



INTERNATIONAL TECHNICAL COMMITTEE

Meeting
21st – 22nd October 2023
DSVHamburg, Germany

Minutes

Attendees.

Present

ITC:

Andy Cloughton (GBR - Chairman), Alessandro Nazareth (ITA – Deputy Chairman), Antoine Cardin (FRA), Matteo Polli (ITA), Zoran Grubisa (CRO - ORC Chief Measurer), Marcus Mauleverer (GBR), Panayotis Papapostolou (GRE-ORC Programmer), Jason Ker (GBR), Davide Battistin (ITA-ORC Programmer).

Observers:

Robert Jacobsen (DSV), Johannes Christophers (DSV), Max Gurgel (GER), Rober Zinkmann (GER)

Via Google MEET:

ITC: Nicola Sironi (ITA – ORC Deputy Chief Measurer), Robert Ranzenbach (USA), Manolo Ruiz de Elvira (ESP), Simon Forbes (UK. ORC Multihull),

Observers: Dobbs Davies(ORC USA), Jim Teeters (US Sailing), Chris Tutmark (US Sailing), John Victorin (GER)

Johan Tuvstedt (SWE Offshore Association), Kim Henriksen (Danish Sailing Association)

Vygantas Stankus, (LTU), Enrico Di Lavore (ITA), Konstandina Sfakianaki (GRE), Jay Tyson ,Karl-Hannes Tagu, Kay-Enno Brink (GER), Marc Tumbroff, Teresa Rios, Stig Gard Paulson, Arthur Peltzer, Raffi Rodrigo.

Apologies from:

David Lyons (AUS), Jim Schmicker (USA)

1.Chairman’s welcome

The Chairman welcomed the Committee members and observers.

For 2023 the residuary resistance model of the ORCi VPP was updated. When viewed across the whole ORC fleet it provided an improvement to the previous model that had served for 10 years. Among some racing fleets the new VPP disturbed the handicap status quo and prompted concerned comments from those who felt harshly treated. The Chairman noted, with some relief, that there were no submissions relating to the residuary force model.

The Chairman recalled his observations from a year ago, that the VPP was now free from any “subjective” assessments of physical effects.

The 2023 VPP provides a firm base from which to develop the code by replacing multi layered force models with more robust and physically plausible methods, for example the aerodynamic force model as headsail configurations become more varied.

In response to a US submission the ITC had turned its attention to scoring using constructed courses and weather routing. This shows great promise.

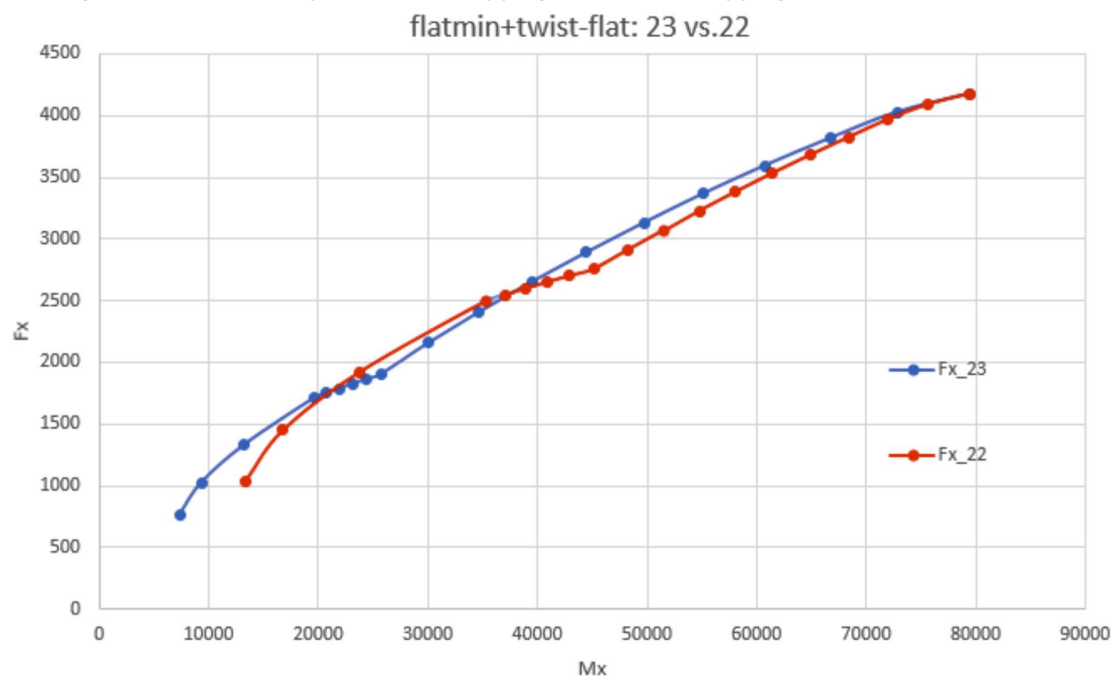
The ORCs and ORCmh VPP’s are providing good handicap racing for very varied fleets, and over time the developments in the ORCi VPP will be folded into these VPPs.

2. Test Runs – De-powering

a) Main and Jib

Davide Battistin presented his summary of the situation.

The essence of a good VPP depowering scheme is a smooth reduction of driving force (F_x) as heeling moment (M_x) is reduced through reducing lift and lowering the sail plan centre of effort (C_{eh}). The current scheme has changes of slope as the sails are depowered through reducing lift coefficient (FLAT) and jib area, before finally in some cases, reefing the mainsail. For 2023 the minimum of the Flat parameter was reduced to 0.42, this had disturbed the congruence between depowered overlapping and non-overlapping sails in 20 knots of wind.



The Committee also discussed:

a revision of the FCdJ term which reduces the base drag of the headsail as lift coefficient is reduced and, a scheme to prevent headsail roach being retained when the jib foot is reduced during de-powering.

Actions:

- Correct existing code anomalies,
- Review existing Flat min (should this be linked to overlap and fractionality?) and the minimum Flat link to Flat @ 8 knots.
- Review Fcdj.
- Plot VPP solution points on Fx-Mx plots.
- Depowering is defined by variation of area, C_{eh} and H_e . – Plot these curves.

b) HSF

Robert Ranzenbach presented his work and proposal for 2024.

He ran all ORCi certificates that are carrying HSF at this time using the 2023 VPP and the 2024. The current formulation of the HSF coefficients is inferred from their Mid Girth Ratio (MGR), a higher. Ratio implying a deeper mould shape designed for setting at wider apparent wind angles. In some cases, HSFs with smaller MGR are designed with a deeper mould shape to sheet around the standing rigging. This type of sail is not presently recognized by the VPP, and will be set, by the VPP' at an apparent wind angle appropriate to its MGR. During 2024 the Committee

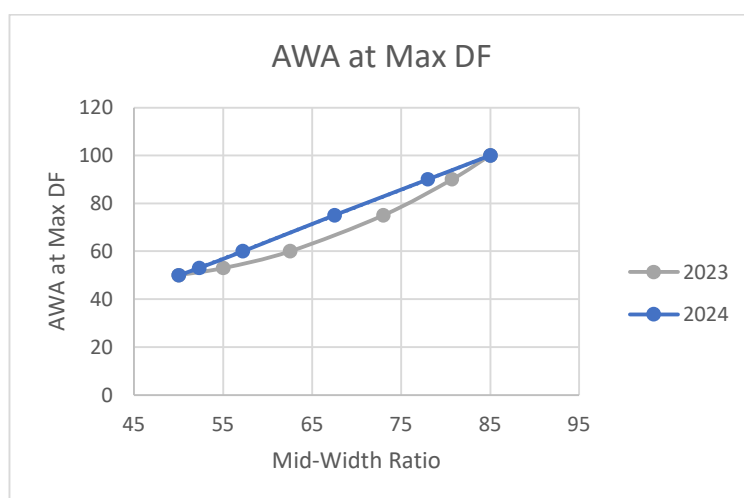
will explore handicapping the impact of rig envelope on the ability of HSF to be sheeted close to the wind.

2024 Proposal.

The proposal is focused exclusively on reducing number of HSFs being inappropriately predicted as best sail upwind.

The MGR ordinals are shifted to achieve a linear target relationship, there were no modifications to the actual lift or drag coefficients.

It was supported for adoption in 2024.



The Table below shows the reduction in the number of boats predicted to use HSF's upwind from the proposed change.

Mid-Width Ratio	6 knots TWS		8 knots TWS		10 knots TWS		12 knots TWS	
	2024?	2023	2024?	2023	2024?	2023	2024?	2023
< 55.99%	78*	79	67**	71	52**	57	30****	37
Between 56.0% and 62.49%	9	19	2	8	2	2	0	0
Between 62.5% and 69.99%	1	4	1	1	0	0	0	0
> 70%	0	0	0	0	0	0	0	0

*- ~70% of the HSF identified as the optimal sail upwind have a mid-width ratio of less than 52% and the few remaining less than 56%, i.e. very much upwind sails
 **- ~75% of the HSF identified as the optimal sail upwind have a mid-width ratio of less than 52% and the few remaining less than 56%, i.e. very much upwind sails
 ***- ~90% of the HSF identified as the optimal sail upwind have a mid-width ratio of less than 52% and the few remaining less than 56%, i.e. very much upwind sails
 ****- 100% of the HSF identified as the optimal sail upwind have a mid-width ratio of 52% or less, i.e. very much upwind sails

See also Submission FIN 2.

3. Weather routing scoring.

Panayotis demonstrated the implementation of “Weather Scoring” in the ORC scorer. This uses a link to the “Predict Wind” routing engine, called from the scorer, to generate optimum routes based on the ORC Polar table and the currently available PW forecasts for the race area. The current system cannot handle re-scoring using historical grib files. The ORC has re-analysed regattas from 2023 using the appropriate grib files. A typical analysis is shown in the figure below. The upper plot shows the All-Purpose Handicap (APHD) vs three Elapsed times. The APHD is used to provide a spread along the X axis. The three Elapsed Times are:
 1) Actual Elapsed time (AET hrs) (red star)

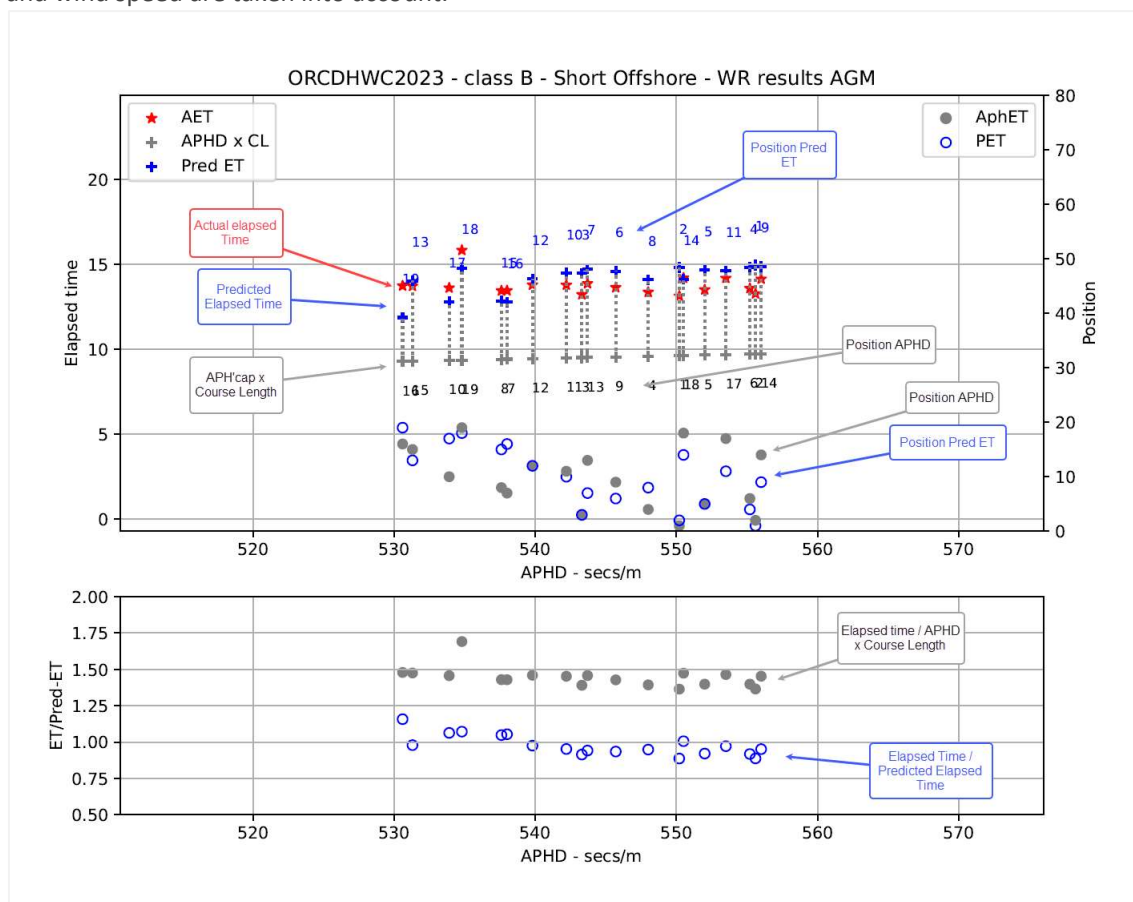
- 2) The APHD times the Course Length. (sec/mile * miles = predicted ET based on APHD) (grey +)
- 3) The Predicted Elapsed time based on Weather routing each boat. (hrs) (blue+)

The plot shows that the Weather routed predicted elapsed time is close to the Actual elapsed time. The effect on the scoring is shown in the lower part of the upper plot.

The positions calculated using the PET and APHD * CL are plotted on the right-hand axis.

The lower plot shows the ratio of the Actual elapsed time to the two predicted Elapsed times (Weather and APHD). The Weather routed PET lies close to a ratio of 1 whilst the APHD underestimates the race time by a factor of 50%.

Also, the APHD elapsed time points inevitably lie on a straight line, whereas the Weather PET shows more variation, which indicates the boats being more sensitively handicapped once the actual course and wind speed are taken into account.



The weather scoring has been evaluated in the USA by Jim Teeters and interested parties on the west coast of America. It shows great promise as a better alternative than the APH handicap. The analysis has been implemented using the “Expedition” software.

Jim Teeters shared his analysis of the Bermuda Race where the race was re-scored using the Weather routing process. This analysis showed the situation where part of the fleet encountered a big change in the wind caused by an approaching high. The Weather routing predicted that the fastest 6 boats would avoid the light airs under the high. But in reality, only the first 4 were unaffected. This meant that the 5th and 6th fastest boats were handicapped using a predicted elapsed time that was much too short compared to the others caught by the ridge. Jim explained some methods to smooth out such problems, which manifest themselves as a “step” in the Weather PET values. This problem becomes more and more likely as the race duration extends beyond 2-3 days.

The Committee welcomed Bruce Nelson’s (ORC Research Associate) comments on Race scoring.

1. Race Scoring – we have seen some good results with scoring offshore races by routing each boat over the course using an updated (within 8 hours of race start) GRIB wx file (HRRR or GFS) and each boat's rating certificate (ORCi or ORR) polars to derive a 'Predicted Elapsed Time' (PET) for each boat. The PET for each boat is then factored by the PET of the 'Base Boat' with TCF=1.000 to derive TCF's for the fleet, ie Boat A TCF = (Boat A PET)/(Base Boat PET). Then score using TCF's as usual.

2. Base Boat for Scoring – we have also found it helpful (and less confusing) use a consistent Base Boat to determine all TCF's for all races, which produces a much more consistent set of TCF rating values for all the boats over the range of conditions. In the US, a standard Farr40OD(masthead) is used as the Base Boat and always rates 1.000 TCF for any course (WL or constructed) or conditions (light, med, heavy, GRIB wx) – thereby each boat's TCF rating reflects its predicted performance relative to a Farr40 for the given race geometry and conditions. Thus, the TCF's tend to be consistent for every race, rather than varying substantially from race-to-race – I recently sailed an ORCi buoy-racing event which used the Lt/Med/Hvy TCF's off the ORCi certificates which were bewildering to the sailors (including me) due to their large variations from one race to the next. The use of consistent Base Boat-based ratings, where a TP52 always rates 1.2xx and a Swan 42 always rates 0.9xx, enhances the sailors' comprehension of the ratings and more easily understand their performance on the race course, which is important to the wide acceptance of the system.

The ITC thanked Jim Teeters and Bruce Nelson for sharing their observations from the USA 2023 Season.

4.Submissions to ITC.

Submission	Decision*	Submission	Decision*
ESP1-Polyester Sails.	NS	GER5 No Lifelines Kyy	S
ESP2 Mast Jack Pump	S	ITA4 Cruiser Racer Regs	NS
ESP3 Boom Diameter	To MC	NED2 Underwater cartoon	NS
EST1 PCS Scoring Worlds	NS	NED3 Internal Ballast	NS
EST2 Low wind scoring	NS	NED9 VPP 20 kts plus	S
EST3 Depowering Asymmetric Sails	S	NOR2 Stored Power	NS
EST4 Headsail FLAT REEF		SWE1 Tanks and Batteries	S
FIN1 Sailing Displacement	S	USA2 S-Glass	S
FIN2 HSF Coefficients	S	USA4 Minimum Crew weight	S
GER1 Constructed Crs 20kts up	S	USA6 Noncircular rigging	S
GER2 PCS All Purpose	S	USA7 Age Allowance	NS
GER4 Extreme Wind Conditions			

*S Supported, NS Not Supported.

- ESP 1 Remove woven polyester rating credit.
Not supported.
The current allowance is well established and has not proved open to exploitation. It offers a modest handicap allowance for boats using these sail materials. The Committee noted that the allowance was more appropriate to larger yachts, and that the allowance was only available to sails made completely from woven polyester.
- ESP 2 -Mast jack pump
Supported.
Rating assessment of the adjustment of the standing rigging tension while racing will be the same as Adjustable forestay, except for the boats that already have adjustable forestay recorded. In such a case, rating assessment will be 1.5 of the “adjustable forestay”
- ESP 3 Boom diameter
The ITC agreed that:
any part of the boom, when horizontal, that lies above the bottom P band should be excluded from the VPP calculations and

the current boom depth permitted without penalty should remain unchanged.
The ITC will respond to the Measurement Committee comments.

EST 1 Offshore race scoring

Not supported.

The Committee agreed that to realise the unique benefits of the ORC polar handicap table, races should be scored using a wind speed and direction, and course layout that matches that raced by the boats. This can be accomplished post-race using PCS and constructed course. Use of a predetermined course mix and PCS will inevitably degrade the scoring **unless** the preselected course matches exactly the course sailed, for example an accurately laid windward leeward course.

Competitors find post-race scoring unsatisfactory, they prefer the use of a precalculated handicap table.

Trials are underway to explore the feasibility of using weather routing software to predict the elapsed time for each boat round the course and use this Predicted Elapsed Time (PET) to generate the time allowances for the race before the start.

Pending the conclusion of this evaluation of previous races the Committee are reluctant to revise their scoring recommendations.

EST 2 Low wind scoring

Not Supported.

The ITC concluded that this is a race management issue.

The RRS rules about completing the course within the time limit and abandoning races in light airs are clear. No changes to the scoring procedure will address the difficulties of managing races in light airs.

EST 3 Depowering asymmetric spinnakers and higher wind velocity

Supported.

The Committee will add a 24 knot wind speed to the polar table.

The Committee evaluated the depowering scheme for asymmetric spinnakers and found that the VPP process of depowering correctly represented the progressive reduction of spinnaker size. The Committee noted that this approach of de-powering, based on the largest measured sail, implies that the boat has a wardrobe of smaller spinnakers that can be set as the wind speed increases. Boats with a single spinnaker are not correctly modelled, because a single large spinnaker cannot be depowered to achieve the performance of a smaller sail.

During 2024 the Committee will explore handicapping the individual spinnakers onboard in an equivalent way to that used with Headsails Set Flying (HSF)

EST 4 Headsail flattening and reef.

Supported

The Committee noted that the aerodynamic force model adopted for 2023, where the minimum of the FLAT parameter was reduced, had disturbed the congruence between depowered overlapping and non-overlapping sails in 20 knots of wind.

The flattening force model will be updated for 2024.

FIN 1 Sailing displacement calculations

Supported.

The increased number of Double Handed certificates has highlighted this situation. A review of the Sailing Displacement is underway, and a revised method will be evaluated for 2024.

The test runs will be prepared for the AGM.

FIN 2 Headsail set flying.

Supported.

The Committee analysed the VPP predictions for boats in the fleet that carried HSF's in the 2023 season.

The HSF force model will be adjusted for 2024 to further reduce the number of cases where HSF's are carried too close to the wind or in too strong winds.

The aerodynamic performance of HSF's is inferred from their Mid Girth Ratio (MGR), a higher ratio implying a deeper mould shape designed for setting at wider apparent wind angles. In some cases, HSFs with smaller MGR are designed with a deeper mould shape to sheet around the standing rigging. This type of sail will not be recognized by the VPP and will be set at an apparent wind angle appropriate to its MGR.

- GER 1 Constructed course scoring above 20 kts of wind.
Supported
The ITC will add a 24 knot True Wind Speed to the polar table.
- GER 2 PCS with All-purpose preselected course
Not supported, see submission EST 1
- GER 4 Atypical and extreme wind conditions
Supported.
Notwithstanding the difficulty of sailors matching the VPP predicted speeds when racing in strong winds, the ITC will add a 24 knot True Wind Speed to the polar table.
A lower wind speed will not be added, scoring in lighter winds can be done by Interpolation.
- GER 5 Boats without lifelines elements
Supported
Boats without lifelines will attract the same handicap adjustment as those with "light" lifelines.
ITC noted that non-lifeline boats are excluded from Cat 4 races and above.
- ITA 4 Review of Cruiser/Racer regulations
Not Supported.
The committee see no need to modify IMS Appendix 1 but refer this matter to the Measurement Committee and Rating Officers Committee.
- NED 2 Profile of the boat below the waterline.
Not supported.
The Committee are divided as to merits of this submission.
Adding the underwater profile and the appendages makes it easier to see that rated configuration of the boat, but it exposes dimensional information about the boat that designers do not want to share.
The Committee noted the contribution from the Observers that a Privacy Algorithm might be adopted to show the broad configuration without exposing actual dimensions other than those shown on the Certificate.
The Committee will respond to the direction of the Management and Rating Officers Committees.
- NED 3 Internal ballast
Not Supported
The submission asked the ITC to consider calculating the gyradius effect of internal ballast. This is not feasible, but the submission prompted the Committee to discuss the matter. The Chief Measurer observed that the accurate recording of inventory items (including internal ballast weights and locations) was problematic. Hence an adjustment to the gyradius allowance might be compromised.

The Committee believe that the pitch gyradius change between fitted accommodation structure and the equivalent weight replaced with internal ballast was difficult to assess, because of the wide range of interior structural arrangements used to meet the Cruiser/Racer requirements.

The Committee analysed the boats that carry internal ballast. 10 % of these boats carry more than 15% of their sailing displacement as internal ballast. The Committee concluded that boats carrying significant amounts of internal ballast were unlikely to be bona fide cruiser racers. The Committee will make more test runs with a view to implementing a maximum amount of internal ballast permitted for a Cruiser/Racer.

NED 9 VPP above 20 kts of wind
Supported, see submission GER 4

NOR 2 Electric power assistance
Not supported.
There is a wider discussion needed about Non-Manual Power and stored power. Adding more small adjustments now does not seem appropriate.

SWE 1 Batteries in place of fuel tanks for Cruiser/Racer
Supported.
The regulations will be amended to reflect the realities of electric propulsion.

USA 2 Hull construction in IMS Rule B7.1(b)
Supported
Change IMS B7.1b to read: Hull skin of Glass-reinforced Plastic (GRP) or wood but incorporating a core material of less density than the skin.

USA 4 Minimum crew weight
Supported
Revise ORC Rating rule 102.3 to read
“Minimum crew weight may be applied by the Notice of Race and Sailing Instructions and shall be calculated as follows:
Minimum CW = Maximum CW – (the greater of: 15% of Maximum CW or 85 kg)”

USA 6 Non-circular rigging.
Supported.
The Committee reviewed the available data related to non-circular rigging and agreed to reduce the handicap allowance by 25%. This reflects a technically plausible handicap adjustment without providing encouragement for the vast majority of the fleet to change their rigging.

USA 7 Age Allowance
Not supported.
Over time the ORC age allowance has been reduced, most recently in 2012.
The increasing sophistication of the ORC performance prediction methods have become more sensitive to the performance effects of non-contemporary designs of hull and rig plan. The Committee are comfortable with the current situation, where a modest allowance is available to encourage older designs.
The submission suggests that the proposed change to Age Allowance has minimal effect on the race results, which begs the question “why make a change”. The Committee want to avoid a situation where extending the range and size of the age allowance, using only hull date as the metric, might open the door to old boats fitted with new keels, rig and sails disturbing the current equilibrium.

5. Mini test fleet (MTF).

Three more boats have been added to the mini test fleet.

These results fitted well with previous data and increased the Committees confidence in the current residuary Resistance Formulation.

Marcus Mauleverer showed the distribution of the current members of the MTF in terms of their hull parameters. During 2024 it is intended to add 3 or 4 more boats when suitable candidates are available.

6. SY Leeway

The Superyacht fleet has several boats where the rig envelope and high leeway angles restricts their ability to trim overlapping jibs for upwind sailing. This effect is largely absent in the ORCi fleet, and this effect is not acknowledged in the VPP.

The ORCsy VPP already has handicap allowances in the hull resistance force model. Before the final ORCsy VPP release the ITC will try to introduce a sail force model that reflects sheeting restrictions. During 2024 the ITC will explore a more sophisticated hydrodynamic induced drag force model to improve the handicapping of boats with centreboards and shallow draft fixed keels.

The ITC will also implement a default mast weight and gyradius for wooden spars.

7. Multihulls

a) Daggerboards.

A large proportion of the multihull fleet use retractable daggerboards which have either symmetrical or cambered cross sections. Using symmetrical daggerboards the windward board may be fully extended at any time, whilst with asymmetric boards the windward board must be raised to prevent it generating a force that pushed the boat to leeward.

Symmetric boards are used where the designer seeks to share the load between the two boards, and/or avoid the installation of high-speed board lift systems.

For 2024 the ORCmh certificate will record the type of daggerboard.

The hydrodynamic force model will assume that all boats with asymmetric boards will sail with only the leeward board extended. Boats declaring symmetric boards will be handicapped on the based on the best speed from one or two boards deployed.

The ITC will develop a more sophisticated force model to account for the leeway effects on the demihulls, like that used in the monohull VPP.

b) Cruiser/Racer Interior

For monohull yachts the VPP predicts the added resistance in waves based on the hull geometry and displacement. It also calculates the effect of the pitch gyradius on the added resistance. This approach follows well proven methods for monohull vessels.

The approach for multihulls follows similar lines, but the effect of pitch gyradius is less easy to define. Multihull vessels have a higher beam/length ratio, thus the pitch inertia cannot simply be linked to the hull length. Also, a “stripped out” interior does not reduce the hull inertia very much. The main performance influence of reducing fit out is reducing the weight, and this is properly accounted for in the VPP.

The Committee agreed that at this time there was insufficient data available to devise a “gyradius allowance”, but research will continue during 2024, with the assistance of the Research Associates.

c) HSF AWA limits

The modifications to the HSF aerodynamic coefficients will be implemented in the ORCmh VPP.

The ORCmh VPP also needs to detect HSF’s that cannot be sheeted at close apparent wind angles because of the shroud envelope. This routine in the VPP will be improved to reduce the occasions where HSF’s that cannot be set due to sheeting restrictions or sail construction form part of the scoring polar table.

d) Hull Fly Angle.

In the monohull VPP the heel angle is a variable that is “optimised” in the VPP. For multihulls, where the righting moment begins to reduce as soon as the windward hull is clear of the water, this “Hull

Fly” angle is used as a hard heel limit. The sails are depowered as the wind speed increases to maintain this angle.

The difficulty of sailing with the windward hull just clear of the water increases as boat size reduces. The waves are the same for all boats, so they are proportionally bigger and more disruptive for small boats. The smaller boat heels more quickly in response to gusts and shifts, the crew have less time to adjust sail trim and heading. This leads to the crew of a small boat having to sail more conservatively. Additionally, regardless of the boat size, bold crews can sail closer to the edge for longer than more conservative crews, and the speed gain from flying a hull more often than your opponents is significant. Addressing these issues is a major challenge.

8. Performance database

The ORC continues to gather high quality data logs from racing yachts, thanks to the support of navigators and owners. For 2024 the ORC will again allocate funds to support the data processing through KND. There are four more boats in the pipeline.

This year the analysis will include the data for each “phase” so that this can be included in the ORC data viewer.

The Performance Database project has been publicized at the World and European Championships, but there has been no data processed from these events. The ORC will shift its focus to working with the navigators who know the system and can provide data from their programs that they know will fit the ORC’s requirements.

9. VPP

a) Morgan 27

The Committee discussed the Morgan 27 design. The boat’s polar curves are predicted slower by the ORCi VPP than the ORR VPP. To investigate the source of this discrepancy the ORC will provide US Sailing with a version of the ORCi VPP that outputs the force breakdown at each polar solution point. US Sailing will compare the results with ORR force output and report back.

b) IF boat

At the beginning of 2023 the Dutch ORCclub fleet asked the ITC to review the certificate for an International Folkboat (IF) style yacht that they felt was predicted too slow by the VPP.

The ITC concluded that the keel resistance model was over predicting the resistance for this small, long keel, hull form. The keel resistance model was modified so that long chord keels, where there was no separate rudder, should have a reduced frictional resistance coefficient. The question of the residuary resistance of the keel volume is still under investigation.

No further VPP changes were requested for 2024, pending getting an inclining test result from a typical boat.

10. Rating and measurement tolerance

The ORC rules require that regatta results be re-scored if a check measurement during the regatta causes a change in handicap of 0.1%. In practice this means that some rig measurements may change by 200-300 mm before the threshold is reached.

The Chief Measurer reported that he felt there was no need for action, as these situations arose mostly with boats new to ORC, with little experience of its extensive measurement requirements.

11. Data viewer

Marcus Mauleverer demonstrated the latest version of the Polar comparison tool and VPP output viewer. The system is driven by a Python script that interrogates the XML file that is output by the VPP. Once the desired functionality has been programmed the code will be made available to the ITC members.

12. Any other business

a) Review of Neural Network Methods.

Max Gurgel presented an analysis of the ORC’s methodology regarding the creation of the residuary resistance force model.

Max described what he saw to be shortcoming in the analysis, that had given rise to handicap changes for the 2023 season. Jason Ker and Marcus Mauleverer presented their assessment of the situation, both in the meeting, and later in a one-to-one discussion with Max.

The Committee noted that:

No submissions were received relating to the residuary resistance force model.

Max was able to determine the functionality of the force model based on the information published by the ORC.

The contribution from Max was well received, and the ITC encourage observers to contribute to the discussions.

b) Manual Power, Stored Power, Autopilots and Sensors.

The Committee discussed the challenges around the use of “Non-Manual Power”.

There are several considerations:

Limits on the sensors that support the autopilot. There is a submission to the WS Oceanic and Offshore Committee” that will restrict the use of sensors that scan outside the boat. This is to protect competitors from another step in the autopilot arms race.

Stored Power (Energy), Where this is derived from batteries and generators there is no confusion.

But boats now carry accumulators that can store “manual power” for use at some point in the future. The power may be manually generated even before the race start. This situation is not currently addressed.

Stored energy is energy that can be used but is not being used at that moment and is thus being stored. Energy in action is energy that is being used at that moment.

The rules and definitions related to the use and handicapping of NMP systems are not well coordinated. The RRS and ERS do not easily transfer to the language and systems of offshore racing yachts, and the handicap rules adopt different terms and approaches.

The ORCSy rule needs to address the handicap implications of different systems.

The Committee agreed to review the situation during 2024.

c) Asymmetric Spinnakers flown to windward.

The Committee agreed that this would continue to be prohibited for 2024.

d) Triple head rig and reaching struts.

The Committee noted Bruce Nelson’s (ORC Research Associate) comments on this matter.

“Triple-head sailing – this topic may be one for future discussion, but worth mentioning that triple-headed jib reaching is providing substantial performance improvement to a growing number of boats in the US (and elsewhere), with performance factors of 1.05+ commonly seen at twa’s between 80 to 120 degrees in tws from 9 to 20+ kts. I recognize this is not entirely new, as IRC and others have already discovered, but I did find the 5+ percent of performance gained with the triple-headed configuration to be a surprisingly large amount of basically unrated advantage. Thus I suggest the ITC consider this, along with use of reaching struts, on the agenda for future sail aero research”

The current VPP assessment (that assigns to such a configuration a sail area the same as the foretriangle, $ISP \times TPS / 2$) is a good way of evaluating the equivalent sail area. The triple head rig is favoured by boats who also race under IRC, where the triple head rig permits multiple headsails to be set without rating penalty. Future IRC rule changes may reduce the popularity of multiple headsails. The ITC considered increasing this “minimum HSF area” by 5 or 10% but were content to leave the VPP unchanged for 2024.

The Committee discussed the matter of Whisker Poles (“reaching struts” in Bruce Nelson comments above). The aerodynamic force coefficients already contain a handicap adjustment when a Whisker Pole is deployed to hold the headsail clew outboard of the sheer line. This is based on the Whisker Pole Length (WPL). The Committee also agreed that the WPL would only be used for headsails and the Spinnaker Pole Length only for Spinnakers.

e) In order to harmonise the regulations between IRC and ORC, ORC rule 208.2(a)(ii) is deleted. This now permits yachts to use spinnakers and headsails in tandem without handicap adjustment.

13. Next meeting

The next meeting will be held on April 6-7th.
The venue to be decided after the Congress meeting.

14. Closing remarks.

The Chairman thanked the members and observers for their attendance, and their business-like approach to the agenda.

The Chairman thanked the DSV officers, on behalf of the ORC, for their hospitality and the use of their facilities. The venue is ideal for the ITC's purposes.

15. Research Agenda.

Following the meeting a 2024 Research Agenda was compiled.

- Aero
 - Headsail depowering strategy
 - Spinnaker depowering, single spinnaker coefficients
 - HSF sheeting and rig envelope
- Heel angle comparison with observed data.
- Weather Routing Scoring
 - Process
 - Implementation for racing
- Mini Test Fleet (CFD)
 - Add new boats.
- Superyacht leeway and centreboard treatment
- Multihulls
 - Daggerboards
 - Cruiser Racer allowance
 - HSF and rig envelope
 - Heel Fly angle
- Performance Database.
 - Process 4 new boats
- Data Viewer and Polar comparator
- Manual and stored power regulations

ITC Chairman 23-11-01