CYC PHRF Handicapping
Philosophy and Procedures (updated 3/1/04)

CYC PHRF Handicapping- The Philosophy

The intention of the CYC PHRF Handicap Committee is to handicap boats fairly and economically. Fair handicaps mean any properly prepared and equipped boat can win when it is sailed well (sails are trimmed optimally and boat handling is correct) and makes better tactical decisions than the other boats racing.

The handicaps are based on the speed potential of boats, not the skill of the crew and skipper. Winning boats will not be penalized for their performance and losing boats will not get more favorable ratings, Handicaps may be adjusted for boats which have been modified and, in limited instances, for boats for which the Handicap Committee has reason to believe that US PHRF data and/or other relevant measurements of boat performance do not adequately reflect the performance potential of an individual boat or class of boats.

CYC is a member of US Sailing and follows the handicapping guidelines established by the US Sailing PHRF Fleet Bylaws.

PERFORMANCE HANDICAPPING- THE US SAILING Definition

PHRF ratings are boat performance handicap. They are based on the speed potential of the boat, determined as far as possible on observations of previous racing experiences. It is the intent of PERF handicapping that any well equipped, well maintained, and well sailed boat has a good chance of winning. Handicaps are adjusted as needed on the basis of the boat's performance so that each well-sailed boat has an equal opportunity to win. This is the fundamental concept.

PHRF ratings are not intended to reflect skipper and crew capability. Ratings are not adjusted to encourage a poor or careless skipper, and conversely, no rating adjustment is made to penalize proficiency. Intensity of competition and the influx of new and aggressive sailors require each skipper to maintain consistently high performance in order to place well.

CYC PHRF Handicapping - Rules

CYC PHRF Handicapping rules are intended to guide the assignment of handicaps for auxiliary boats for racing on Lake Carlyle. Unless class rules, club rules or sailing instructions for a race provide for variances, each boat that is issued a CYC PHRF handicap is expected to meet the safety equipment standards specified by the US Sailing Association and U.S. Coast Guard.

Boat Design

The PHRF is an open rule. There are few national hull or sail restrictions other than the single hull, self-righting requirement. There are no fundamental limitations on ingenuity other than those contained in the US SAILING (formerly USYRU) rules. Class restrictions may be applied locally but are not a matter for national policy.

Well-designed and constructed boats will not be made obsolete by newer designs under PHRF. PHRF does not use formulas to determine handicaps, because any formula once established can be beaten by a clever designer. As faster designs appear, they are handicapped accordingly. Therefore, one of the major attractions of the PHRF system's that older boats can race competitively with the latest designs.

PHRF discourages "rule beating." If a skipper modified his boat, PHRF will attempt to compensate for the new speed potential. The use of taller masts, longer spinnaker poles, extra

ballast, gutted interiors or other modifications intended to increase speed are compensated for by the rating assigned.

Equipment
CYC and US Sailing PHRF assume a boat is equipped to race. There is no attempt to rate a partially equipped boat, or a boat that differs from others in its class, in that it is unusually heavy, out of balance, or has unusual windage (as from a dinghy on davits). However, if the basic hull and rig differ from others in its class, it will, be rated uniquely.

Changes to Design or Equipment
A skipper may experiment with different ways of improving the performance of his boat. If there are changes to the hull, rig, sails or other factors upon which the existing rating is based, they must be reported to the handicap committee for evaluation. If the possible deviations on the part of the owner become apparent, other contestants are urged to appeal to the committee.

CYC PHRF Base Handicaps
CYC PHRF ratings are expressed in seconds per nautical mile to be deducted from elapsed times to produce corrected times. The higher rating indicates the slower boat. CYC establishes the base rating as the weighted national average of all boats with an experience rating of C or higher in a class of boats as reported in the most recent US Sailing PHRF Handicap book. If there are fewer than 10 boats reported with an experience rating of C or higher, all reported handicaps will be used to calculate the weighted national average. When calculating the weighted national average, the CYC Handicap Committee may choose to ignore ratings from fleets reporting a handicap that is irrelevant or significantly beyond the normal range of variability.

Base handicaps are assigned with the assumptions that:

1. The spinnaker pole length is standard for the class or equal to "J"
2. The spinnaker maximum width is standard for the class or equal to 180% of "SPL"
3. The spinnaker maximum length is equal to 95% of the length of the jib stay i.e., $95\sqrt{(I^2+J^2)}$
4. The genoa LP is between 150% and 155% of "J"
5. The number of battens and the length of battens are restricted by class rules or as permitted by the CYC racing instructions.
6. The boat is in racing condition.
7. The boat has a folding or feathering propeller, a two bladed solid propeller in an aperture or a retractable outboard motor.
8. The hull and appendages are unmodified from the factory design of the class

Adjusting Base Handicaps
The CYC PHRF Handicap Committee will make adjustments to the base handicap for variances from the listed assumptions or for other conditions (primarily sail size, rig size and design, weight changing/shifting changes to interiors) the committee believes effect the speed potential of the boat. The committee may adjust the base handicap when it believes a boat or a class of boats has demonstrated greater or lesser speed potential in actual performance at Lake Carlyle than its base handicap. See the attached Schedule of Handicap Adjustments.

Performance based adjustments will be made only when the committee is convinced that performance reflects the true speed potential of the boat and not for superior race tactics, boat handling skills, boat maintenance and preparation.

Handicap Ratings

The handicap rating of an individual boat is expressed in seconds per nautical mile. The smallest increment of performance normally used for rating is 3 sec/Mi.

Because headsail size has so much to do with boat speed, PHRF uses this factor as a means of handicapping. Boasts with headsails in excess of 155% of LP will be adjusted. Once a boat is rated with a headsail larger than 155% of LP, this rating must be used, even though wind conditions may preclude use of the sail. A skipper is not allowed to have his boat re-rated frequently by choosing his headsail to fit expected race conditions.

Handicapping Procedure

A new boat in an established class is normally given the weighted national average rating for the class. The CYC Handicapping Committee reviews all new boat handicaps and determines whether an adjustment from the national weighted average is necessary for fairness. Adjustments may be made for any deviation from the class. If adjustments are made, an indication is made in the handicap record that the boat is not a standard class boat or the class has been adjusted for local conditions.

For new classes and one-of-a-kind boats, the rating is determined on the basis of comparison with similar boats with established ratings. Comparison is made considering type of design and principal dimensions. The rating is assigned conservatively, and is adjusted as performance data becomes available adjusted as performance data becomes available.

Measurement and Verification

Assigning a base handicap and deriving the final handicap may require measurement and verification of hull parameters including interiors, and critical rig and sail dimensions. Often, where measurements are required, differences are observed for "standard" boats that were believed to be identical. Discrepancies may also arise from use of published sail plans of manufacturers, or from hull and sail plan modifications made by owners.

These measurements will provide the necessary comparison values to enable the CYC PHRF Handicap Committee to establish with reasonable confidence that boats are "standard" and which are different or have been modified.

Although it may be possible to assign a handicap without official observation and measurement, these procedures are required for fair racing since handicaps are based upon knowledge of a boat's "standard" hull, interior, rig and sails. Boat owner verification must accompany application for a CYC PHRF handicap. Normally handicap renewal does not require re-verification, unless hull, interior, rig or sails are modified. Any change to a boat must be reported to the handicap Committee and must be accompanied by verification of the change.

If, for any reason, hull, interior, rig or sails are questioned or protested through normal procedures, CYC reserves the right to require verification by actual observation and measurement by a CYC PHRF Committee member.

Verifying Hull Parameters

The length, beam, draft, etc. of the hull called for on the CYC PHRF application or renewal form do not need to be precisely measured except when the hull has been modified. Standard hull measurements are readily available from US Sailing. If precise measurements are known (as, for example, from an IOR certificate) they should be used. It's best to include a copy of the certificate

with application or renewal. The type of keel, rudder, prop installation and type, and type of auxiliary engine must be reported. The boat must be raced with its designed and manufactured interior. Modification to the interior must be reported even though it may not cause and an adjustment to a handicap.

Verifying Sail and Rig Dimensions

Sails that require measurement are the largest headsail (including bloopers) and spinnakers. Sails are measured suspended off the floor, with sufficient tension to remove cause wrinkles but not with so much tension as to cause wrinkles in the direction of measurement. The measuring tape should conform to the catenary of the sail so that measurement represents the cloth length. The measurement point for edges or corners in all cases is to be the extent of the sail itself and not to a projected point or to include
shackles or swivels.

The following measures are obtained:

LP: The shortest distance from the forward edge of luff tape to aftermost portion of sail at the clew. The value entered is the largest value from jibs and bloopers.

SL: Maximum length of spinnaker luffs.

SMW: Maximum horizontal width of spinnaker, usually measured by doubling the half width. For cruising spinnaker measure perpendicular to the luff.

Spar dimensions are explicit for banded spars; spars must be banded. Unbanded spars will be reported with spar dimensions equal to the maximum dimensions to which sails could extend with the installed halyard and outhaul. Please note that this may imply an adjustment. Measurements are made in feet and tenths of afoot: e.g. 29.3 feet. A current or still valid measurement certificate (IOR, IMS, MORC) may be used to obtain all of the required measurements. When this is the case, the owner must supply a copy of the certificate.

J: Horizontal distance from forestay attachment point to front surface of mast

SPL: Length of spinnaker pole from centerline of the mast to outer end of the pole measured athwartships.

I: Height of foretriangle, measured from the highest point of sail attachment to sheer line at the point abeam the mast. The point of sheer line is the intersection of the hull and deck.

P: Maximum hoist of mainsail, measured from lower edge of the upper mast band to the upper edge of lower mast band or upper surface of fixed boom band to the upper edge of lower mizzenmast band or upper surface of fixed boom inner edge of the band on the boom.

E: Maximum foot length of mainsail, measured from the after edge of the mast to the inner edge of the band on the boom.

Mainsails

Fully battened mainsails are allowed. Midgirth measurements must comply with current IOR/IMS requirements. There is no restriction on the material of the battens. Battens must be evenly spaced along the leech but do not have to be parallel to the boom. There

maybe no more than four (4) battens which must not have any lines permitting shape adjustment while racing except the usual leech line and mainsail sheet.

Asymmetrical Spinnakers

Asymmetrical Spinnakers are allowed subject to the following definitions and rules to ensure that these sails are not used as oversized jibs. An approved asymmetrical spinnaker must no exceed the following measurements:

1. SMW AS = ((1/4 + SMW) +(3/4 +SF))/4
2. SL = $(SL_1 + SL_2)$ X .5 such that 1.7 X JC $\leq$ SMW $\leq$ 1.8 X JC

An owner who wishes to use an asymmetrical spinnaker must declare the intention to the CYC PHRF Handicap Committee by formal letter accompanied by a sailmaker's certificate before the sail is set in competition. Asymmetrical spinnakers may be set with or without a spinnaker pole. When set without a pole the sail may not be attached further forward of the mast than JC.

Cruising Spinnakers

Cruising spinnakers are allowed subject to the following definitions and rules. These definitions and rules are promulgated to ensure that cruising spinnakers are not used as oversized jibs to "beat" a LP penalty. The SMW of a cruising spinnaker is its maximum width, which may not exceed 180% of J without penalty, and the luff length may not be larger than that of a genoa. A boat may carry any combination of cruising spinnakers, asymmetrical spinnakers and conventional spinnakers but must declare all the types it carries in its inventory. Owners may make only one change in their declared spinnakers during a season.

Adjustments

Adjustments, in seconds-per-nautical mile, are added or subtracted from base handicaps for variations or modifications to standard hull, interior, keel, rudder, rig or sail plan. All adjustments are handled on a case-by-case basis. Owners must report all modifications when they apply for or renew a handicap certificate. Mid-season modifications must also be reported, and an updated handicap may be issued before a boat races with the modifications. *The CYC PHRF Handicap Committee assumes modifications are made to increase speed.*

Boat Owner Responsibility

Some think PERF is a rule with few regulations and so anything goes. To a certain extent that is true, you can do almost anything but only after it has been documented and reported to the CYC Handicap Committee. The idea of PHRF and the area where it works best is when a large number of identical boats race often and have observations based on their performance to determine a handicap. It works best when the boats are as similar as possible.

Thus, the rule requires the boat be raced in "boat show" trim. That is all cushions, hatches, lockers, bunks, doors, tables, bulkheads, etc. that would be on the boat in order to sell it should be on the boat when it is raced. If, for some reason, you do not wish to race that way, you must inform the handicap committee of your "modification". It is the right of the CYC PHRF Handicap Committee to adjust your handicap if the modification seems to justify it. It is not the boat owner's job to assess what is significant or not. Of course, if it is not significant, why do it?

CYC PHRF Handicapping
Philosophy and Procedures (updated 3/1/04)

If you have submitted an IOR or IMS rating certificate to help the handicappers assign a CYC PHRF number, you must race your boat in the same trim as was required for the IOR or TMS rating. If you do not wish to do so, you must report the exact nature of your changes from your certificate. In general, you may do what you wish but you must keep the CYC PERF Handicap Committee apprised of what you are doing to your boat.

Be cooperative; follow the CYC PHRF rule. Report any and all changes you make to your boat. Let us all keep the rule easy and simple by competing fairly.

Appeals
Formal appeals of ratings may be made to the CYC Handicap committee. Further appeals may be made to the US SAILING PHRF Handicap Committee. A skipper may appeal his own, or others' ratings. The appellant sets forth his views in writing and documents his case with supporting information.

Schedule of CYC PHRF Handicap Adjustments:

1. LP adjustment: 155% of J or less, 0 sec/nm; Each 10% (or fraction thereof) greater than J, -3 sec/nm.
2. SPL adjustment: less than J, 0 sec/nm. Each 5% (or fraction thereof) greater than J, -3 sec/nm.
3. SMW adjustment: Less than 180% of SPL, 0 sec/nm. Each 5% (or fraction thereof) greater than 180% of SPL, -3 sec/nm.
4. SL adjustment: $.95 \sqrt{(I^2+J^2)}$,0 sec/nm. Each 5% (or fraction thereof) greater than SL, -3 sec/nm.
5. I adjustment: Standard, 0 sec/nm. Each 2.5% (or fraction thereof) greater than I, -3 sec/nm.
6. Propeller adjustments
    a. Folding prop, retractable outboard, or a two-blade solid prop in an aperture, 0 sec/nm.
    b. Two bladed solid propeller on an exposed shaft or a non-retracting outboard motor, +3 sec./nm.
    c. Three bladed solid propeller on an exposed shaft or a non-retracting outboard motor, +6sec./nm.
7. Mainsail adjustments:
    a. Change to P or PY: Each 5% increase (or fraction thereof), -3 sec/nrn.
    b. Change to E or EY: Each 5% increase (or fraction thereof), -3 sec/nm.
    c. Mainsails must be constructed within the previously described limitations.
8. Failure to verify hull or rig and sail dimensions, -6 sec/nm.

Changes to the schedule of adjustments can be made only by the CYC PHRF Handicap Committee.

CYC PHRF Handicapping
Philosophy and Procedures (updated 3/1/04)

CYC Handicap Evaluation Criteria

Handicaps may be adjusted for boats which have been modified and, in limited instances, to boats which the PHRF Handicap Committee has reason to believe that US PHRF data and/or other relevant measurements of boat performance do not adequately reflect the performance potential of an individual boat or boat class. The PHRF Handicap Committee may initiate, and will respond, to all inquiries by racing boat owners relative to the possible need for adjustments to their boat or a specific competitive boat or class.

Each inquiry will require the involvement and cooperation of the person requesting the review, the boat owner and/or other knowledgeable people identified by any of the involved parties. The CYC PHRF Handicap Committee will conduct the inquiry and issue adjustments as they see fit based on the following procedures and criteria. Appeals can be made to the Handicap Committee or the USSA Board of Handicappers.

During each inquiry, the Handicap Committee will question whether each boat in question is currently "optimized" and "fairly" handicapped relative to its speed potential, typical Lake Carlyle sailing conditions and all PHRF assumptions and criteria outlined in this document. If not, the Committee will work to detern1ine why not and make necessary adjustments to encourage fair sailing by wel1-sailed competitive boats.

Evaluation Criteria Guidelines	**Optimal …….. Poor**				
Overall Boat and Rig					
Hull and Foil fairness					
Condition of bottom					
Condition and age of sails					
Sail inventory					
Dry / Wet sailed					
Propeller					
Equipment (rig adjustments, sail controls, etc.)					
Interior (factory installed, modified)					
Crew/Skipper					
Number of crew….for the boat					
Crew knowledge/skill level					
Years sailing together as a crew					
Professionals					
Ability to make the boat go fast					
Attitude					
Knowledge of the rules					
Location					
Is this boat great for Carlyle Lake					
Is it better for Carlyle Lake than other places					
Where else are these boats sailed/raced					
Numbers					
How many boats are rated nationally					
Performance History					
Record of performance on Carlyle Lake					
Compared to boats in its class/similar boats					