

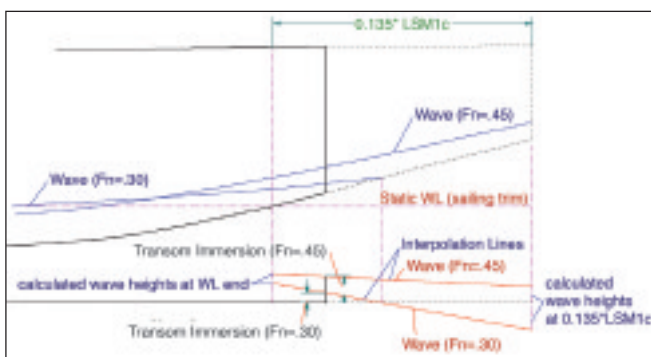
## Business carries on

The recently announced plans to merge ORC and RORC have made for interesting speculation, but until organisation managers give us any concrete direction at ITC we are proceeding with business as usual, further refining the 2011 ORC VPP. Here is a summary of modifications approved at the 2010 ORC AGM.

### Immersed transom drag

A fine-tuning of the assessment of frictional resistance of the immersed transom has been performed during the year. The committee want to avoid exploitation of stern-down trim, at the same time protecting those boats with actual transoms in the water.

It was noted that the gain when trimming the boat stern down is more due to the change in residuary drag than to the transom drag. So it was decided that the work on the extreme aft trims will be completed next year when a fuller revision of upright residuary drag will be performed (see below).



EMME & EMME/DPPI

**Indefatigable former America's Cup skipper Mauro Pellaschier... hard at work training his all-women crew for Trieste's Barcolana**

### Downwind crew weight

In light winds it is usual to put the crew to leeward side to induce heel. The VPP does not take this into account, so some boats (mainly the slab-sided or 'boxy' designs) get an advantage as they heel, allowing for a decrease in their wetted surface as they also become longer. Next year the downwind position of the crew will be treated differently, moving it from leeward in light airs to windward in medium/strong wind, making for a better replication of how modern boats are actually being sailed.

### Modification of residuary resistance for long root keels

The main factor to address is Residuary Resistance at the interception with the canoe body (frictional resistance should be addressed by the revision of  $C_f$  made some years ago for thick fins). So in the case where the uppermost section of the keel is 1.5 times longer than the average of the rest of the fin keel, a reduction in residuary drag will be applied in a similar way as for long bulbs.

### Spinnaker shape function

Following the 2007 removal in ORC International of penalties on the spinnaker surface connected to the sailplan dimensions,

there is still some typeforming of smaller spinnakers, especially for light winds. We studied a 'shape function' based on the ratio of default area to spinnaker area to take account of the loss of efficiency of big spinnakers below 12kt true wind speed (TWS).

### Spinnaker/jib crossover

The crossover between jib and spinnaker is a known problem to which the ITC has devoted considerable time. Finally, the following modifications to aerodynamics will be made:

- a)** Spin coefficients (lift and drag) were changed at low Apparent Wind Angles (AWA) to better address efficiency loss at low AWA.
- b)** Maximum heel angle with spinnaker is now fixed at 28°. The VPP will now shift earlier from spinnaker to jib because of this maximum heel angle with spinnaker being reached.
- c)** Maximum reef factor being fixed at  $0.85 \times \text{Default Area/Spin Area}$  will also prompt the VPP to shift to the jib earlier.

The above modifications will shift the crossover point to wider AWAs than in the 2010 VPP.

### Updated blanketing function for spinnakers

Last year a function that took into account the blanketing effect of the mainsail on the spinnaker was introduced based on the ratio SPL/SMG and/or SPL/AMG and/or TPS/AMG, according to sail configuration (the longer the pole the less the blanketing). Since it is always possible to have an inventory with more sails than are carried when racing, handicaps could be done with the most favoured sails which are then left on the dock. For this reason there is a new approach in which the blanketing function is now based on the ratio of SPL (or TPS) with an average girth of the spinnaker ( $\text{Area Spi/ISP}$ ). This should avoid extreme exploitations.

### VMC

A different approach for handicapping reaching conditions will be introduced. Test runs were satisfactory and the committee feel comfortable inserting it into next year's VPP. This is based not only on estimated performances but will take into account the so-called VMC (Velocity Made good along the Course) concept often used in long offshore races to find the best combination of courses to get to the same point – a new approach illustrating how ORCi is a handicapping system and not just a pure VPP.

### Rotating bowsprits

Mobile bowsprits are now allowed, taking account of a modified TPS depending on location of rotation axis and angle of rotation.

### Lenticular rod rigging

Many requests to allow lenticular rigging were received during 2010 so ITC has agreed to allow lenticular rigging for ORCi, reducing the windage calculation for this rigging type by 75% of the equivalent circular rigging windage.

### New models and residuary resistance

Three new models were built in 2010 to be tested in the Delft tank. Two have been designed to be part of our ongoing series, on the light side (high LVR) similar to today's most aggressive race yachts (not only ORCi). These two models may be inserted into the regression for the residuary and heeled drag to improve the accuracy for lighter boats. The third model has been designed with a shape as close as possible to a late-generation TP52.

ITC work on hydrodynamics is always being reviewed, and the current aim is to implement a new residuary regression into the 2012 VPP. The new formulation could also take into account the possible adoption of different polynomials with different parameters. This could be very effective in addressing challenging issues like high  $C_p$  and aft LCB boats (and stern-down trim, as mentioned earlier).

*Alessandro Nazareth, ITC chairman*

