

Sailing's Rating Rules

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Rating Rules are intended to promote the "Safe, Fun, and As Fair As Possible" competitive sport of sailing. Though you would think that is a simple matter, the history of rating rules shows it's not so easy.

Here's a short listing of rating rules that have come (and some gone).

Universal Rule – In 1902, the New York Yacht Club adopted a rating rule developed by Herreshoff. Its first simple form was $\text{Rating} = .18 \times ((L \times SA^{.5}) / D^{.333})$ which became known as the Universal Rule and, by 1906, was quite popular. However, such a simple rule can easily be beaten, so in order to plug the loopholes the rule became more and more complex. Still, it was used well into the 1930s in the J (130'), M (100'), P (60'), Q (50') and R (40') classes, each with a maximum rating under the rule.

Meter Rule – Similar to the Universal Rule, but designed in Europe (metric) and produced the America's Cup 12 Meters, plus 10 Meter, 8 meter and 6 Meters. Readers must note that there is no single measurement in any of these classes that gives them their name. Rather, the rating of "X" meters is developed from a complex formula of measurements taken off the yacht and, on top of that, there are limitations on beam, draft, mast height, etc. within each class.

CCA – Cruising Club of America rule; one of the first offshore rating rules developed in the 1922-32 time period and used extensively on the East Coast for races like the Bermuda Race; it reigned during the heyday of wooden boats. Here is a comment on it by famed designer Bob Perry: CCA boats can be generally characterized as having medium D/L's, long overhangs, moderate beam, slab sides, full ends and modest draft. The rigs are stumpy and for a while the CCA favored yawls as it did not measure sail area in flying sails carried between the masts. The short DWL's were intended to keep the measured length down and the overhangs were designed to get some of that sailing length back, hence their fullness. Ballast was heavily penalized so boats were built with heavy structure, tanks, cast iron and bronze floors etc. in the bilge that did not technically qualify as "ballast" but did the same job. It's kind of ironic that proportions we see today as "classic" were purely functions of the way the CCA measured boats.

History: The Founding of the CCA

The Cruising Club of America was launched in the winter of 1921-1922 by a handful of experienced offshore sailors interested in cruising and the development of the cruising type of yacht. It was felt that this branch of the sport never had attained the position it deserves in a country so rich in seagoing tradition and whose natural advantages are so peculiarly favorable to cruising, possibly because of the fact that there never had been any concerted action by cruising enthusiasts.

The yacht clubs of the country had made racing a large part of their activities and there were several inter-club associations devoted to the advancement of this branch of yachting, but there never had been in this country an organization comparable, for example, to the Royal

Cruising Club, which, in the forty years preceding the formation of our Cruising Club, had done so much toward making cruising a national institution in Great Britain.

William Nutting, using the Royal Cruising Club as a prototype, persuaded a group of yachtsmen to launch The Cruising Club of America. Shortly thereafter, Henry A. Wise Wood, a charter member, was requested to formulate ideas on the objectives and scope of the activities of our Club. The following are excerpts from his report:

"We have chosen the title, Cruising Club of America. In choosing this title did we mean to imply that we are the Cruising Club of the United States? or of the United States and Canada? or of all the Americas? As those to the north of us are our intimate friends, of our own sea-loving stock, it would seem to be too narrow a view of our field did we rate ourselves only a national organization. As we are an offshore club, composed of blue-water men whose playground lies well beyond the Volstead line, I suggest that we use in our title the word 'America' in its geographical and not in its political sense.

"Let us refuse stoutly to accumulate an on-shore contingent; let membership in the Club be a mark of achievement. This policy will give us standing at home and abroad such as no American yacht club ever has had. Besides, it will make of the Club burgee a bit of bunting that all afloat will respect, and that sea lovers everywhere will strive to possess. Thus we shall become an active force influencing others to make adventurous use of the sea."

The CCA Rule

By 1933 The Cruising Club of America was hard at work developing a satisfactory ocean racing rule, and that year announced a design contest to test the rule. Thus was the start of the long evolution of The CCA Rule, which endured and evolved for over fifty years.

CCA members have been leaders in the development of major ocean racing rules, including the CCA Rule, MHS/IMS, and now, the ORR.

IOR – International Offshore Rule 1970; The IOR rule encouraged wide short boats with limited stability. A narrow waterline and large beam on deck, combined with a high centre of gravity, meant that crew weight provided a significant proportion of stability at small heel angles, and boats had a relatively low angle of vanishing stability. Initially designs were heavy displacement, with a fine, often V shaped stern as well as a fine bow. These were powerful boats for sailing to windward, but had limited performance offwind as well as often having an alarming tendency to broach.

IMS - The **International Measurement System (IMS)** is a system of handicapping sailboats for the purpose of racing that replaced the earlier IOR system in the early 1990s. IMS was the first yacht racing rule developed around the central idea of a Velocity Prediction Program (VPP). A VPP is a very highly developed computer program that integrated continuous hullform information in order to predict a given boat's speed potential in a given wind velocity. Details on the VPP were openly available to the yachting community, in contrast to the earlier IOR system IMS is generally believed to have made significant leaps of progress forward from the IOR rule it displaced in terms of fairness and accuracy.

(Another source says: "IMS is a measurement rule. The boats are machine measured and the rating results from a VPP based on the measurement. It has been shown to be quite flawed. The

VPP seems to favor horrible slab-sided, high freeboard, low stability boats. At the highest levels it has become as bad as the IOR was. It is pretty much dead. I doubt another IMS boat will ever be built.”)

IMS racing declined seriously in the early 2000s. A raft of new technology developments in yacht design led to a situation where the very largest and most expensive yachts were able to gain a significant technology advantage which the rule was less able to account for. Smaller yacht owners began to feel unfairly disadvantaged under the rule and between 2003 and 2007 much handicap racing around the world changed to using the newer [IRC](#) rule.

However, an improved, revised version of IMS has been developed recently (2006-2008), known as the [Offshore Racing Congress \(ORC\)](#) rule. As of 2008 some major sailing clubs around the world are considering replacing IRC with ORC in their club activities, heralding a return to the IMS system in a more modern form.

ORC – Offshore Racing congress; The ORC was established in 1969 to create a single international handicap standard to combine the two pre-existing dominant handicap standards - that of the [Cruising Club of America](#) which covered North and South Americas, and the standard of the [Royal Ocean Racing Club](#) for Europe and the Antipodes.

The combined rule set, the [International Offshore Rule](#) or IOR, was initially successful. The ORC developed [International Measurement System](#) (IMS) in the early 1990s and it was widely used to the early 2000s. This made use of a [Velocity prediction program](#) or VPP. Whilst still maintained,^[1] the IMS has been largely superseded by the [Offshore Racing Congress Rule](#) in its 'International' and, more simple, 'Club' forms.^[2] These more recent rule sets are based on the same VPP as the IMS. The VPP is used "to rate boats of different characteristics in size, hull and appendages shape and configuration, stability, rig and sails measurement, propeller installation and many other details affecting their theoretical speed".^[2]

Along with the IMS, ORC International and ORC Club, the ORC is also the sole authority recognised by the [International Sailing Federation \(ISAF\)](#) for the administration of the ORC Grand Prix Classes Rules and the co-related Regulations, measurement and classes.^[3]

IRC – IRC is a system of [handicapping](#) sailboats and yachts for the purpose of racing. It is managed by the [Royal Ocean Racing Club](#) in the [United Kingdom](#) through their dedicated Rating Office.^[4]

Technically, IRC does not officially stand for anything. Originally, "IR" was an abbreviation for International Rule. However, since the Rule at that stage was not recognized under [International Rule \(sailing\)](#), that name was not permitted. So RORC simply decided to keep the initials as the name, and even after IRC received International Rule recognition, the name remained simply IRC.

The IRC rule is not published, meaning the only bodies capable of calculating an IRC rating are the RORC Rating Office and UNCL Centre de Calcul in Paris (they are joint owners of the Rule). This prevents designers from attempting to design 'to the rule'. The earlier [IOR](#) was published, and often amended, resulting in widespread criticism for several reasons. Firstly, as the rule effectively dictated the nature of boat designs, amendments to the rule could result in older designs gaining less favourable ratings compared to their real world speed, making racing competitively more expensive. Also, the pressure to produce designs which performed well under the rule resulted in designers producing yachts with certain dimensions intentionally

extreme, in order to gain an unfairly favourable rating. The production of yachts which were excessively light and beamy - what became the classic 'diamond' plan form of the IOR - was believed to impact safety, and was cited as a factor in the [1979 Fastnet race](#) disaster. In theory, the IRC avoids these problems.

ORR – Offshore Rating Rule; All yachts have different sailing characteristics depending on the conditions. The ORR uses a velocity prediction program (VPP) that predicts a particular boat's speed for each component of the course that is sailed in windward, reaching and running directions at varying wind speeds. Some regattas will have a VPP based on the weather conditions on the course. In other cases, the race authorities will pick an all-purpose VPP or even a windward leeward VPP depending on fair handicap scoring. ORR has developed a very sophisticated program to rate yachts fairly and is constantly being improved. Past experience with other rules has demonstrated that designers are adept at locating small loopholes in any rule and taking advantage of them and designing/modifying boats accordingly. By keeping the ORR rule non-public, that opportunity is minimized.

[Offshore Racing Association](#)

The CCA, along with the Chicago Yacht Club and the Transpacific Yacht Club, joined forces in the fall of 2004 in an alliance called the Offshore Racing Association. ORA was formed to promote and support the use of VPP-based handicapping and has undertaken the task of developing a new measurement-based rating rule that provides the fairest handicapping possible. CCA Technical Committee Chair Bill Langan is a principle in the Offshore Racing Association, and this new rule will be put to the test in the 100th anniversary of the Bermuda Race in June 2006.

PHRF - Performance Handicap Racing Fleet (PHRF) is a [handicapping](#) system used for [yacht racing](#) in North America. It allows dissimilar classes of [sailboats](#) to be raced against each other. The aim is to cancel out the inherent advantages and disadvantages of each class of boats, so that results reflect crew skill rather than equipment superiority. The handicap number assigned to a class of yachts is based on the yacht's speed relative to a theoretical yacht with a rating of 0. A yacht's handicap, or rating, is the number of seconds per mile traveled that the yacht in question should be behind the theoretical yacht. Most boats have a positive PHRF rating, but some very fast boats have a negative PHRF rating. If Boat A has a PHRF rating of 15 and Boat B has a rating of 30 and they compete on a 1 mile course, Boat A should finish approximately 15 seconds in front of Boat B. In most fleets there is no credit for lack of sailing skill or boat preparation. The handicap is based on the yacht being sailed by a top notch crew with the best equipment. The PHRF system handicaps yachts, not sailors.

PHRF History - To understand performance handicapping in Southern California, it is necessary to go back in time over 50 years to 1947. Imagine the yachting society of that era. World War II had ended only a few short years before. Fiberglass boats were still at least ten years away from initial production. The high aspect ratio sloop rig would not appear for a few more years. The yachts of that era were heavy displacement ketches and schooners, moderate displacement cruising sloops and yawls, sleek Meter boats, R-boats, and others.

The racing craft, when not actually engaged in class racing, raced against each other using one of the measurement handicapping systems of that time (all spin-offs of the Universal Rule developed by Nathaniel Herreshoff in 1901), primarily the Cruising Club of America (CCA) Rule

on the East Coast, and the Ocean Racing Fleet (ORF) Rule on the West Coast. One of a kind boats and non-racing craft were not rated. There was a need for a handicapping system that would rate all types and sizes of boats...a system that would be easy to administer at nominal cost.

Fast forward past an "Arbitrary Handicap Racing" rule to 1959. - Officers of the organization were proposed and a set of by-laws were drafted. The name of the new association was to be the **PACIFIC HANDICAP RACING FLEET (PHRF)**. A letter, dated August 1, 1959, invited each skipper listed in the Arbitrary Racing Fleet to the first official meeting, held at Cabrillo Beach Yacht Club. With 44 interested skippers in attendance, Chairman Frank Dair called the meeting to order officers were elected, and the by-laws were accepted. Elected officers were: President, Harry Wills; Vice President, Al Holland; Secretary, Charles T. Brown; Treasurer, Ken Street; and Fleet Handicapper, Frank Dair. The word "arbitrary" did not appear in the by-laws. Except in the case of a new boat, the handicaps were based on a boat's observed performance. Instead of one person handling all of the handicapping, an elected committee would rate the boats. Each year, new officers were elected. Annual dues were \$3.

1960 - Within one year of the first meeting, the membership grew to over 350. PHRF Ratings were used in the Newport Beach to Ensenada Race, instead of the Arbitrary Handicap Fleet Rating.

1970/71 - PHRF success attracted the attention of many yacht clubs throughout the U.S., and they made numerous inquiries for information. Peggy Gregory courteously mailed out the list of established ratings, with a brief rundown of how the system operated (over 90 organizations eventually asked for this information). It became apparent that a nationwide PHRF entity would eventually be formed.

1973 - The Pacific Handicap Racing Fleet officially changed its name to the PERFORMANCE HANDICAP RACING FLEET. PHRF racing began to appear in yachting centers worldwide. US-PHRF was formed and performance handicapping became a nationwide phenomenon, headquartered in Peggy Gregory's office.

1981 - - The fall United States Yacht Racing Union (USYRU) meeting held in St. Petersburg, FL was attended by US-PHRF President, Jim Foyer, Secretary, Peggy Gregory, and delegates from other PHRF regions. It was agreed that the USYRU would assume responsibility for US-PHRF.

1990 - On the recommendation of SCYA's USYRU Appeals Chairman, PHRF re-defined its existing "Policies and By-laws" to "Class Rules and By-laws" thereby making them enforceable standards as defined under USYRU Rules.

Compiled from various Google search links, and particularly Wikipedia. 12/13/13

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