Lake Michigan Performance Handicap Racing Fleet, Inc.
Terms of Reference, Rules and Associated Regulations

January 2007

(Revision 1.0)

LMPHRF Terms of Reference

Lake Michigan Performance Handicap Racing Feet, Inc. (LMPHRF) is an Internal Revenue Service approved non-profit service corporation headquartered in Wisconsin whose fundamental service is to assign performance handicaps to offshore monohull and multihull sailboats that compete in casual and championship racing, and to ensure that the important subordinate tasks that make the service possible are in place. These services include handicapping, analysis of race data, hearing boat owner appeals of assigned handicaps, development of the rule, and producing and delivering education seminars or forums. LMPHRF services do not extend to organizing or managing racing events.

LMPHRF Rules and Associated Regulations

The LMPHRF rules and regulations are intended to guide the assignment of empirical or performance handicaps to monohull and multihull racing/cruising sailboats for intra-club and inter-club casual and/or championship racing. Unless class rules, club rules, notice of race or sailing instructions for a competitive event provide for variances, each boat issued a LMPHRF empirical handicap is expected to meet the minimum accommodation, equipment and safety standards suggested by the United States Sailing Association's minimum requirements for Category IV races. On a case-by-case basis boats meeting minimum requirements for Category V and VI races may be handicapped. From time to time LMPHRF may also make slight and reasonable modifications to the application of these standards when the safety of the boat and crew are not compromised. Such modifications will be announced and published to all holders of LMPHRF handicap certificates and to race organizers.

Handicaps

A base handicap (BHCP) scaled in increments of three seconds per nautical-mile (sec/nm) is assigned to each boat type or class by the Council of Handicappers upon review of recommendations or actions taken by the Regional Handicappers Group Chaired by the Chief Handicapper and the Chair of the LMPHRF Technical Committee. These bodies carefully consider analysis of hull parameters, rig and sail dimensions, USPHRF data, race data and any other relevant studies of performance as important factors in the assignment in the final handicap or sailing number (HCP) to a boat competing with respect to the LMPHRF Rules and Associated Regulations.

The base handicap for a boat type or class assumes:

1. Standard hull and interior, keel, rudder, and rig and other features specified in the original design and build of a production boat or custom one-of-a kind monohull or multihull sailboat.
2. Jib overlap (LP) of 155% of J.
3. Spinnaker pole length (SPL) no longer than the larger of J.
4. Spinnaker mid-width (SMW) no greater than 180% of SPL.
5. A folding prop, a retracted outboard, or a solid prop in an aperture.

These assumptions are consistent with USPHF.

A provisional base handicap may be assigned for one-off, custom, modified, innovative or new production boats until sufficient information is obtained to result in the assignment of a stable handicap. Certificates of provisionally handicapped boats are clearly marked. All provisionally handicapped boats are reviewed annually.

A handicap (HCP) or final sailing number is derived by algebraically adding adjustments (credits or penalties) to the base handicap. Please see the section on kinds of adjustments and associated values reported in seconds-per-nautical-mile (sec/nm).

A calculated non-spinnaker handicap (NSHCP) is also routinely assigned to each handicapped boat. The non-spinnaker handicap is developed for "Jib & Main" competition only. Its application alters the base handicap (BHCP). Its use is at the discretion of race organizers. Non-spinnaker or jib and main handicaps are not developed for competition within traditional spinnaker classes, sections or divisions of a competitive event. The non-spinnaker handicap assumes that headsails are limited by the I, J, and LP measurements shown on the LMPHRF Handicap Certificate. Spinnakers, bloopers, gennakers or such sails by any other name are not allowed for non-spinnaker based competitive events. A pole may be used to push out the clew of a headsail. The pole must be no longer than the SPL measurement shown on handicap certificate (or no longer than the J measurement if SPL is not shown). A whisker pole may be used for this purpose if it is banded to meet the above length restriction. Staysails are allowed subject to the following restrictions:

1. Staysail overlap when hoisted cannot exceed the overlap of the largest headsail.
2. When used, the staysail must be tacked to the deck or to the bowsprit.
3. The staysail may not be tacked further forward of the mast than the J or JC measurement shown on the LMPHRF handicap certificate

Credits or penalties otherwise assessed are algebraically added to the non-spinnaker or jib and main handicap. The NSHCP handicap is printed on every issued certificate.

A distance handicap (DHCP) is available for many boat types or classes to score port-to-port competitive events of over 25 nautical miles in length. This handicap is not formula based and is determined by empirical analysis of race result data. The implication is that all boats will not automatically receive a DHCP that is different form the HCP since the HCP for some boats takes into account their excellent distance racing speed potential advantage. The DHCP handicap is printed on every issued certificate and may be identical to the HCP in numeric value.

Measurements, Interior Design or Layout, and Verification of Hull, Rig, Sail Plan Critical Dimensions.

Systematically assigning a LMPHRF base handicap and deriving the final sailing number or handicap requires measurement and verification of critical hull and rig parameters, and sail dimensions. A description of the interior layout features and appointments are also required. Measurements required for handicapping are not used to determine a base handicap using an exact mathematical specification or formula with deference to a theoretical model for prediction of a boat's speed potential. This is so for determining a measurement rating. For performance or empirically handicapping systems such as North American Portsmouth USPHRF handicapping organizations, measurements provide necessary comparison values that enable handicappers to establish with reasonable confidence which boats are standard and which are different or have been modified. Many times differences of almost a foot are observed for boats that were believed to be identical, but in fact are not. Discrepancies often arise from use of published sail plans provided by manufacturers for the wrong production run, or poor measurement technique. Moreover, measurements provide empirical data that is matched with observations of the sailing characteristics and competitive performance of a boat type or class. Using statistical algorithms, speed potentials or a boat type or class manifested as a handicap may be verified by analysis of race data.

Perhaps a base handicap without measurement and observation could be assigned by guess work and bias. Measurement data and description of features of a boat type or class are required for systematic assignment of handicap to insure fair competition. Hence, verification of, rig, sail plan and interior features and layout must accompany application for a LMPHRF handicap and certificate. Normally, renewal of handicap and certificate does not require revarification unless hull, rig, sail plan or interior are modified. Any change to a boat's critical dimensions and features must be reported to the LMPHRF Office, the Chair of the Technical Committee and the Chief Handicapper. The report must be accompanied by verification of

the change. LMPHRF accepts the following for verification of hull, rig, sail dimensions and interior design or layout.

1. Any current or still-accurate measurement rating certificate, such as IOR, IMS, ORR, IRC and MORC.
2. Actual physical measurement and feature description by a LMPHRF handicapper.
3. Actual physical measurement and feature description by a competitor who normally races against the boat being measured, provided the measurement is attested to by signature of a LMPHRF handicapper and competitor.

A large penalty (-6 sec/nm) will be applied to a boat's base handicap for unverified measurements or measurements reported to advantage its final sailing number.

A handicapped boat shall not carry a one-design designation (OD or ODR) unless application for a new certificate or a renewal certificate is submitted with the class measurer's certificate of authentication. The International Sailing Federation and US Sailing specify one-design classes. Boats of similar design may band together for racing, but they are individually handicapped and shall not be identified as a one-design class. LMPHRF does not supply a handicap for "level racing".[1]

Hull parameters. The length, beam, draft, etc. of the hull called for on the LMPHRF application or renewal form are measured to the nearest tenth of a foot; greater accuracy is fine, but is not really necessary. However, these dimensions must be reported! If precise numbers are known (e.g., from a recent IOR, IMS, ORR, IRC or MORC certificate), they may be used. A copy of the measurement certificate with the application or renewal must be included. The type of keel, rudder, prop installation and prop type must be reported as well as the type of auxiliary engine installed. Boats with swing keels or drop keels are handicapped under the assumption that these are pinned in place while racing.

Sail plan and rig dimensions. Sails that require measurement to be reported inclu8de the main sail, the largest genoa, the largest symmetrical and/or asymmetrical spinnaker, code zero spinnaker as discussed elsewhere, gennaker or cruising spinnaker, and blooper. Sails are measured, to the nearest tenth of a foot.

1. LP is the shortest distance from forward edge of luff tape to aftermost portion of sail at the clew. The value entered is the largest value from jibs and bloopers.
2. SL is the maximum length of symmetrical or asymmetrical spinnaker luff.
3. SMW is the maximum horizontal width of spinnaker, usually measured by doubling the half width.
4. AMG, the midgirth of an asymmetric spinnaker measured on the suface of the sail between the midpoints of the luff and leach is reported.
5. SF or AF is the foot of a symmetrical or asymmetrical spinnaker. It is the shortest distance between the tack and clew (or both clews) measured along the surface of the sail.

It is always best to supply a sail maker's sail measurement certificate to support reported sail plan dimensions. Sail plan dimensions defined below 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 a penalty! Measurements are made in feet and tenths of a foot (e.g., 29.3 feet). A current or still valid measurement certificate

[1] Many boat types in various regions decide to race together and call the bunch of them a one-design class. Such informal groups designating themselves as a one-design class may be a local decision for race organizers to accept or not. These informal groupings of similar boats are not certified and often there are differences among them with regard to speed potential even though the race organizer decides to allow level racing among the members of the boat type or class. A boat type or class that is certified as one-design will often times carry different sails, crew limits and crew weights that are specified differently than a similar boat type or class not certified as one-design. LMPHRF requires the one-design class rules to be on file and a note of certification or compliance with those rules from the class measurer in order for a boat to receive the one designation and associated handicap.

(MORC, IMS, etc.) may be used to obtain all of the required measurements. When this is the case, the boat owner must supply a copy of the certificate with the application form or certificate renewal documents.

1. J refers to the horizontal distance from forestay attachment point to front surface of mast.
2. SPL refers to the length of spinnaker pole from centerline of mast to outer end of pole.
3. TPS refers the horizontal distance from the tip of the sprit to the front of the mast.
4. I refers to the height of foretriangle measured from the highest point of sail attachment to the sheer line at the point abeam the mast. The point of sheer line is the intersection of the hull and deck.
5. P refers to the 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.
6. E refers to the maximum foot length of mainsail measured from after edge of mast to the inner edge of band on boom or to the end of the boom.
7. PY refers to the maximum hoist of mizzen measured from lower edge of the upper mizzenmast band to the upper edge of lower mizzenmast band or upper surface of fixed boom.
8. EY refers to the maximum foot length of mizzen sail measured from after edge of mizzenmast to the inner edge of band on boom.

Mainsails. It should be understood that LMPHRF would not handicap a boat without penalty for carrying a mainsail that has an extra large roach except for MORC rated sailboats. Mainsails with significant upper girth roach are becoming more prevalent. If these are not recognized and appropriately rated, their unrated advantage will force the fleet towards these sails. Handicapped without adjustment are one design mainsail girths or IMS default girths. Mainsail girths measurements must comply with the following limits.

MAINSAIL GIRTH LIMITS
MGT=22% of E @ 7/8 point
MGU=38% of E @ ¾ point
MGM=65% of E @ ½ point
MGL= 90% of E @ ¼ point

Mainsails exceeding these values by up to 5% receive a -3 sec/nm adjustment. Excessive girth mainsails are adjusted -6 or more sec/nm depending on the amount of increased girth. In addition, if the headboard size exceeds .5 of a foot or .04*E, whichever is larger, a -3 sec/nm adjustment to the base handicap is applied. Full battened mainsails are allowed. There is no restriction on the material for the battens. Battens must be evenly spaced along the leach but do not have to be parallel to the boom. There may be no more than seven battens that must not have any lines permitting shape adjustment underway except the usual leech line and mainsail sheet.

Credit is awarded for mainsail luff roller furling of +6 sec/nm with no battens and positive roach or +3 sec/nm with battens and/or positive roach. This must be a production feature of a yacht awarded the credit.

Headsails. LMPHRF HANDICAPS BOATS IN RACING TRIM AND ASSUMES A 155% Genoa and no roller furled sails. When a boat is designed so that small headsails and roller furled

sails are integral to the design, the handicap will take these production features into account without application of a credit.

The Handicap Council sets headsail maximum sizes from the information obtained from designers, manufacturers or builders. Boats with larger genoas or oversize spinnakers or poles or both are penalized in order to effect equitable racing between boats of the same basic design as well as the other designs of the fleet without oversized sails.

Both symmetrical and asymmetrical spinnakers are allowed and may be used while racing. Unless integral to the boat design, LMPHRF assumes these sails will be tacked to either a spinnaker pole or sprit (prod).

Asymmetrical spinnakers must not exceed the following dimensions to assure that these sails are not used as oversized genoas without penalty. Penalties are assessed in increments of 3 sec/nm on a case by case basis as a function of how the asymmetrical spinnaker is set while racing.

1. The luff shall be at least 5% greater than the leach.
2. The mid girth shall not be less than 75% of the foot.
3. ASF = foot of sail
4. AMG= mid girth of sail

Headsails that do not qualify as an asymmetrical spinnaker because the mid-girth *is not 75%* of the foot may be handicapped as an oversized genoa or otherwise penalized. These sails are commonly referred to as Code 0 spinnakers. These sails must be declared and may be penalized on a case-by-case basis. Code 0 sails can provide a significant advantage for some boats that use them, embarrassing the intent of the USPHRF/LMPHRF Rule. Typical penalties are –3 sec/nm for a masthead rig with a 155% LP genoa and –6 to –9 sec/nm for a fractional rig with a masthead spinnaker and 107% LP jib. Penalties vary with the actual rig and how the sail is set while racing.

Cruising spinnakers, often called gennakers are allowed subject to the same restrictions as other headsails and/or asymmetric spinnakers.

Roller Furling Jibs may receive a credit. A boat that carries a luff roller furled head sail with the furling drum mounted above the deck may receive a 3 sec/nm credit. The headsail LP may not be greater than that allowed for a base handicap without penalty and no credit is applied for a headsail smaller than the maximum allowed. Except for a storm jib, the roller furled headsail must be the only headsail carried while racing. The sail may not be made of exotic material such as a scrim type membrane.

Under canvassed boats. Credit for under-canvassed boats is not awarded. USPHRF and LMPHRF handicap boats in racing trim and assume a 155% jib/genoa and no roller furled sails. When a boat is designed so that small headsails and roller furled sails mains or genoas/jibs are integral to it, the assigned handicap will consider this without application of a special credit.

Features of the Interior

The interior layout and appointments must be fully described. When an interior is judged by the owner to be unusual, or when it has been customized, photos may be used, but are not required.

Inspections

LMPHRF reserves the right to require verification by actual observation and measurement of hull, rig, sail plan and interior layout. The certificate may be withheld until verification is complete.

Unconventional Hulls, Novel Rigs and Sail plans

LMPHRF will deal with any non-standard monohull or multihull boat type or class. It is not the intention of LMPHRF to prohibit boats from racing with novel or unconventional hull and rig designs or built with non-standard materials. Handicaps will be generated for unconventional monohull and multihull boats that will reflect the unconventional design. Owners of boats with such rigs should be prepared to supply LMPHRF with relevant information to verify any unique claims made under this provision. In order for a boat with unconventional hull, novel rig or sail plan to be handicapped the boat must conform to the safety standards published by US SAILING and the ISAF OFFSHORE SPECIAL REGULATIONS GOVERNING OFFSHORE RACING FOR MONOHUILLS AND MULTIHULLS. Owners of unconventional boats must supply complete and detailed information to LMPHRF to receive a handicap under these provisions.

LMPHRF will handicap those boats that have declared moveable ballast, such as canting keel or other non-conforming appendages, and/or other than manual power for shifting such moveable ballast on their application. This will not apply to boats where moveable ballast and/or stored power are not an integral part of their basic design and associated class rules. RRS Rules 51 and 52 are amended per Rule 86.1(c) for boats that have declared this information on their application for a handicap certificate. A remark to this effect will appear on certificates for these boats as issued by LMPHRF with these words: "With reference to the LMPHRF RULE AND RELATED REGULATIONS this certificate is issued reflecting the application of RRS 86.1(c) modifying RRS 51 and RRS 52". LMPHRF will not handicap boats with trapezes in accordance with RRS 49 CREW POSITION.

Adjustments to a Base Handicap: Credits and Penalties

Credits and penalties, in seconds-per-nautical-mile, are added algebraically to assigned base handicaps for variations of or modifications to "standard" hull, rig, sail plan and interior layout. All modifications 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 certificate issued before boat races with the modification. Understand that LMPHRF assumes that modifications are made to increase speed. For example, a modification that results in a more favorable rating under another system such as IOR may result in a less-favorable handicap under LMPHRF.

The following general adjustments are applied to all boats currently registered and racing with LMPHRF certificates.

1. LP Adjustment: 155% of J, 0 sec./nm.; 155.1% to 165% of J, -3 sec./nm. greater than 165% of J, -6 sec./nm.
2. SPL Adjustment: Less than J, 0 sec./nm.. Each 6% or fraction thereof greater than J, -3 sec/nm
3. SMW Adjustment: Less than 180% of SPL, 0 sec./nm. Each 6% or fraction thereof greater than 180%, -3 sec./nm.
4. SL Adjustment: $.95\,(\sqrt{I^2 + J^2})$, 0 sec./nm. Each 6% or fraction thereof greater than SL, -3 sec./nm.
5. I Adjustment: Standard I, 0 sec./nm. Each 6% or fraction thereof greater than I, -3 sec./nm.
6. ISP Adustment: Standard I, 0 sec./nm.. Each 6% or fraction thereof greater that ISP, -3 sec./nm.
7. Mainsail Adjustments:
    a) Change to P or PY. Each 6% increase or fraction thereof, -3 sec./nm.
    b) Change to E or EY. Each 6% increase or fraction thereof, -3 sec./nm.
    c.) Full-length battens will not be penalized. Mainsails must be constructed within established limitations. Boats not in compliance will not be rated.
    d) Mainsails with girth measurements exceeding the maximum values up to 5% receive a -3 sec./nm. adjustment. Excessive girth mainsails are adjusted -6 sec./nm. depending upon the amound of increased girth.

8. Boom length adjustment: For an increase of 0.5% to 10% a -3 sec./nm. penalty is assessed; for an increase of 10.01% to 20% a -6 sec./nm. penalty is assessed.
9. Asymmetric area for boats with spinnaker poles. The asymmetric spinnaker area must not be greater than the area of the maximum sized symmetric spinnaker. Each 6% or fraction thereof greater than this standard, -3 sec./nm.
10. Auxiliary Power Propeller Adjustments:

Two or three blade folding or feathering propeller on an exposed shaft	no adjustment (0 sec./nm.)
Two bladed solid propeller on an exposed shaft	+6 sec./nm. (formally +3 sec./nm.)
Three bladed solid propeller on an exposed shaft	+9 sec./nm. (formally +6 sec./nm.)
Three bladed solid propeller in an aperture	+3 sec./nm.
Feathering or two bladed fixed propeller in an aperture	no adjustment (0 sec./nm).
Outboard fixed in well with two bladed solid propeller	+6 sec./nm.

Other specific adjustments include:

1. For each 6% increase in I or P a -3 sec/nm is assessed or -3 sec/nm for a 3% in I and P.
2. There is no penalty for using an asymmetrical spinnaker that is a component of a production boat's standard configuration.
3. When an asymmetrical and a symmetrical spinnaker are both used a -3 sec/nm penalty may be assessed.
4. When an asymmetrical spinnaker is the only spinnaker on the boat and flown from the bow without a pole or sprit, a +6 to +9 sec/nm credit may be awarded on a case by case basis.
5. Credit for a roller furling headsail of +3 sec/nm is awarded when it's LP is 155% or less and is the only headsail used in racing for the entire season declared in writing by application to LMPHRF. The rollerfurling drum must be above deck. Storm sails are excepted from this requirement.. This credit is not awarded to production boats that have roller furling as a standard.
6. Credit is awarded for mainsail luff roller furling of +6 sec/nm with no battens and positive roach or +3 sec/nm with battens and/or positive roach.
7. When a production boat normally has an aluminum mast and its mast is changed to a carbon fiber mast a penalty between -3 and -6 sec/nm is assessed depending on the relative size of the aluminum mast. Boats produced with carbon masts are not penalized since the base handicap takes into account this feature. There is no penalty for changing to a carbon fiber boom.
8. When shrouds or headstays other than wire or stainless steel rod are replaced by synthetic materials such as PBO a penalty will be assessed on a case by case basis unless all boats in the class have this feature. Backstays are excluded from this penalty structure.

Failure to report and verify hull parameters or rig and sail dimensions within a season: -6 sec./nm. Failure to verify dimensions in a successive season will inhibit the issuance of a certificate or invalidate an issued certificate.

If, for some reason, an owner does not wish to race within the LMPHRF Rules and Associated Regulations, the Council of Handicappers must be informed about *any* modifications or changes that are made. LMPHRF empirical handicaps are intended to provide equitable time allowances for monohull and multihull boats of

different designs racing against each other. Notwithstanding any of the foregoing rules, LMPHRF reserves the right to declare any boat exceptional and, then, either not provide a handicap or assign a handicap outside of the regular rules. Such a decision can be made only by the Technical Committee with the Chair of the Regional Handicappers Groups and must be approved by the Council of Handicappers.

Application of HCP Values in Time-On-Distance Scoring of Sailboat Races

The LMPHRF handicap (HCP) is the degree to which one boat design is potentially faster or slower than any other in seconds-per-nautical-mile. The LMPHRF handicap is based upon the nature of a boat's original design and any modifications to it. It is the information acquired from race results that enables the handicappers to determine the speed potential of one class or design in relation to the speed potential of any other class or boat type sailing in the same race. Analysis of consecutive race results aids the Handicap Council in its annual determination of the relative difference in speed potential among boats racing in the Lake Michigan region. Many other algorithms are also used to assist the Handicap Council in assigning a valid handicap for a particular class or boat type. HCP is a time on distance factor utilized in scoring competitive events.

The handicap or final time on distance sailing number or HCP assigned a boat is understood as the time in seconds for that boat to complete a one nautical mile race. HCP values are scaled in increments of 3 sec/nm. In practice, HCP values are applied to compute a time allowance for scoring a particular race by multiplying the HCP value assigned to all competing boats by the course distance. The product is a time allowance value (or finish time correction value) for each boat in the race. This computed time allowance, or correction, is subtracted from each boat's actual finish time, or its elapsed time, around the course, yielding a corrected finish time. Corrected finish times are ranked to determine the place for all boats racing together.

The HCP value assigned to a boat is not mathematically formulated for the boat based upon theory. HCP values are empirical estimates of speed potential in increments of three seconds-per-nautical-mile upon an overall interval scale with an arbitrary zero. HCP values may be positive or, now, negative with the modern advances in hull, rig and sail plan designs.

Application of HCP Values in Time-On-Time Scoring of Sailboat Races

A LMPHRF time correction factor (TCF) or time multiplication factor (TMF) is calculated using the following equation:

$$TCF = \frac{650}{550 + HCP}$$

The above is a general TCF value that works quite well for all events. Other computations are also available.

$$TCF = \frac{650}{650 + HCP}$$

The above produces a TCF that works quite well in windward-leeward events.

$$TCF = \frac{650}{450 + HCP}$$

The above produces a TCF value that works quite well in port-to-port events.

A corrected TOT finish is calculated by multiplying a boat's actual finish time by the TCF value. Corrected finish times for all boats racing together are ranked to determine the place. Time on time scoring sometimes works better that time-on distance score when:

1. the course distance cannot be accurately determined, or
2. the course is a windward/leeward course, or

3. the course is an exceptionally long port-to port course, or
4. the differential between the fastest boat and slowest boat in a section is more than 15 sec/nm, or
5. the wind is light and "fluky".

Application of HCP Values in small fleet intra-club casual racing

Performance handicaps work best when there is a small handicap range in each class or section. This is typically the case in small intra-club fleets where there are not many boat types. In the case where there are only a few boats with sailors of wide ranging abilities and boats with a wide range of handicapped potential speeds, the racing will be dominated almost every time by one or two boats. This leads to real unhappiness and the loss of boat owners from racing. One solution at club level racing is to employ "golf handicapping"

For small fleet intra-club racing, performance golf handicapping works just the way that golf handicapping works. The PHRF handicap is adjusted after each race based upon race performance. The technique is not designed for large fleet inter-club racing.

The way the golf handicapping system works for sailboat races involves picking a "reference boat", say the boat that corrected out 40 percent of the way down the fleet. Then the scorer calculates the seconds per mile that the other boats either beat or lost to this "reference boat". Take a small fraction of this delta (difference), say 10 percent, and lower the faster boats handicaps by this amount and raise the slower boats. By taking a small percentage the scorer does not make radical changes to a boat's handicap. The system does give more boats an opportunity to do well in any race.

If a boat is corrected significantly faster or slower than the "reference boat", say by 50 seconds per mile, nothing is done to the handicap. There has to be a reason for such a large delta. Adjustments to a golf base handicap will not be contaminated by this kind of unusual race result.

The golf handicap scheme is very simple to apply. It encourages small fleets to develop an active racing program where sailing competitively is fun. In the long run, golf handicaps will tend to even things out. It will still allow the expert to win overall, but makes competition tougher and perhaps develops new club champions.

Violating the LMPHRF Regulations and Rules

It is sometimes thought that since PHRF systems seem to have relatively few regulations and handicaps are not thought to be accurate anything goes. Handicaps are often thought to be assigned casually, but it is not so. Handicaps are systematically assigned using computational algorithms for analyzing race results and observations of on the water performance. Within the system accuracy is sufficient to lead to fair competitive racing.

An owner of a sailboat choosing to race under the LMPHRF Rules and Associated Regulations can do almost anything to the boat, but all changes must be documented and reported in writing to the Technical Committee Chair, the Chief Handicapper, and the Council of Handicappers through the office of the LMPHRF Executive Director. *No one modifies a boat to go slower!* When modifications are reported, an updated handicap can be quickly assigned. The idea basic to any empirical handicapping system such as PHRF is to have a large number of different types of boats race together with a handicap that attests to their different speed potentials utilized in scoring a competitive event. In order for this to work LMPHRF rules and associated regulations require boats to be handicapped and raced in "dhow boat" racing trim, as designed and manufactured. What this means is that internal ballast, all cushions, hatches, lockers, bunks, doors, tables, bulkheads, stoves, etc., that would be on the boat in order to sell it should be on board and functional when the boat is raced. . As an example internal ballast is a measurement value required by other rules, but often overlooked by owners racing under LMPHRF. Internal ballast is often removed. Removal of internal ballast is regarded as a design alteration that is forbidden.

If, for some reason, an owner does not wish to race this way, the Council of Handicappers must be informed about *any* modifications or changes that are made. *Unreported design alterations and/or removal of equipment to seek a competitive are forbidden.*

When changes are reported, the LMPHRF Council of Handicappers will adjust the base handicap consistent with the action taken by the owner who intends to regularly race with removed equipment or altered design. Also, it is not the boat owner's job to assess what is or is not a significant design alteration or removal of equipment. It is the task of the Council of Handicappers to make this judgment as they seek to determine a fair base handicap.

Failure to report design alterations, removal of equipment or other modifications so they can be reviewed is considered a serious violation that yields a substantial penalty and labels an owner as a cheat, or one who tries to get away with something in order to win a race.

Flagrant violations are not common. LMPHRF handicappers have found several boats over the years that have much larger sails or keel and rudder modifications than those actually specified in the owner's application for a handicap or on the handicap certificate. The Handicap Council views this as a flagrant violation and, in the past, has refused to ever again issue a certificate to owners who violate the LMPHRF rule and associated regulations in this way. Moreover, if an owner has a one-of-a-kind boat or "one-off" boat that raced under IOR, IMS, Offshore Rating Rule, IRC or MORC submittal of the measurement rating certificate may help the handicappers to assign a base handicap and resolve concerns It is expected that the boat will be raced in the same trim as was required for one of these ratings. If the owner does not wish to race in IOR, IMS, Offshore Rating Rule, IRC or MORC trim, the exact nature of any changes must be reported. Any shielding of modifications or changes to configurations of custom "one-offs" as delivered and originally described by their owners or failure to report them on a timely basis are regarded as a flagrant violation that may cause revocation and recall of a handicap certificate

Questions

Questions relating to this document may be addressed to LMPHRF by email (lmphrf@lmphrf.org) or mailed through the US Post Office to the LMPHRF Office (1135 Maricopa Drive; Oshkosh, WI 54904-8118)