OFFSHORE RACING CONGRESS

World Leader in Rating Technology

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ITC – INTERNATIONAL TECHNICAL COMMITTEE

Minutes of a meeting of the **International Technical Committee** of the Offshore Racing Congress held on 20-21st October 2012 at UVAI, Rome Italy.

Present: Alessandro Nazareth (Chairman)
Andy Claughton
David Lyons
Kay Enno Brink
Jason Ker (UK)
Nicola Sironi (ORC Chief Measurer)
Zoran Grubisa (ORC Technical Staff)
Davide Battistin (ORC Programmer)
Panayotis Papapostolou (ORC Technical staff)
Enrique Mollinelli (ORC Technical staff)

Observers: Gennaro Aveta (Italy)
Claudio Schiano (Italy)
Matteo Polli (Italy)
Claudio Maletto (Italy)
Peter Reichelsdorfer (US)

Apologies for absence were received from committee members Manolo Ruiz de Elvira, Rob Pallard, Philippe Pallu De La Barriere and Research Associates Fabio Fossati and Lex Keuning.

1. WELCOME, MEETING LOGISTICS

The Committee thanks the UVAI for their customary hospitality and for their friendly staff assistance during the meeting.

2. MINUTES OF THE LAST MEETING

The minutes of the previous meeting in Hamburg were approved.

3. HYDRODYNAMICS

The Residuary Resistance (Rr) Working Group completed its task delivering a completely new formulation of this fundamental part of VPP, essential to establish the correct total resistance of the boat.

Recognizing that previous attempts to accurately calculate the effect of several hull parameters such as Prismatic Coefficient, Longitudinal Center of Buoyancy (LCB) and water plane area coefficient have led to undesirable type-formed hull shapes and that this trend could not be addressed within the existing model, it was decided to simplify the input parameters accounting for 2 main parameters only: dynamic Length-Volume ratio (LVR), and Beam to Canoe-body-draft ratio (BTR) to avoid as much as possible any type-forming. The effects of hull volume distribution are still captured by the use of the traditional integrated lengths.

During about two years of work and several meetings, but especially in the last 3 months, the WG went through the following steps:

a) Reviewing and understanding the shortcomings of the existing Rr formulation
b) Collating the relevant Delft Systematic data (analyzed by Kay Enno Brink) and the CFD results coming from CRAIN (Philippe Pallu) and the FINE^{TM}/Marine code, performed by Jason Ker
c) Deriving a new Rr formulation based on BTR and LVR that fits the CFD results more accurately and rationally than the 2012 formulation
d) Establishing a methodology to assess for each Froude number (Fn) the Rr variation related to a base boat having LVR = BTR = 6. The Length model has also been modified to correctly represent a dynamic length.

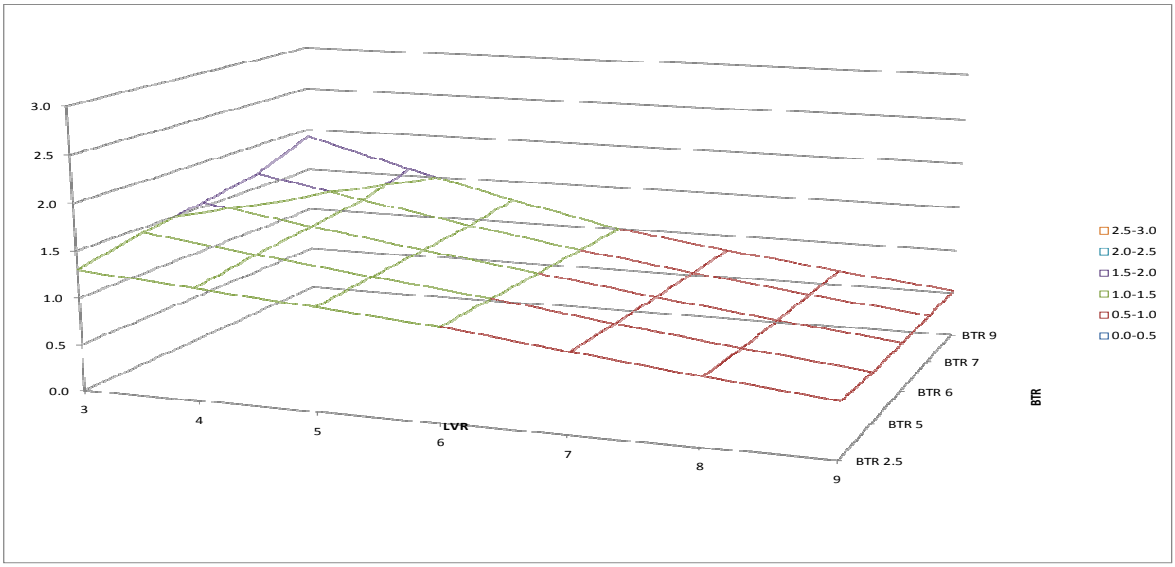
Following much retrospective analysis on models of the Delft Systematic Series, a base boat Residuary Drag was derived from a regression performed on a set of models that correspond well with the LVR and BTR values of the ORCi fleets. The frictional resistance has also been changed, using the Hughes frictional line viscous resistance, instead of the classic ITTC as in current VPP.

Models were evaluated using Numeca's FINE^{TM}/Marine RANS CFD code. Drag values were re-referenced to dynamic LVR calculated accounting for Fn, and not limited to a single value.

The Rr drag curve for the canoe body is then formed by the extraction of drag values from 3 Dimensional surfaces of dynamic LVR and BTR at each Fn increment, where Fn is being derived from the combination of speed and dynamic length (see below) with each Fn surface constructed starting from 0.25 up to 0.7. For speeds outside this range the resistance is extrapolated.

The various surfaces (as a function of LVR and BTR, with LVR range 3 to 9 and BTR range 2.5 to 9) represents Residuary Resistance ratios (more than 1 if increased, less than 1 if decreased) versus the base boat, with LVR = 6 and BTR = 6.

An LVR-BTR surface (at a fixed Fn) might look something like the plot below:



The new Residuary Drag formulation proved to be robust and very effective in assessing the Resistance of the boat, so the WG went on to apply it also to heeled drag, using the same formulation based on heeled parameters entered into the new Rr at each heel angle.

So a new formulation of the heeled drag is included in the new hydro model based on calculation of heeled residuary resistance using the same parameters of upright Rr (BTR and LVR) but calculated with the boat heeled. This formulation also takes into account the asymmetry of the heeled hull form , and then considers appendages size (and special configurations like canards and trim tabs) so that leeway angle can be calculated and used to compute the induced drag.

The methodology implemented is as follows:

- Formulate lift area (Coefficient of lift multiplied by projected area, abbreviated as "Cla") versus leeway angle slopes and axis intercepts for the hull and for the combined appendages, based on simplified lifting line theory for the hull plus a modified version of the lift efficiency modified by BTR and LVR method already in place in the VPP for the appendages;
- Determine from the LPP a hull yaw angle at zero leeway due to the asymmetry of the heeled hull shape. This is based on the transverse shift of the center of buoyancy in the forward and aft end of the hull;
- Combine both hull and appendage lift Coefficient (Cl) vs Leeway lines to create a total coefficient of lift area line (tcla) which considers areas and initial slopes (for canard or trim tab yachts, the hull share of lift is assumed to be zero).

In the VPP solver operation the procedure is to:

- Divide applied side force by 0.5*density*Vs^2 to obtain the required tcla;
- determine leeway at the applied tcla;
- determine separate hull and appendage lift shares at the leeway angle obtained;
- From effective spans of hull and appendages, determine the induced drags of both hull and appendages;
- Di total = Di appendages + Di hull , with both Di component parts accounted as

  Component_Lift squared * π /effective span of component.

The programmed structure of this method has allowed for the factors to be tuned to match closely the CFD and tank data, and then checked against the existing fleet.

Finally, a new dynamic length scheme was studied to substitute the current one that consisted of a simple two thirds to one third share between the static waterline length and a quite deeply "sunk" length, being a fixed value insensitive to LVR or Froude number.

Recognising that the wave height, the dynamic heave and therefore the physical length itself are highly sensitive to both Froude number and Length volume ratio (LVR), a new scheme was developed to improve the treatment of "effective length." Two new sunk length values were created, namely LSM4 and LSM6, aimed at Fn > 0.35 and Fn < 0.35 respectively. The height of LSM4 is aimed to match wave heights at Fn 0.4, while the height of LSM6 is designed to match waves heights at Fn 0.3, and both depend on suitable functions of the yachts length and LVR. LSM6 has a lower length exponent than LSM4, because at Fn < 0.35 having a lot of volume in the ends rather than in the middle is not as beneficial as it is at Fn > 0.35. The static sailing waterplane length LSM1 has also had its exponent reduced to reflect that it is now only primarily used at slow speeds. The new L is dependent on Froude number, and based on length mixtures which are linearly interpolated in four phases:

- Phase 1: 0.125 < Fn < 0.3 L is a mixture of LSM1 and LSM6, starting at 100% LSM1 and finishing at Fn 0.3 as 100% LSM6
- Phase 2: 0.3 < Fn < 0.4 L is a mixture of LSM6 and LSM4, starting as 100% LSM6 and finishing as 100% L
- Phase 3: 0.4 < Fn < 0.5 L is a mixture of LSM4 and LSM1, starting at 100% LSM4 and ending as 70% LSM4
- Phase 4: 0.5 < Fn L is a mixture of LSM4 and LSM1, continuing as 70% LSM4

For values of Fn > 0.4 the LSM6 loses relevance, but the wave length grows longer than the hull as the Fn continues to increase, resulting in a reduction of the wave height locally at the transom, so LSM1 is mixed in to reduce the effective length appropriately, representing a 30% share of L by Fn0.5 and then continuing at that ratio for higher Froude numbers.

This is the proposed Length Mix:

At exponents of LSM1, LSM4 and LSM6 are 0.3, 0.4 and 0.45 respectively, the depth attenuation remains unchanged. The heights at which the LSM4 and LSM6 are taken are found by:

1. LSM4 Height Aft: LSM1 * 0.14 * LVR^-1.2
2. LSM4 Height Fwd: LSM1 * 0.093 * LVR^-1.2
3. LSM6 Height Aft: LSM1 * 1.105 * LVR^-2.15
4. LSM6 Height Fwd: LSM1 * 0.736 * LVR^-2.15

The committee is comfortable with the new hydro models that includes the 3 main components described above, and the situation could be summarized with the following points:

1) The model of the RR relation to LVR and BTR is now very accurate, and residuary resistance has retained an appropriate sensitivity to Cp with our new length scheme. Although LCB has been lost, this won't be a problem

2) The replacement of the heeled drag factor is much more accurate now that it uses the heeled parameters in the Rr model, PLUS the hull asymmetry calculation that divides the lift between hull and keel

3) The revision of the length scheme using LSM1, LSM 4 (now with a height that has LVR sensitivity) and the new LSM6, is much better than the current formulation of IMS L

Other hydrodynamics issues like:

- Standard keel concept
- Crew weight trimming moment evaluation
- Transom drag revision

will be put in 2013 agenda.

In particular the Committee thinks that because the new heeled drag will take into account asymmetry of the boat and its influence on the induced drag, the issue of big keels will be addressed, as well as for unconventional configurations like canards and trim tabs. This should allow the Standard keel concept discussed earlier in the year to be better checked next year if necessary.

4. AERODYNAMICS

New Power and Shape Functions

In some cases the current VPP has given downwind speeds that are higher than observed speeds, and that boats with asymmetric spinnakers on centerline are in some cases assumed to sail deeper than the same boats with a pole, so the ITC has completely revised the three aero functions known as "power", "shape" and "blanketing" to yield better results.

4.1 POWER

The Power Function was introduced some years ago in order to more equitably handicap the influence of increasing the length of the spinnaker pole or bowsprit relative to the spinnaker or gennaker mid-girth.

The Power Function of 2013 has an apparent wind angle linkage, so that the effective reference area is essentially similar to what would be ideal for the wind angle considered. This addresses several handicapping issues: deep running symmetrical sails on heavy boats now need to be bigger relative to the space available than asymmetrical sails on lighter boats that sail higher angles in order to collect the same Power Function credits.

First, bowsprits are considered shorter than poles (a reduction factor of 0.9 is applied to TPS) while a correction of height available is taken into account for poles as 0.16*LSM1, considering that poles are set higher than the bowsprit.

The new power formulation is:

Power = 0.92 + (ABS (fsp)) ^1.5, but not to exceed 1.2
Fsp= min((1-1.488*SPLc/(SPI_AREA/(ISPc*AWAfact))-0.17 , 0)
SPLc= SPL or 0.9*TPS
ISPc= ISP(for sprit) or ISP-0.16*LSM1 (for poles)
AWAfact = 0.5196*AWA^0.1274 if AWA>28°, 0.794 if AWA<28°
CE height = 0.517*ISPc+0.16*LSM1 for poles or 0.517*ISPc for sprit,

The fsp formulation includes ISP and TPS, so in effect it has dimensions of an area. The AWA factor is a modification on this area to consider a boat type that needs to sail at 175 degrees and can fill the available space with a larger spinnaker more effectively than a boat that needs to sail at 100 degrees that would not benefit from such a large spinnaker. So if a typical A1 area is set at a typical A1 angle, it should reach a similar power factor to a typical S4 or A4 area set at their typically-wider angles.

4.2 SHAPE

The SHAPE function was introduced some years ago as it is an observed effect that large spinnakers are particularly inefficient in light airs. To address this "type-forming" towards smaller spinnakers, a power loss factor for larger sails was developed so reducing the effective area of a spinnaker that is bigger than the "reference area". The pre-existing system however was flawed in having the reference area formed by IG and J leading to a situation where changing J would have a large effect on predicted downwind performance. The new formulation only considers the space available for the spinnaker to be flown in, defined by ISPc, J and pole type.

These are the new features of the shape function:

- The reference area depends on whether a pole or a bowsprit configuration is used, due to the different space available in each case;
- The shape function reference area now has a "head angle" relationship as well as being related to ISP and TPS in order to bring in the effect of gravity making it harder to fly a lower aspect ratio sail;
- The shape function now relates to apparent wind speed rather than true;
- The ISP used by the reference area is the full ISP for pole boats at AWA < 80°, blending to ISPc at AWA > 90°, in order to simulate the practice of tacking very light wind sails onto a short STL length bowsprit to gain more projected area. ISP for sprit boats is the full ISP throughout the range of AWA.

This is the new SHAPE function formulation:

SHAPE = 1 + Wind_Speed_Range_Multiplier * (Shape_factor -1)
Wind_Speed_range_Multiplier = 1 if AWS < 5, 0 if AWS > 6 (the Multiplier = 1 for < 5 AWS, 0 for > 6 AWS, and Interpolates between)
Shape_factor = 1-3 *(Ref_Area/Area_actual -1)^2 with 0.8 < Shape_factor < 1.0
Area_actual = MAX (SPI_AREA, Ref_Area)
Ref_Area = 1.04625* ISPc * SPLc / Head_Angle_Corrector
Head_Angle_Corrector = ARCTAN (2.5 * (SPL;TPS) / ISPc)

The formulation ensures that the "rated area" increases slightly with the increase of TPS, even in 5kts AWS, and the reference area is more appropriate to a small sail for the limited space and AWA. Being related to AWS, it is much more physically realistic and should mean that for a light boat the effect disappears at about 10kts TWS, while for a 37' heavy cruiser-racer the effect tapers down at 12kts TWS.

4.3 BLANKETING

The current VPP aerodynamic model contains a Blanketing term that modifies the spinnaker/gennaker force coefficients if the spinnaker pole length (SPL), or gennaker tack point (TPS), is short relative to the mid girth and relative to the SPI_AREA/Main_Area. The above effects are now correctly covered by the new POWER and SHAPE functions so it was decided to remove BLANKETING from the VPP.

The new formulations are more reliable as they control and rate pole length more effectively, they credit spinnaker area that is in excess of what is effective at the angle sailed, and they consider that sprit length needs to be relatively longer than pole length for sufficient projection and should not systematically favor one type of boat over another, ie. light-fast, heavy-slow, sprit-pole etc.

ITC agreed to propose the implementation of the full package of the above functions

4.4 New mainsail roach computation

The Committee devoted some time to discuss this item because of the possibility of a small loophole that may occur when a longer E is measured on the boom, and then reducing it so to reduce the

effective roach taken into account by the VPP. The boat is then slower too if a non-existing sail area is taken into account by the VPP in the bottom.

Some possible solutions were discussed, and it was decided to compute the roach taking into consideration only the upper 3/4 of the mainsail (ignoring the area below the MGL girth).

It was also suggested to enforce the IMS Rule F1.5 d) to avoid any E measurement outside the boom outer point.

4.5 IG and J measurement wording revision

The Committee was asked what to do when jibs or genoas are hoisted outside the foretriangle as defined in F3.1 (IG) and F6.1 (J). The committee believes that jibs or genoas set flying in front of the forestay will require some rule changes to get this subject better addressed. ORC Rules 207.1 and 207.2 as described above will remain valid; while IG, J, and SFJ measurements will be modified in case of jib/genoa set flying in front of forestay, taking in account actually hoist and tacking point of such jib/genoa

4.6 Quad sails

The Committee also considered a type of headsail with double sheets attached to a double clew, so-called "quad sails" (see photo below):

The Committee believes that this sail should be measured as a jib, extending the leech and the foot, and taking their intersection to measure LP and all the girths.

The Committee also evaluated this sail as a code0 or an asymmetric spinnaker, but it was thought that the performance of this kind of sail, with the upper sheet that could effectively control the leech twist, must considered only as a jib and that the IG and ISP measurements should be re-considered (see 4.5 above).

5. LIGHT SHIP TRIM AS NEW MEASUREMENT TRIM

After the meeting in Hamburg where the Committee decided to defer to Man Com and the Measurement Committee the decision about adopting the new LIGHT SHIP trim as measurement conditions, the ITC also devoted some more time to discuss this issue, mainly to prepare all the necessary technical tools to let the other committees to best make their informed decisions on these matters.

So Kay Enno Brink together with Panayotis Papapostolou worked together to fix the new procedure to be implemented into the LPP if the decision of adopting new measurement trim were to be approved at the next AGM.

Starting from the software programmed last year to take into account all items listed in the Measurement Inventory, and to deduct them to obtain a new flotation trim, it was confirmed that it is working correctly, defining a "LIGHT SHIP" trim derived by the current "MEASUREMENT TRIM".

It must be updated to take into account the boats that from 1/1/2013 may be measured empty, but the "SAILING TRIM" that is used for the VPP calculations is intended to remain the same. So a set of default weights and CG's has been extrapolated from the data base of the world's measurement inventories in order to calculate the items to be added back in for sailing trim. This is as follows:

	Mass/DSPL	LCG/LOA	VCG above Flotation WL	VCG above Flotation WL
Anchors and chain	0.003	0.45	0	0
Deck Gear	0.002	0.40	0	0
Tools	0.001	0.55	0.25 freeboard at mast	0.300
Safety gear	0.0015	0.50	0.25 freeboard at mast	0.300
Galley Equipment	0.001	0.60	0.25 freeboard at mast	0.300
Navigational Equipment	0.001	0.60	0.25 freeboard at mast	0.300

And the following procedure could be adopted:

BOATS MEASURED BEFORE 31/12/2012:
The relevant weights currently included in the measurement inventory will be deducted from the measurement displacement to derive a LIGHT SHIP displacement. The CG will be retained for information purposes but the sailing trim will remain unchanged and computed from measurement trim as is in current LPP.

BOATS MEASURED AFTER 1/1/2013:
Starting from the light ship trim derived from freeboards and stability measured with boat empty, the LPP will add the set of default weights and CG's studied (see above). Then the set of default weights and CG's that are currently added by the LPP (sails, gear + measured crew weight if available) will be added to derive the sailing trim.

To avoid any concerns that the boats could be favored in retaining the old measurement trim or making the new measurement, a test run was prepared: In the world test fleet, removing the measurement inventory weights and adding the new default weights causes very small GPH differences, with extremely aft-trimmed small boats being affected most.

The above differences could be considered negligible, so this new procedure is protecting the existing fleet, will avoid any exploitation of extreme aft trim, and will avoid a massive re-measurement exercise.

Apart the list of advantages and disadvantages already expressed in previous Minutes, another concern regards sailing trim stability for boats that are close to the LPS minimum (103° for general ORCi certificate, or 90° for sportboats) - or having a Stability index around the limit established for racing in OSR category 0, 1 and 2 that are respectively 120, 115 and 110°.

Boats that were eligible last year but were very close to the limit may not be entitled to race this year, so a check on these limits in the current fleet was made and it was shown that no major change occurred.

Therefore, ITC thinks that all the technical tools are available for Man Com and the Measurement Committee to make their final decisions.

6. SUBMISSIONS REVIEW

Submission: **ARG 1 - AEROMODEL**

The Committee discussed the problem of masthead versus fractional rigs. The current aero model reduces Effective Height with fractionality, while on real boats fractional rigs depower more efficiently but have the upper part of the mainsail not covered by the jib, while on masthead rigs this helps in deviating the flux.

For these reasons, which must be considered all together, the Committee decided to defer this item to 2013 agenda.

Submission: **ESP 1 – POLE POSITION FOR INCLINING TEST**

The committee supports the submission, and to include the LCF on the certificate.

Submission: **FIN 1 – DEFAULT CREW WEIGHT CALCULATION**

The current Default Crew weight (ORC 102.2) depends on many parameters (LSM0, DSPM, RM, MB) and there is no clear size dependency apart from RM. The current parameters of the ORC world fleet suggests to the Committee this possible formulation that minimizes changes and is dependent only on IMS LSM0:

Default CW= 25.8 x LSM0^1.4262 (kg),

A test run was prepared and showed minimum differences in handicap.

The submission is therefore supported.

Submission: **FIN 2 – MEASUREMENT TRIM**

See Par.5 above.

Submission: **FIN 3 – BTR, INCLINED DRAG AND/OR RIGHTING MOMENT**

See Par.3 above. HYDRODYNAMIC
Regarding RM in the current VPP evaluation, it should be left unchanged as it is moving the ratings of the racing fleet sailing stiff and safe boats.
The problem of high RM with high VCG is due to the shape of boats (mainly C/R's) that have poor weight stability because of construction limits that reduce building costs. Increases in RM with form stability can lead to low LPS and a low stability index. So the Committee believes that the new Rr formulation will address part of this submission, while it does not support the section related to RM. See also submission RUS 1.

Submission: **FIN 4 – TP 52 STYLE BOATS IN VPP**

See Par.3 above.

Submission: **FRA1 – TWIN KEEL**

ORC programmer Davide Battistin has reported that after the 2010 decision on boats with double fins (retractable or not), the offset file should not have any keel but only rudder(s) and the geometric dimension of the twin keels entered as "canard" in the fields provided for this in the DXT file. The only issue that the current VPP does not address is when the double keel has a bulb at the bottom.

If required, the ITC will next year put a study into the agenda on how to implement this latter kind of double "fixed" keel with bulb.

Submission: **GER1 – NON MANUAL POWER**

The ITC agrees to allow non-manual power in the Performance Division for boats < 20 m, as no loophole is foreseen and there is no reason to forbid the use of non-manual power for racing boats.

In addition it was decided that non-manual power for sheet winches will be treated differently from the power used only to operate hydraulic rams used to adjust backstay, vang and outhaul.

So the penalty for non-manual power will be computed as follow***s:***

PERFORMANCE DIVISION
Non-manual power for adjusting sheets = 50% of the total penalty
Non-manual power for adjusting backstay, vang or outhaul = 50% of the total penalty

CRUISING DIVISION
Non-manual power for adjusting sheets = 75% of the total penalty
Non-manual power for adjusting backstay, vang or outhaul = 25% of the total penalty

Halyard winches to hoist mainsails can be powered without any penalty.

The final value of the penalty will be smoothed, as in the current rule, by the ratio (CW/def CW)^2 (taken to be not > 1) and will be separated by DA.

This means that an additional field needs to be added in the DXT file that identifies boats with just winches or with just hydraulic non-manual power.

Submission: **GER3 – MAINSAIL WEIGHT**

The Committee supports the submission to remove mainsail weight from the ORC VPP.
A new default mainsail weight has been formulated that is better related to boat dimensions:

Default Mainsail Weight = 0.0153 * LSM0 ^3 + 3 (kgs)

The test run showed very small impact on the fleet, so it was agreed to implement this new formulation and eliminate MSW from mainsail measurements.

Submission: **GER4 – MAST RAKE CONTROL**

ITC support the deletion of Rule 205, since the ram tensioning the forestay is not changing the mast rake.

Submission: **GER5 – VPP WIND RANGE**

The submission is deferred to next year's agenda so as to better inspect boats' low and high speeds with the new Hydrodynamic resistance calculations proposed for implementation in 2013 (see Par 3 above).

Submission: **GRE1 – GYBE ANGLES**

The Committee evaluated some tests made with the same boats with same asymmetric spinnaker areas, but with a pole or bowsprit of the same length. It was noted that the gybe angles could be lower for asymmetrics tacked on CL at high wind speeds, but VMG speeds are lower for this spinnaker configuration.

The polar speed plot shows an almost flat curve in the wide TWA range, hence it is very difficult for the VPP optimizer to find an optimum VMG, so the widest TWA is fixed.

Checking the plots of sails coefficients downwind (for both asymmetric configurations) it was noted that some change could be made in the 150°-180° AWA range. In fact, by slightly reducing the drag coefficient for an asymmetric sail tacked on CL, it would be possible to obtain polar speed plots that are less flat, and thus enable the VPP to fix a minor gybe angle problem for asymmetrics on CL.

Submission: **GRE2 – BOOM NOT HORIZONTAL**

The Committee made a check on the effective sail area when the boom is not perpendicular to the mast.

The rated mainsail area, with the boom not perpendicular to the mast, whether the angle is >90° or <90°, is increased compared to the effective area by 0.2% for 10° boom angle and 0.8% for 20° boom angle. So there is no chance to exploit the rule designing mainsails with the boom higher or lower than perpendicular, but there also is not an excessive area penalty.

Submission: **GRE3 – SPINNAKER POLE IN THE "NO SPINNAKER" CONFIGURATION**

The Committee confirmed that a pole is allowed on board when no spinnaker is measured (the "no spinnaker" configuration) and as a consequence the SPL should be measured.

Rule 113.3 must be changed as following:

113.3 If there is not any spinnaker measured, the boat will be rated with an asymmetric spinnaker tacked on a pole with the following parameters:

SPL **–** which shall be taken as follows:

- if there is a spinnaker pole on board it shall be measured and taken as ***SPL*** but not less than ***J***.
- if there is no spinnaker pole on board *SPL* shall be taken as ***J***.

Area = 1.035 * *Area* of the largest jib/genoa.

Submission: **RUS1 – PENALTY FOR INSUFFICIENT STABILITY**

The Committee discussed this submission because it involves a fundamental improvement of the VPP made some years ago that helped to promote stiff and safe boats. In fact, the introduction of an average RM and of the PHIUP (heel angle corrector) provides protection from type-forming towards low stability boats.

On safety issues (when issues like LPS, STIX are invoked) other committees (like the OSR) should be involved.

Finally, ITC believes that mixing handicaps issues with safety issues and trying to rate the latter is almost impossible.

The submission is therefore not supported.

Submission: **RUS2 – MEASUREMENT TRIM**

See Par.5.

Submission: **RUS3 – SCORING COEFFICIENTS FOR COASTAL RACES**

The Committee believes that there is no compulsory handicap to be used. For a coastal race (or offshore race) GPH, OSN or any other handicap derived from constructed course could be used. The RO can also build their own handicap from a table of time allowances.

On the same item it must be noted that after the previous meeting in Hamburg ITC proposed to restore the 2011 Offshore Triple Number formulation that was based on circular random wind.

Submission: **RUS4 – INFLUENCE OF KEEL WIDTH ON WINDWARD PERFORMANCE**

See Par.3.

Submission: **RUS5 – WINDWARD PERFORMANCES OF SMALL YACHTS**

The added resistance in waves for small boats will be checked, but the Committee believes that there are some effects, like inertia of boats and sail efficiency in waves, that causes a larger reduction in performance for small boats than for large ones.

On the other hand there could be some advantages when compared to larger boats, like control of the boat with the movement of crew as it is done on dinghies, and the capability to surf better in waves.

The Committee therefore made a check on the current Added Resistance in Waves (Seakeeping) that is strongly size-related, and found that the added resistance for a small boat of about 8m of IMS L is returning a slower handicap, compared to a boat of 15 m of the following quantities:

ILC…… 2%
GPH…….. 1.2%
OSN…….. 1.2%
Windward 12… 4%
Windward 20… 5%

This issue will be put into the 2013 agenda to better inspect the above concepts.

7. AGE ALLOWANCE

The proposed hydro and aero modifications to the code will make the 2013 VPP even more accurate and closer to real performances of the boats; for this reason the committee devoted some time discussing the effect of age allowance on these new modifications. The committee is now convinced that the current age allowance is too generous and recommends that it be halved for next year.

8. NEW TEST FLEET

A new reduced test fleet to be used for fast-checking VPP modification effects has been prepared by Davide Battistin. It includes the fleet of the best ORC racing boats, some light and high performance racing boats that are racing in other systems, and the SUPERMAXI fleet. The total is about 80 boats.

For final test runs to be presented to the AGM a complete fleet of all ORC INT boats with valid 2012 certificates will be used with an addition of 50 ORC CLUB boats from the Dutch fleet that Ab Pasman suggested to add. The total is about 1500 boats.

9. 2013 VPP. PREPARATION OF AN "ALL EFFECTS" TEST RUN AND A BETA VPP FOR IMMEDIATE RELEASE

After the meeting Davide Battistin is preparing a beta VPP that will include all the modifications approved (see Par.11) and a test run with the new test fleet. The ITC recommends immediate distribution of the beta VPP to Rating Offices, beta testers and DVP users for debugging as soon as possible after the AGM.

10. 2013 VPP DOCUMENTATION RELEASE

After the AGM, ITC will give all the information to update the VPP Documentation to allow the ORC to issue the new documentation possibly within the end of the year. The documentation will describe in detail the new routines and formulations: Residuary, heeled and induced drag for the hydrodynamics, and new power and shape functions with aero coeff for the aerodynamics.

11. COMPLETION OF RECOMMENDATIONS TO THE CONGRESS

1) New upright residuary resistance formulation
2) New heeled drag (heeled residuary resistance considering the asymmetry of boat when heeled, the appendages size and leeway to compute induced drag)
3) New IMS L scheme
4) New aero Power function, Shape function, removal of Blanketing function
5) New set of aero coefficients
6) New Default Crew Weight formulation based on LSM0
7) Removal of Mainsail Weight and adoption of a new Default Mainsail Weight based on LSM0
8) Non Manual Power allowed for Performance Division for LOA <20 m
9) Non Manual Power penalty divided between sails trimming and rig trimming
10) Requirement of compulsory measuring spinnaker pole if on board for boats without spinnaker
11) New definitions of IG, J and SFJ
12) Quad sail procedure of measurement
13) New roach formulation
14) New LIGHT SHIP trim procedure ready to be implemented
15) Revert back to 2011 Offshore Triple Numbers formulation based on circular random allowances.
16) Reduced age allowance

12. STRATEGIC PLANNING FOR WORK AFTER THIS MEETING. MAIN PROJECTS FOR 2013

a) Fine tuning of new hydro model
b) Revision of current aero model
c) Fractional vs Masthead rigs
d) Transom Drag revision
e) Crew weight trimming moment
f) Evaluation of dynamic wetted area
g) Small and light boats issue
h) Extension of TWS range for VPP

13. ORC RESEARCH FUND BUDGET PLANNING

The ITC believes that for next year agenda some further CFD study should be performed. It is difficult to say at this time which budget will be needed, so it will be asked to Man Com the establishment of a fund that may be used during the year 2012 or in 2013.

14. NEXT MEETING

The next ITC meeting is scheduled for mid-March 2013. In previous years it was held in Annapolis after the next Chesapeake Sailing Yacht Symposium, usually held on the third Friday and Saturday of the month. As an alternative, the meeting could be organized somewhere in Europe.

22nd October 2012