



HIGH PERFORMANCE RULE (HPR)

A Rating System for High Performance Offshore Racing Yachts



V4H

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Part 1 – GENERAL

100 Rule Philosophy

The High Performance Rule (HPR) is a simple, published rule intended to rate a narrow range of high performance, fixed ballast, offshore capable racing yachts relative to each other. HPR is a development rule that encourages a fast typeform with the following features:

- light boats with high sail area-to-displacement and length-to-volume ratios.
- single mast, fractional headsails and masthead asymmetrical spinnakers on fixed bowsprits.
- strong all-around performance combined with effective planing.
- capable offshore boats which will qualify to enter major offshore races worldwide.

The HPR yields a single number rated length. A single number TCF scoring coefficient is calculated from the rated length and used for all race and wind conditions. HPR rated length is calculated from the base boat following HPR rule philosophy with evaluation of 14 factors, utilizing appropriate rated length penalties for differences from the base boat values. HPR is narrow in scope and is not intended to replace any other existing rating rules.

These are Closed Class Rules. Anything that is not expressly permitted by these rules is prohibited.

101 Authorities

The Offshore Racing Association (ORA) is the owner of the High Performance Rating Rule, while certificates are processed and managed by the Offshore Racing Congress (ORC). The ORA is responsible for the development, promotion, and implementation of HPR in collaboration with ORC, US Sailing and other organizations.

ORA shall appoint an HPR Measurement Authority (HPR MA) and shall include representatives from US Sailing, ORC, and other major rating offices. The HPR MA shall be responsible for establishing measurement procedures, creating consistent standards for HPR, and review of certificates before issuance.

102 Administrative

- 102.1 The official language of the HPR shall be English and in case of dispute over translations the English text shall prevail.
- 102.2 The word "shall" is mandatory and the words "may" and "can" are permissive.
- 102.3 Except where used in headings, when a term is printed in "**bold**" the definition in the Equipment Rules of Sailing applies and when a term is printed in "*italics*" the definition in the RRS applies.
- 102.4 When printed in "***bold italics***" the term is used as measurement taken or recorded by the measurer.

103 Abbreviations and Definitions

ERS	Equipment Rules of Sailing
HPR	High Performance Rule
ISAF	International Sailing Federation
ORA	Offshore Racing Association
ORC	Offshore Racing Congress
OSR	Offshore Special Regulations
RRS	Racing Rules of Sailing
IMS	International Measurement System*
UMS	Universal Measurement System (Under development by RORC, US Sailing and ORC)
	*Once completed, the UMS will replace the IMS

- 103.1 If the HPR Class Rules and the Certificate Calculator Spreadsheet contradict each other, the Certificate Calculator Spreadsheet shall prevail.

104 ISAF and ORC Rules

- 104.1 RRS and ERS shall apply except when changed by these **class rules**.
- 104.2 ISAF Advertising Code shall apply.
- 104.3 As part of HPR Class Rules, boats must be sufficiently seaworthy to enter the world's major ocean races. It is understood such races have differing requirements however HPR has set this minimum of the selected seaworthiness items to qualify as an HPR boat as shown in Appendix A and Appendix 1, and are made part of these HPR Class Rules.

105 Rules Interpretations

The HPR Technical Committee with approval of the HPR Chief Measurer may at any time issue interpretations or corrections of the HPR **class rules**, to be posted sequentially on the HPR website at www.hprsailing.org. The Technical Committee shall be composed of the HPR Chief Measurer(s), members of the HPR Rule Authority, and an owner of a boat that has a current HPR certificate and is actively involved with HPR events. Interpretations may be overruled only by the HPR Committee, and/or the ORA Board, and if not objected to they shall be included in the next rule revision with the necessary amendments.

106 Eligibility

HPR boats shall comply with following requirements:

- a) The hull shall be monohull. Canoe body depth in any section shall not decrease towards the centerline.
- b) All yachts capable of being lifted for weighing without slings shall receive a credit on rated length of 0.0005. (Same as 1/4 of one year's age allowance). This will become effective with V5.
- c) Single rudder located on the centerline aft of the keel, which rotates only about the vertical axis is permitted. Twin rudders are permitted, and rated, providing they are single surface, rotate only about one axis, and are located at an equal distance aft of the keel. Rudder(s) may have a device, the sole purpose of which is to cut kelp. If the rudder(s) is liftable, it shall be locked in the lowest position while racing.
- d) Adjustable Trim tabs of any kind on the keel or rudder(s) are prohibited.
- e) Keel bulb width on boats with age or series date of 2013 or later shall not be more than $0.05 * L$
- f) One non-rotating mast is permitted.
- g) One fixed bowsprit is permitted. It shall be as close as possible to the centerline and it shall not articulate, but may retract.
- h) Spinnaker poles and symmetric spinnakers are permitted only for boats with age date of 2012 or earlier and without bowsprit.
- i) Boats with age date of 2013 or later shall have a continuous sheer line without inflection as viewed from the profile view of the deck.
- j) Headsails with a mid width between 55% and 75% of the foot length are not permitted.
- k) Material with a density greater than 11.34 kg/m^3 is prohibited.

107 Additional HPR Class Rules while racing

- 107.1 A maximum crew weight shall be declared as part of the measurement process, and this maximum crew weight shall be printed on the certificate. This crew weight shall not be exceeded while racing.
- a) Each HPR entry must submit a crew list and all crew members on the list shall be on board for every race in the regatta. Changes are only permitted with express permission of the Organizing Authority.
 - b) Crews may include a media representative, approved by the Organizing Authority and the Class, for gathering still or video images aboard a boat while racing, or an owner or guest approved by

the class. This person shall not be counted with the crew maximum weight limit and shall not be involved with enhancing the performance of the boat (except for hiking). This person does not have to be on board for all races during the event.

- c) To change the crew weight on her certificate, a boat shall have a new certificate issued with a new crew weight.

107.2 Sail Restrictions

- a) There are no restrictions to the number of sails purchased in a season nor any limit on the number of sails carried on board.
- b) All sails to be used during racing in an HPR Class event shall be on board when the boat leaves the dock before the start of the first race of the day. No changes shall be made to this inventory during the remainder of the race day. Race Organizers may delete this **class rule** at their discretion in the Sailing Instructions.

107.3 Headstay adjustments and vertical adjustments of the mast step are permitted while racing. Version 5 may establish credits on rated length should either of these features not be adjustable. Fore and aft adjustment of the mast step is not permitted while racing.

Part 2 - MEASUREMENT

200 Age Date and Series Date

Age and Series Date shall be taken as defined in IMS A2.2 and A2.3 respectively, except that IMS A2.2b is modified so that forward or aft extensions or reductions of the fair surface of the hull must be limited to modifications within 0.15*LOA of the forward and/or aft end(s) of LOA.

201 Hull and appendages

Freeboard stations shall be defined as follows:

SFFP shall be within 3% of **LOA** from the forward end of **LOA**.

SAFP shall be as defined in IMS B2.2(c).

Following measurements shall be taken following appropriate IMS rule:

LOA	Length overall	B6.2
FFM	Freeboard Forward Measured	B5.3
FAM	Freeboard Aft Measured	B5.4
FBI	Freeboard at Fore Side of Mast	B6.8
Y	Height of Transom	B6.9
FO	Forward Overhang	B6.10
SG	Specific Gravity of Water	B5.5

If there is no hull offset file in accordance with IMS B3 available additional measurements shall be taken:

DSPW	Displacement as Weighed	B6.11
MB	Maximum Beam	B6.3
SDM	Station of Maximum Draft	B6.5
DMT	Deepest Point of Keel to Sheerline	B6.6
FMD	Freeboard at Maximum Draft	B6.7

If stability is measured in accordance with HPR 308.2(b) instead of IMS E2 these additional measurements shall be taken:

KW	Keel Weight	C1.1(h)
KCG	Keel Vertical Center of Gravity	C1.1(j)
BWT	Boom Weight	F5.4

202 Rig

Following measurements shall be taken following appropriate IMS rules:

P	Mainsail Hoist	F2.1
IG	Height of Headsail Hoist	F3.1
ISP	Height of Spinnaker Hoist	F3.2
MWT	Mast Weight	F8.1
MCG	Mast Vertical Center of Gravity	F8.2
CPW	Chainplate Width	F6.3
CPD	Chainplate Diagonal	F6.4
E	Mainsail Foot	F5.1
BAS	Boom Above Sheerline	F3.4
BWT	Boom Weight	F5.4
J	Foretriangle Base	F6.1
FSP	Forestay Perpendicular	F6.5
TPS	Tacking Point of Spinnaker	F7.2

For boats with Age date of 2012 or earlier complying with IMS 106.2(h):

SPL	Spinnaker Pole Length	F7.1
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203 Sails

Following measurements shall be taken in accordance with the IMS:

HB	Mainsail Top Width	G2.1
MGT	Mainsail 7/8 Width	G2.1
MGU	Mainsail 3/4 Width	G2.1
MGM	Mainsail 1/2 Width	G2.1
MGL	Mainsail 1/4 Width	G2.1
JH	Headsail Top Width	G4.1
JGT	Headsail 7/8 Width	G4.1
JGU	Headsail 3/4 Width	G4.1
JGM	Headsail 1/2 Width	G4.1
JGL	Headsail 1/4 Width	G4.1
JL	Headsail Luff	G4.1
LPG	Headsail Perpendicular	G4.1
AMG	Asymmetric Spinnaker Mid Width	G6.5
ASF	Asymmetric Spinnaker Foot	G6.5
SLU	Asymmetric Spinnaker Luff	G6.5
SLE	Asymmetric Spinnaker Leech	G6.5

For boats with Age date of 2012 or earlier complying with 106.2(h):

SMG	Symmetric Spinnaker Mid Width	G6.4
SF	Symmetric Spinnaker Foot	G6.4
SL	Symmetric Spinnaker Luff/Leech	G6.4

204 Flags

The following flags shall be recorded:

RUD2	Y indicates twin rudders
PSP	Y indicates an installed production sail drive
ESOC	Y indicated a production boat
KEEL	1 indicates the component method is being used for VCG
LEYE	Y indicated the yacht can be lifted without slings. This will be activated in V5.

205 Designer's Predicted Measurements:

It is recommended the designer furnish his expected measurements to the measurer. If the measurer gets significantly different numbers, the measurer may use various approaches to build confidence in the final submitted measurements.

Part 3 –RATED LENGTH

300 HPR Rated Length

300.1 HPR rated length in meters shall be calculated as follows:

A base value is determined for each corrector and if the measured value is equal to the base value that corrector shall be 1.000. If the measured value is different from the base value the corrector shall be slightly greater or less than 1.000 depending on whether HPR's evaluation of how that corrector effects boat speed. If all of the measured values equal the base values, and there are no other penalties, a yacht's rated length will equal its L value in meters. Rated length correctors are:

Final Output	Description	Format
L	Length	Linear number
AGEc	Age Allowance	+/- 1.000
BMc	Beam	+/- 1.000
CFc	Crew Factor	+/- 1.000
FRc	Freeboard	+/- 1.000
DRAc	Draft	+/- 1.000
DSPMc	Displacement (empty)	+/- 1.000
VCGc	Vertical Center of Gravity	+/- 1.000
USAc	Upwind Sail Area	+/- 1.000
SPINc	Spinnaker Area	+/- 1.000
RHc	Rig Height	+/- 1.000
RMASTc	Robust Mast	- 1.000
Apc	Appendage	+ 1.000
Epc	Engine-Propeller	- 1.000
CCc	Cost Control	+/- 1.000
	Rated Length RL	Linear number

300.2 For boats of age date of 2012 or earlier, R shall not be less than $0.88 * L$.

300.3 For boats of age date of 2013 or earlier, R shall not be less than $0.95 * L$.

300.4 Corrector calculation mechanism is explained in rules below and Appendix B.

301 Length

301.1 For boats with Age Date 2012 or earlier L shall be taken as:

$$L = LOA - FO$$

301.2 For boats with Age Date of 2013 or later L should be **LOA**, except if **Y** measurement is negative, when L shall be taken as:

$$L = LOA - 2 * Y$$

302 Age Allowance and Pre-HPR Allowance

302.1 Boats with an Age Date in the current year shall receive no Age Allowance.

302.2 For boats older than the current year the Age Allowance shall be 0.002 of rated length for each year older than the current year.

302.3 The maximum Age Allowance shall be 0.02 plus 0.002 for every year older than the current year.

- For 2013, the maximum Age Allowance was 0.02
- For 2014, the maximum Age Allowance will be 0.022
- And so on up to 2018 when Age Allowance will max out at 0.03.

302.4 Boats with an Age date of 2011 or earlier are entitled to a Pre HPR Allowance of between 0 and 0.03 of rated length as follows:

- Up to 42 feet 0.03
- Between 42 and 50 feet: Linear proration of 0.03 at 42' and 0.00 at 50 feet
- Over 50 feet: 0.00

303.5 AGEc shall be calculated as: 1.000 - Age Allowance - Pre HPR Allowance

303 Beam

303.1 Base boat beam shall be calculated as: $0.1907 * L + 1.4732$.

303.2 BMc shall be calculated from ratio between **MB** and base boat beam on the TYPEFORM page of the spreadsheet.

304 Freeboard

304.1 Base boat freeboard shall be calculated as: $0.04536 * L + 0.6066$.

304.2 Measured freeboard shall be calculated as follows:

$$FBc = (FAM + FBI + FFM) / 3$$

304.2 FRc shall be calculated from ratio between FBc and base boat freeboard on the TYPEFORM page of the spreadsheet.

305 Draft

305.1 Base boat draft shall be calculated as: $0.1959 * L + 0.4606$.

305.2 Measured draft shall be calculated as follows:

$$DHKM = DMT - FMD$$

305.2 DRAc shall be calculated from ratio between DHKM and base boat draft on the TYPEFORM page of the spreadsheet.

305.3 For boats measured with offset files and inclining, SG corrects for differences in water density. For component measurement, measuring in fresh water will increase draft and freeboard, including FBI. The decreased draft and freeboard will raise the rated length whereas the decreased FBI will lower it. It is recommended the designer furnish a table of pounds per inch immersion so adequate corrections can be made. If there are significant deviations from the density of sea water, a mandatory review by the HPR measurement authority is required.

306 Vertical Center of Gravity

306.1 Base boat vertical center of gravity shall be calculated as: $0.000848 * L^2 - 0.12169 * L + 0.55844$.

306.2 VCG shall be either:

- a) calculated as result of inclining test in accordance with IMS E2 with hull offset file available; or
- b) calculated as follows:

$$VCG = \frac{MWT \cdot (MCG + BAS + FBI) + BWT \cdot (BAS + FBI - BD/2) + VHE \cdot FBI \cdot (DSPM - MWT - KW) + KW \cdot (DHKM - KCG)}{DSPM}$$

Where VHE is estimated VCG of hull and shall be taken as 0.585.

306.3 The HPR Measurement Authority shall accumulate data on boats that are measured both ways to develop a numerical process to accommodate the statistics of the two methods. VHE may be adjusted from time to time as needed and it shall be developed with the intent of approximating the VCG of the canoe body for this calculation.

306.4 If both methods are used, the resultant VCGs shall be averaged before calculating VCGc.

306.5 VCGc shall be calculated from ratio between VCG and base boat vertical center of gravity on the TYPEFORM page of the spreadsheet.

307 Crew Factor

307.1 Base Crew Weight shall be calculated as: $-0.26304 * L^2 + 114.1243 * L - 588.2$.

307.3 CFc shall be calculated from ratio between *CW* and base crew weight on the TYPEFORM page of the spreadsheet.

308 Displacement

308.1 Base boat displacement shall be calculated as: $44.14 * L^2 - 256.52 * L + 571.7$.

308.2 DSPM shall be taken as displacement calculated with *FAM*, *FFM* and *SG* measurements from the hull offset file or as weight recorded as *DSPW*.

308.2 DSPMc shall be calculated from ratio between DSPM and base boat displacement on the TYPEFORM page of the spreadsheet.

309 Upwind Sail Area

309.1 Base boat upwind sail area shall be calculated as: $0.44114 * L^2 + 4.854 * L - 17.878$.

309.2 Measured upwind sail area shall be calculated as sum of mainsail and headsail areas:

$$USA = MSA + HSA$$

309.3 Mainsail area shall be calculated from the actual height on which *MGT*, *MGU*, *MGM* and *MGL* are measured as follows:

$$MGMH = P / 2 + (MGM - E/2) / P * E$$

$$MGLH = MGMH / 2 + (MGL - (E + MGM) / 2) * (E - MGM) / MGMH$$

$$MGUH = (MGMH + P) / 2 + (MGU - MGM / 2) * MGM / (P - MGMH)$$

$$MGTH = (MGUH + P) / 2 + (MGT - MGU / 2) * MGU / (P - MGUH)$$

$$MSA = (MGL + E) / 2 * MGLH + (MGL + MGM) / 2 * (MGMH - MGLH) + (MGM + MGU) / 2 * (MGUH - MGMH) + (MGT + MGU) / 2 * (MGTH - MGUH) + (MGT + HB) / 2 * (P - MGTH)$$

309.4 Headsail sail area shall be calculated as follows:

$$HSA = 0.1125 * JL * (1.445 * LP + 2 * JGL + 2 * JGM + 1.5 * JGU + JGT + 0.5 * JH)$$

LP shall be taken as the greatest of $LPG + FSP$ or $0.95 * J$.

For boats with age date 2013 and later:

a) HSA shall not be taken as less than 64% of MSA or 39% of USA.

b) if HSA is greater than 79% of MSA, twice the excess shall be added to USA. (44% of USA)

309.5 USAc shall be calculated from ratio between USA and base boat upwind sail area on the TYPEFORM page of the spreadsheet.

310 Spinnaker Area

310.1 Base boat spinnaker area shall be calculated as: $0.61148 * L^2 + 8.1278 * L - 6.37$.

310.2 The maximum *TPS* without rated length penalty is $0.4229 * L + 2.285$. if *TPS* exceeds maximum, *AMG* shall be increased for $4 * (TPS - TPS_{max})$.

310.3 Spinnaker area shall be calculated as follows:

$$SPIN = \frac{SLU + SLE}{2} \cdot \frac{ASF + 4 \cdot AMG}{6}$$

For boats with Age date of 2012 using a symmetric spinnaker as allowed by 106.2(h) spinnaker area shall be calculated as follows:

$$SPIN = SL \cdot \frac{SF + 4 \cdot SMG}{6}$$

If *SPL* exceeds *SMG*/1.8, *SMG* shall be taken as 1.8 * *SPL*

310.4 SPINc shall be calculated from ratio between SPIN and base boat spinnaker area on the TYPEFORM page of the spreadsheet.

311 Rig Height

311.1 Base boat rig height shall be calculated as: $0.00974 * L^2 + 1.5794 * L + 0.7803$.

311.2 For boats with Age Date of 2013 or later *IG* shall not be taken as less than $0.80 * (P + BAS)$.

311.3 For boats with Age Date of 2013 or later RHic shall be the maximum of *P + BAS*, *ISP* or *IG*/0.88.

311.4 For boats with Age Date of 2012 or earlier RHic shall be the maximum of *P + BAS* or *ISP*.

311.5 RHc shall be calculated from ratio between RHic and base boat rig height on the TYPEFORM page of the spreadsheet.

312 Robust Mast

312.1 The Base sweep angle of the cap shroud chainplates, shall be 15 degrees.

312.2 The measured sweep angle of the chainplates shall be calculated as follows:

$$SWA = \arctan\left(\frac{CPW}{2 \cdot CPD}\right)$$

312.3 If SWA equals or exceeds base sweep angle, RMASTc shall be taken as 1.0000

312.4 If SWA is less than 15 degrees, RMASTc shall be calculated as:

$$RMASTc = 1.0000 + 0.01 * (15 - SWA) / 15.$$

RMASTc shall not be taken greater than 1.0100.

313 Appendage

313.1 For boats with age date of 2013 or later with twin rudder APPc shall be 1.005.

314 Engine - Propeller

314.1 For a retractable propeller or outboard engine EPc shall be 1.000.

314.2 For other type of propeller installation EPc shall be 0.9829.

315 Cost Control

315.1 Economy Of Scale Credit (ESOC) is a credit for being a series produced boat and shall be 0.99 for qualifying yachts as determined by the HPR measurement authority. A cost control 'base boat' and more sophisticated cost control corrector is under development.

315.2 CCc shall be calculated as:

$$CCc = 1.000 - ESOC$$

316 Time On Time scoring coefficient

Time-On-Time (ToT) scoring coefficient is calculated as follows:

$$ToT = \left(\frac{RL}{12.2}\right)^{0.424}$$

Corrected time is calculated as follows:

*Corrected time = ToT * Elapsed time*

317 Time On Distance scoring coefficient

Time-On-Distance (ToD) scoring coefficient is calculated as follows:

$$ToD = \frac{552}{ToT} (s / NM)$$

Corrected time is calculated as follows:

$$Corrected\ time = Elapsed\ time - (ToD * Distance)$$

Part 4 - CERTIFICATES

400 Certificates: Initiating and Issuing

- 400.1 HPR Certificates shall be initiated by the ORC Central Rating Office or by the National Rating Offices authorized by the ORA and ORC and by using the ORC provided web base system. A levy as determined by the ORA and ORC shall be paid for all valid certificates issued which shall be shared by ORA and ORC. Prior to initiating a certificate, payment is required thru the HPR payment site.
- 400.2 National Rating Offices shall be the Rating Authority in their areas and shall initiate certificates. HPR measurements may be taken in any country, however the owner's country of nationality shall determine the Rating Office responsible for initiating his or her certificate and receiving the portion of the fee.
- 400.3 The HPR MA, at its option, shall review each certificate prior to issuance. Upon approval, certificates shall be issued by posting on the ORC HPR website. The turnover for this review is expected to be no more than 2-3 business days.
- 400.4 The certificate will have a signature line and it is recommended that race organizers require a signed copy as a condition of entry.
- 400.5 Once a certificate is issued, measurement data of any boat shall be publically available and a copy of each will be available at ORC-HPR website with the exception that copyright protected hull data will not be available to other parties without the written permission of the designer.
- 400.6 If anything that can be considered unusual or against the general interest of the HPR is found, the Rating Office shall consult with the HPR MA before initiating a certificate.
- 400.7 The certificate shall be valid until the date printed on the certificate, which shall normally be 31st December of the current year.
- 400.8 A boat shall have only one valid certificate at any one time. The valid certificate shall be only the one issued last.
- 400.9 When the Rating Authority has reasonable evidence that not by her own fault a boat does not comply with her certificate, or that she should never have received a certificate, it shall withdraw the certificate, inform the owner or his representative in writing of the reasons for this withdrawal, re-check the data and
- a) Re-issue a certificate if non-compliance may be corrected; or
 - b) If non-compliance may not be corrected by the Rating Authority, the certificate shall be invalidated and the owner or his representative shall be informed in writing.
- 400.10 A demonstration certificate is one not generated by US Sailing or ORC. Anyone may generate a demonstration certificate by using the latest version of the HPR Certificate Calculator Spreadsheet. Demonstration certificates shall only be used for informal double scoring where no trophies will be awarded. Demonstration certificates can be rejected at sole discretion of the organization doing the double scoring.

401 Owner's Responsibility

- 401.1 The owner or his representative shall be responsible for:
- a) Preparing the boat for the measurement in accordance with the IMS.
 - b) Declaring any required data to the measurer.
 - c) Ensuring compliance of any measurement data to those printed on the certificate. Compliance with the certificate shall be defined as follows:
 - i) All measured, declared or recorded values shall be as close as possible to those on the certificate. Differences are allowed only if the values on the certificate give a higher rated length.
 - ii) The sail area shall be smaller or equal to the respective one printed on the certificate.
 - iii) The actual crew weight shall not be considered as an issue of compliance with the certificate, but it is applied while racing in accordance with 107.1.
 - d) Using the boat and equipment as prescribed by the RRS and HPR.
 - e) The owner shall sign the statement on the certificate: "I certify that I understand my responsibilities under HPR Rules and Regulations". A signed copy of the current valid HPR certificate shall be carried on board.
- 401.2 A certificate shall be automatically invalidated by a change of ownership. The new owner may request a new certificate with a simple declaration that no changes have been made so a new certificate may be issued without the need of any new measurement. Conversely the new owner has every right to have his boat re-measured.
- 401.3 Any change of the measurement data requires new measurement and issuing a new certificate. Such a change may be:
- a) Changes of ballast in amount or location or configuration.
 - b) Change of tankage, fixed or portable, in size or location.
 - c) Any changes in the engine and/or propeller installation.
 - d) Addition, removal or change of location of gear or equipment, or structural alteration to the hull that affect the trim or flotation of the yacht.
 - e) Movement of any measurement bands used in sail area measurement, or any changes in spars, spar location or headstay position.
 - f) Any change to the size, cut or shape of the maximum area sails.
 - g) Changes to the shape of the yacht's hull and/or appendages.
 - h) Changes to spars or standing rigging configuration, including elements of rigging identified as adjustable while *racing*.
 - i) Change of declared crew weight
 - j) Any other change of the data in the certificate that affect rated length.

402 Measurement Protests

- 402.1 When, as a result of any pre-race inspection or measurement, it is determined that a boat does not comply with her certificate:
- a) When the non-compliance is considered to be minor and can be easily corrected, the boat may be brought into compliance with her certificate and, when necessary, a new certificate may be issued. The Measurer shall inform of such a correction the Race Organizer who shall approve a new certificate issue.
 - b) When the non-compliance is major (even if it can be corrected) or if it cannot be corrected without requiring significant re-measurement, a boat shall not be eligible to enter a regatta. The

Measurer shall inform the Race Organizer who shall act in accordance with RRS and inform the Rating Authority.

- 402.2 When, as a result of any measurement protest by a boat or by the race committee, it is determined that a boat does not comply with her certificate in accordance with 401.1(c)(i) and (ii), the non-compliance shall be calculated as a difference in percentage of percentage of Rated length RL:
- a) If the difference is less than or equal to 0.30%, the original certificate will be maintained, the protest will be dismissed and the protestor will have to cover any cost involved. RRS 64.3(a) will apply but no corrections are needed.
 - b) If the difference is more than 0.30% but less than 1.00%, no penalty shall apply, but a new certificate shall be issued based on the new measurement data and all races of the series shall be rescored using the new certificate data. The protest will be considered accepted and the protestee will have to cover any cost involved.
 - c) If the difference is 1.00% or more, a boat shall receive a 50% place penalty in any race in which her rated length was incorrect. The protest will be considered accepted and the protestee will have to cover any cost involved and the yacht shall not race again until all non-compliance issues are corrected to the limit defined in a) above.
- 402.3 If a boat's certificate has to be recalculated during a race or series as a result of an error or an omission in the production of the certificate of which the boat owner could not have been reasonably aware, according to 400.6(a), all races of the series shall be rescored using the new data.
- 402.4 The results of a race or series shall not be affected by measurement protests lodged after the prize giving or such other time as the Sailing Instructions may prescribe. Nothing in this paragraph shall bar action under the RRS concerning a boat deliberately altered and shall not limit in any way acts of the Race and Protest Committees against any individual person involved.

Appendix A

HPR Class Requirements

Effective Date: 1/1/2014

Preamble	1.1	As part of HPR Class Rules, boats must be sufficiently seaworthy to enter the world's major ocean races. It is understood such races have differing requirements however HPR has set this minimum of the selected seaworthiness items to qualify as an HPR boat
Overall: Strength of Build	1.6	A boat shall be strongly built, watertight and, particularly with regard to hulls, decks and cabin trunks, capable of withstanding solid water and knockdowns. A boat shall be properly rigged and ballasted, be fully seaworthy and shall meet the standards set forth herein. A boat's shrouds and at least one forestay shall remain attached at all times.
Overall: Watertight Integrity	1.7	A boat's hull, including, deck, coach roof, windows, hatches and all other parts, shall form an integral watertight unit and any openings in it shall be capable of being immediately secured to maintain this integrity.
Overall: Scantlings	1.8	Hull Construction Standards - Scantlings with plan review approval - (See HPR Appendix 1)
Hull and Structure: Hull Openings	2.1.1	A boat's companionway(s) shall be capable of being blocked off to main deck level. The method of blocking should be solid watertight and rigidly secured, if not permanent.
Hull and Structure: Hull Openings	2.1.2	A boat's hatch boards, whether or not in position in the hatchway, shall be secured to the boat (e.g. by a lanyard) for the duration of the race to prevent their being lost overboard.
Hull and Structure: Cockpit	2.1.3	A boat's entire cockpit shall be solid, watertight, strongly fastened and/or sealed. Weather-tight seat hatches are acceptable only if capable of being secured when closed.
Hull and Structure: Cockpit	2.1.4	A boat's cockpit drains shall be capable of draining six inches of water in 5 minutes. One square inch (645mm ²) of effective drain per eight square feet (0.743m ²) of cockpit sole will meet this requirement.
Hull and Structure: Cockpit	2.1.5.1	A boat's maximum cockpit volume for cockpits not open to the sea, including any compartments capable of flooding, to lowest points of coaming over which water can adequately escape, shall not exceed 0.06 x LOA x Max. Beam x Freeboard aft. The cockpit sole shall be at least 0.02 x L above LWL.
Hull and Structure: Cockpit	2.1.5.2	A boat's maximum cockpit volume for cockpits not open to the sea, including any compartments capable of flooding, to lowest points of coaming over which water can adequately escape, shall not exceed 0.08 x LOA x Max. Beam x Freeboard aft. The cockpit sole shall be at least 0.02 x L above LWL.
Hull and Structure: Through Hulls	2.1.6	A boat's through-hull openings below the waterline shall be equipped with sea cocks or valves, except for integral deck scuppers, speed transducers, depth finder transducers and the like; however a means of closing such openings shall be provided.
Hull and Structure: Stability	2.2.1	The boat must have a stability index greater than or equal to 115, or meet the requirements of ISO 12217-2A
Hull and Structure: Accommodations	2.3.1	A boat shall be equipped with a head or a fitted bucket.
Hull and Structure: Accommodations	2.3.2	A boat shall have bunks sufficient to accommodate the off-watch crew.
Hull and Structure: Accommodations	2.3.5	A boat shall have adequate hand holds below decks.
Hull and Structure: Lifelines	2.4.1	A boat's deck including the headstay shall be surrounded by a suitably strong enclosure, typically consisting of lifelines and pulpits, meeting the requirements in 2.4.2 to 2.4.8.
Hull and Structure: Lifelines	2.4.2	A boat's stanchion and pulpit bases shall be within the working deck. Stanchions used with HMPE shall have rounded openings to reduce chafe.
Hull and Structure: Lifelines	2.4.3	Bow pulpits may be open, but the opening between the vertical portion of stanchion pulpit and any part of the boat shall not exceed 14.2" (360mm).
Hull and Structure: Lifelines	2.4.4	Lifelines may be either uncoated stainless steel wire or high molecular weight polyethylene (HMPE) line with spliced terminations or terminals specifically intended for the purpose. A multipart-lashing segment not to exceed 4" per end termination for the purpose of attaching lifelines to pulpits is allowed. Lifelines shall be taut (see appendix for requirements). When HMPE is used, the load-bearing portion (core) shall meet or exceed minimum diameter requirements.
Hull and Structure: Lifelines	2.4.5	The maximum spacing between the bases of lifeline supports (e.g. stanchions and pulpits) shall be 87" (2.2m).
Hull and Structure: Lifelines	2.4.6	Boats under 30 feet (9.14m) shall have at least one lifeline with 18" (457mm) minimum height above deck, and a maximum vertical gap of 18" (457mm). Taller heights will require a second lifeline. The minimum diameter shall be 1/8" (3mm).

Hull and Structure: Lifelines	2.4.7	Boats 30 feet and over (9.14m) shall have at least two lifelines with 24" (762mm) minimum height above deck, and a maximum vertical gap of 15" (381mm). The minimum diameter will be 5/32" (4mm) for boats to 43' (13.1m) and 3/16" (5mm) for boats over 43' (13.1m).
Hull and Structure: Lifelines	2.4.8	Toe rails shall be fitted around the foredeck from the base of the mast with a minimum height of 3/4" (18mm) for boats under 30' (9.14m) and 1" (25mm) for boats over 30'. An additional installed lifeline that is 1-2" (25-51mm) above the deck will satisfy this requirement for boats without toerails.
Hull and Structure: Dewatering pumps	2.5.1	A boat shall have a permanently installed manual bilge pump of at least a 10 gallons per minute (GPM) capacity and which is operable from on deck with the cabin closed with the discharge not dependent on an open hatch. Unless permanently attached to the pump, the bilge pump handle shall be securely attached to the boat in its vicinity via a lanyard or catch. A bilge pump discharge shall not be connected to a cockpit drain. The bilge pump shall not discharge into a cockpit unless that cockpit opens aft to the sea.
Hull and Structure: Dewatering pumps	2.5.2	A boat shall have a second permanently installed manual bilge pump of at least 10 GPM capacity, operable from below deck, meeting the same criteria as above.
Hull and Structure: Mechanical Propulsion	2.7.1	A boat shall have a mechanical propulsion system that is quickly available and capable of driving the boat at a minimum speed in knots equivalent to the square root of LWL in feet (1.81 times the square root of the waterline in meters) for 10 hours.
Hull and Structure: Mechanical Propulsion	2.7.3	The boat's engine and generator installation (if so equipped) must conform to U.S. Coast Guard and either ABYC or ISO standards.
Safety Equipment: Navigation Lights	3.3.1	A boat shall have navigation lights that meet U. S. Coast Guard requirements and mounted so that they will not be obscured by the sails nor be located below deck level.
Gear: Life Rafts	3.39	Boats built after 01/06/ 2001 shall have the life raft stowed in a deck mounted rigid container or stowed in watertight or self draining purpose built rigid compartment(s) opening adjacent to the cockpit of the working deck.

Appendix B - Hull Construction Standards – ISAF Offshore Special Regulations

- 1.8.1** a) A yacht of less than 24m (78.74 feet) in hull length with the earliest of Age or Series Date on or after 1 January 2010 shall have:
- been designed, built and maintained in accordance with requirements of ISO 12215 Category.
 - on board a certificate of building plan review from a Notified Body recognized by ISAF.
 - on board a declaration signed and dated by the builder to confirm the yacht is built in accordance with the plans reviewed by the Notified Body.
- A list of Notified Bodies recognized by ISAF can be found at http://www.sailing.org/classesandequipment/offshore/plan_review.php.
- b) A yacht of 24m (78.74 feet) or greater in hull length with the earliest of Age or Series Date on or after 1 January 2010 shall have:
- been designed, built and maintained in accordance with the requirements of a Classification Society recognized by ISAF.
 - on board a certificate of building plan review from a Classification Society recognized by ISAF.
 - on board a declaration signed and dated by the builder to confirm the yacht is built in accordance with the plans reviewed by the Classification Society.
- A list of Classification Societies recognized by ISAF can be found at: http://www.sailing.org/classesandequipment/offshore/plan_review.php.
- 1.8.2** a) A yacht of less than 24m (78.74 feet) in hull length, with the earliest of Age or Series Date on or after 1 January 2010, if subject to any significant repair or modification to the hull, deck, coachroof, keel or appendages on or after the 1 January 2010, shall have:
- the repair or modification designed and built in accordance with ISO 12215 Category A.
 - on board a certificate of building plan review for the repair or modification from a Notified Body recognized by ISAF.
 - on board a declaration signed and dated by the builder to confirm that the repair or modification is in accordance with the requirements of ISO 12215 Category A.
- b) A yacht of 24m (78.74 feet) in hull length and over, with the earliest of Age or Series Date on or after 1 January 2010, if subject to any significant repair or modification to the hull, deck, coachroof, keel or appendages on or after the 1 January 2010, shall have:
- the repair or modification designed and built in accordance with the requirements of a Classification Society recognized by ISAF.
 - on board a certificate of building plan review for the repair or modification from a Classification Society recognized by ISAF.
 - on board a declaration signed and dated by the builder to confirm that the repair or modification is in accordance with the plans reviewed by the Classification Society.
- 1.8.3** A monohull with the earliest of Age or Series Date before 1 January 2010 shall comply with ISAF OSR 3.03.1 and 3.03.2 and above or with 3.03.4.
- 1.8.4** a) A monohull with the earliest of Age or Series Date before the 1 January 2010 not complying with ISAF OSR 3.03.1, 3.03.2 and 3.03.3 shall have been designed built, maintained, modified and repaired in accordance with the requirements of one of the following:
- the ABS Guide for Building and Classing Offshore Yachts in which case the yacht shall have on board either a certificate of plan approval issued by ABS, or written statements signed by the designer and builder which confirm that they have respectively designed and built the yacht in accordance with the ABS Guide.
 - ISO 12215 Category A, with written statements signed by the designer and builder which confirm that they have respectively designed and built the yacht in accordance with the ISO standard, except that a race organizer or class rules may accept, when those standards described above is not available, the signed statement by a naval architect or other person familiar with the standards listed above that the yacht fulfills the above requirements.

Appendix C - How to Calculate an HPR Rated Length, TOT, and seconds per mile using certificate calculator spreadsheet.

1. Download the latest version of the HPR **class rules** and calculator from the HPR website.
<http://hprsailing.org/technical/hpr-rule>
2. There are ten tabs at the bottom of the spreadsheet but only the Certificate and Database tabs are needed to calculate a boat's Rated Length.
3. Start with the Database tab: it contains about 40+ boats, some valid certificates, some demonstration certificates and some tests. Most of the data is measured. For issued HPR certificates, both the input data and the certificate are publically available. The columns show various boats by name, sail number and boat type - move to the right until an empty column is found.
4. If there is red number in row #1 at the top of a column, use that column, otherwise just add a number in row #1 and start your own column.
5. Determine a source of data, whether it is designer information, measurements for another certificate, etc. ORCi, ORC Club or ORR certificates will have almost everything you need. For IRC, a few rig dimensions are different and for IRC and ORC Club you will need VCG from an alternative source. Enter all data in metric units.

There are a few tips for entering data:

- a) 'Dempty' is the displacement in lightship trim with no gear on board, as required by IRC and also ORC starting in 2013. For all IRC data, use Boat Weight. For ORC data starting in 2013, use DSPW. For ORC data previous to 2013 and all ORR data subtract 1% from DSPW before entering.
- b) Freeboards and draft also vary some with this trim difference, however the effect is small for test purposes. If an ORC club or IRC certificate is the data source, freeboards do not appear and need to be approximated.
- c) **FBI** is the freeboard at the base of I in measurement trim at the sheerline. It is solely an HPR measurement and does not appear in other rules. Depending on the sheerline, you can approximate it by assigning a measurement between the values of FF and FA. FF and FA appears on ORCi and ORR certificates, but for ORC Club or IRC certificates they will need to be approximated.
- d) 'VCG incline' is the VCG from an inclination, such as VCGM from an ORCi or ORR certificate. HPR can also calculate VCG from component weights as described in the VCG section of the class rules. If either MWT or KWT are entered it automatically will put a 1 in cell T74 of the Certificate page to indicate a component calculation. If using the component method, be sure to enter all 5 of the required dimensions: MWT, MCG, BWT, MCG, and KVCG.
- e) **CPD** and **CPW**: these calculate cap shroud sweep angle, and if the sweep angle is 15 degrees or greater, but the exact dimensions are unavailable, enter 1 and 0.135.
- f) Rows 51-54 automatically calculate typical jib widths if desired: just copy and paste those cells in the new boat column.

6) Flags

RUD2	Enter Y if you have twin rudders
PSP	Enter Y if you have a permanently installed strut drive or a shaft drive.
AC	Not used at this time – will be revised for Version 5
HDHM	Not used at this time – will be revised for Version 5
SPHM	Not used at this time – will be revised for Version 5
EOSC	Enter if you your boat was built as part of a series production run.

- 7) Go to the Certificate page, in which the cells are protected except for the green box in cell T5. Enter the

subject boat number in that box and both the T column and the Certificate should populate. Read your Rated Length and scoring options toward the bottom of the P column on the Certificate.

8) The calculated Rated Length may be less than the Minimum Rated Length in cell P43, which means the minimum rated length will apply instead of the calculated rated length. This is a catch-all to discourage the accumulation of “go slow” factors which might result in low rating boats that are no fun to sail. It means the boat can be sped up some with no cost on the Rated Length. However as better data is developed, the calculated rated length may move slightly.

9) In order to see how close a boat is to the HPR typeform, go to the TYPEFORM tab. For each corrector, there is a red ball which shows where the subject boat is on the performance line and how close it is to the base boat. In the mid range in the performance line and fairly close to the base boat, the slope is intended to rate the factor fairly. As part of encouraging the HPR typeform, the slope increases to discourage extremes on the fast side and also goes flat to reduce incentive for utilizing slow features to reduce rated length. For boats with age dates of 2012 or earlier, and on the fast side, the red ball may be below the performance line. This is because some typeform restraints are relaxed for older boats.

10) To compare several boats, use the tab for “Fleet Report.” Enter the boat numbers to be compared in column A. For a Mac which is running Office for Mac, the procedure is slightly different.

Notes:

- While sail “girths” are the common reference, the ERS refers to them as sail “widths.”
- A small “b” after a term indicates it is a base.
- A small “c” after a term indicates it is a final corrector.

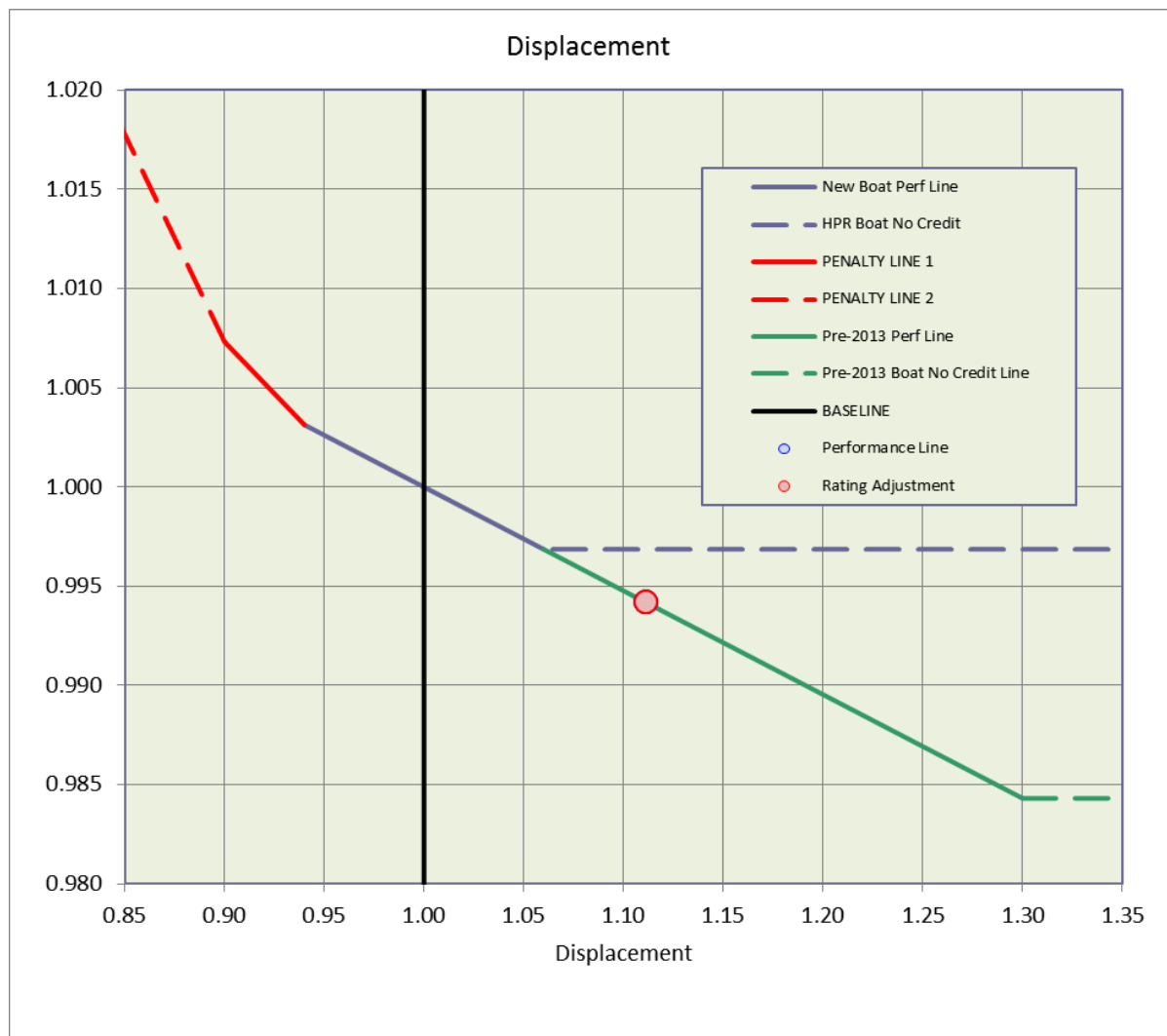
Appendix D

The example below shows how the correctors in paragraphs 303 thru 310 are calculated on the TYPEFORM page of the spreadsheet.

HPR Rating & Type-form Formulas

The following chart illustrates how HPR rates displacement. The same logic can be applied to any of the other rated parameters. The formulas would have different coefficients and limits specific to those parameters.

- The horizontal axis shows the ratio of the boat's actual displacement to the baseline displacement. That baseline is nominal target displacement of an HPR design for the boat's length. The heavy vertical line at a value of 1.0 highlights where the target ratio is.
- The vertical axis shows the change in performance as a multiplier, higher numbers are faster. This goes into rated length and the TCF used for scoring. By definition, a boat with the target displacement, and a displacement ratio of 1.00, would have a performance ratio of 1.00.



- The solid blue and green lines on the chart give the performance ratio for any particular displacement ratio. This is what HPR considers a fair tradeoff of displacement and boat speed. The

solid red and the dashed lines are typeforming constraints meant to discourage design from venturing too far away from the nominal baseline boat. For new boats, those built after 2012, there are penalties for being too light. At a displacement ratio of about .94, the red line has a steeper slope than the blue, meaning that going even lighter incurs double the rating assessment. A boat that light can compete in HPR but at some rating disadvantage. The dashed red line that starts at .9 has an even steeper slope to further discourage boats that are extremely light from competing.

- If a new boat is heavier than the baseline boat she is treated “fairly”, getting rating credit, until she gets to a ratio of 1.07, meaning being 7% heavier than the baseline. At this point no more credit is provided. The dashed blue line illustrates the constant rating ratio no matter how large the displacement ratio.
- Older boats are assessed with both the blue and the green lines. They can get as much as 30% heavier, picking up performance credit all the way. Beyond 30% heavier no more performance credit is provided.
- The red circle shows the displacement and performance ratios for a pre-2013 40 foot design that is about 11% heavier than the baseline displacement. If the boat per 2013 or newer, the circle would move up vertically to the dashed blue line.

This form of rating assessment and type-forming penalties applies to all performance parameters. Specific formulas and evaluations for the rating adjustment for displacement, for this particular 40 footer, are supplied below with explanations.

Age Date	2011
Length	11.580

Measured Displ.	3911.0	Actual Displacement of boat
Base Displ. Value	3520.2	Base Displacement = $44.14 * Length^2 - 256.52 * Length + 571.7$
Ratio (meas./base)	1.1110	Displacement Ratio = Measured Displacement / Base Displacement

Performance Line Slope

Constant	-0.05124	Fixed Value
Coeff1	0.00094	Fixed Value
Coeff2	-0.00009	Fixed Value
Slope	-0.0521	= Constant + Coeff1 * Length + Coeff2 * Length ^ 2

Performance Line

Base Ratio	1.000	Fixed Value
Pre-2013 Min Delta	30.0%	Fixed Value Distance of lower limit from base ratio
Pre-2013 Min Ratio	1.300	= Base Ratio + Min Delta Limit where “old” boat gets no more rating credit
Pre-2013 Min Factor	0.9844	= $1 + Slope * (Min Ratio - 1)$ Rating credit for a boat that is 30% heavier

New Boat Performance Line

New Min Delta	6.0%	Fixed Value
New Min Ratio	1.060	= Base Ratio + New Min Delta Limit where a new boat gets no more credit
New Min Factor	0.997	= $1 + Slope * (New Min Ratio - 1)$ Performance ratio at that limit
Max Delta	-6.0%	Fixed Value
New Upper Limit	0.940	= Base Ratio + Max Delta Limit where new boat penalty starts

New boat Penalty Lines

Slope Ratio 1	2.0	Fixed Value Penalty slope is twice as steep as performance line slope
New Delta	-10.0%	Fixed Value Limit where penalty line 1 transitions to penalty line 2

Slope 1 Upper Limit	0.900	= Base Ratio + New Delta End of penalty line 1
Slope 1 Min Factor	1.0031	= 1 + Slope * (New Upper Limit - 1) Performance ratio at start of penalty 1
Slope 1 Max Factor	1.0073	= Min Factor + Slope Ratio * Slope * (Upper Limit - New Upper Limit) Performance ratio at end of penalty 1, start of penalty 2
Slope Ratio 2	4.0	Fixed Value

Rating Evaluation

Perf Line Value	0.99422	= 1 + Slope * (Ratio - 1) Value for this boat if no penalties
Penalty Line 1 Value	0.98532	= 1 + Slope * Max Delta + Slope Ratio 1 * Slope * (Ratio - New Upper Limit)
Penalty Line 2 Value	0.96335	= Slope 1 Max Factor + Slope Ratio 2 * Slope * (Ratio - Slope 1 Upper Limit)

Final Rated Length Factor

Final Rated L Factor	0.99422	Choose Value from Perf Line, Penalty Line 1 or 2 as is appropriate
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For boats with an age date of 2012 or earlier, the penalties on the fast side of the graphs are waived, with the exception of crew weight where pre and post 2012 boats are treated identically.

Appendix E: Economy of Scale Credit items (*under development*)

This Appendix is included in V4H to help readers understand the current ideas on how to assess and assign appropriate handicapping factors to series-produced yachts that wish to compete in HPR fleets. Attention is drawn to HPR Rule 100, where the Rule Philosophy explains the attributes of boat types that HPR is intended to rate fairly, and this does not include all boat types. The intention of the ESOC is to help build fleets of boats to race fairly using HPR ratings, not to create new typeforms.

HPR welcomes comments from sailors, designers, builders, riggers and others who may have meaningful input to helping quantify the ESOC credits scale.

Appendix E

Worksheet to develop a Cost Control Base Boat

HPR base boat	1.0000	Effect on Rated Length		
		1.0000	1.0000	
<p>This table proposes a "Base Cost Control Boat" is the 40 foot size. Lower cost items above the green rows may get a credit depending on boat size More expensive items below the green rows may get a charge depending on boat size Also items which HPR wishes to encourage may be credited</p>				
		Up to +/- 32 feet	32 to +/- 50 feet	Over 50 feet
Hull, Deck and Interior component cores				
Non-cored	0.9xxx			
Balsa	0.9xxx			
Foam - Density not less than 70 kg/m ³	1.0000	1.0000	1.0000	1.0000
Nomex	1.xxxx			
Hull, Deck and Interior component fabrics				
All E Glass	0.9xxx			
95% E glass, maximum 5% carbon by fiber weight	0.9xxx			
Standard Carbon	1.0000	1.0000	1.0000	1.0000
High Modulus Carbon	1.xxxx			
Ultra High Modulus Carbon				
Boat can be lifted without straps	0.9995			
Hull, Deck and Interior component Resins				
Polyester	0.9xxx			
Vinylester	0.9xxx			
Epoxy - cures <80°C	1.0000	1.0000	1.0000	1.0000
Epoxy - cures >80°C	1.xxxx			
Hull, Deck and Interior component processes				
Female mold, Gelcoat finish, CSM to prevent print thru approx 1.25 kg/m ³	0.9xxx			
Hand layup	0.9xxx			
Wet preg	1.0000	1.0000	1.0000	1.0000
Vacuum bag wet layup	1.0000	1.0000	1.0000	1.0000
Infusion	1.0000	1.0000	1.0000	1.0000
Prepreg	1.xxxx			
Autoclave (<1 atm)	1.xxxx			

Keel				
	Retractable	0.9xxx		
	Homogenous single casting metal fin/bulb	0.9xxx		
	Cast metal fin and lead bulb	1.0000	1.0000	1.0000
	Welded fin and lead bulb	1.xxxx		
	Carbon fin and lead bulb	1.xxxx		
Rudder				
	No carbon	0.9xxx		
	Standard carbon	1.0000	1.0000	1.0000
	High Modulus (>250 GPa) carbon	1.xxxx		
Mast				
	Aluminum	0.9xxx		
	Standard Carbon	1.0000	1.0000	1.0000
	High Modulus Carbon	1.xxxx		
	Ultra High Modulus Carbon	1.xxxx		
	Mast Weight	Measurement		
	Mast VCG	Measurement		
Boom (VCG plus weight moves to leeward when sheeted out)				
	Aluminum	0.9xxx		
	Standard Carbon	1.0000	1.0000	1.0000
	High Modulus Carbon	1.xxxx		
	Ultra High Modulus Carbon	1.xxxx		
	Boom Weight	Measurement		
Sprit				
	Standard Carbon	1.0000	1.0000	1.0000
	High Modulus Carbon	1.xxxx		
	Ultra High Modulus Carbon	1.xxxx		
Rigging				
	Wire	0.9xxx		
	Dyform wire	0.9xxx		
	Standard Rod	1.0000	1.0000	1.0000
	Cobalt rod	1.xxxx		
	Lenticular (low windage) composite rod	1.xxxx		
	Carbon	1.xxxx		
	Spectra	1.xxxx		
	PBO	1.xxxx		
Rig Complexity				
	Permanent backstay	0.9xxx		
	Swept spreaders - 15 degrees or more	1.0000	1.0000	1.0000
	Runners below the masthead	1.xxxx		
	Secondary attachments - tweekers, checkstays etc	1.xxxx		
	Split adjustable masthead backstays	1.0000	1.0000	1.0000
	Runners to the hounds			
	Number of spreaders			
	Number of jumpers or diamonds			

Fixed forestay	0.9xxx		
Adjustable forestay only, no adjustable aft stays	0.9xxx		
Adjustable forestay and backstays	1.0000	1.0000	1.0000

Mast step vertically adjustable while racing	1.0000	1.0000	1.0000
Mast step horizontally adjustable while racing	Not legal under HPR		

Engine

Inboard diesel - Production Sail Drive or shaft drive	0.9829	V5 may further develop the prop factor	
Inboard diesel - retractable prop	1.0000	1.0000	1.0000
Outboard	1.0000	1.0000	1.0000

Metals

Bow pulpits and stanchions made from Stainless	1.0000	1.0000	1.0000
Composite - ORC legal stanchions & pulpits	1.xxxx		
Titanium in rig parts	To be determined		
No material denser than lead	1.0000	1.0000	1.0000

A reminder to refer to HPR Rule section 100, which states:

"These are Closed Class Rules. Anything that is not expressly permitted by these rules is prohibited."

Practical

Boat can be lifted without straps	0.9995		
OR			
Boat can be lifted without straps	1.0000	1.0000	1.0000
Straps required for lifting	1.0005	1.0005	1.0005