

ORC

GUIDEBOOK

2016

**THE WORLD'S FASTEST GROWING RATING SYSTEM EXPLAINED
HOW ORC WORKS, FROM CERTIFICATES TO SCORING
GET YOUR PASSPORT TO BETTER RACING**

HOSTED BY THE ROYAL VANCOUVER YACHT CLUB AND THE LAHAINA YACHT CLUB



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COVER BY EILIKI PUKK/VOLVO ESTONIA ORC EUROPEAN CHAMPIONSHIP



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NORTH SAILS

WELCOME

EXPERIENCE CHANGE

It is with great pleasure that we at the Offshore Racing Congress present to you this new ORC Guidebook. You will find it informative and useful to learn about this system, which is used in more than 40 countries and 10,000 boats, making it the largest science-based rating system in the world.

This publication is intended for all sailors, race managers, event organizers, measurers, media, and everyone else who has an interest in learning about how the ORC rating system brings competitive and fair racing to a wide variety of boat types, from small sportboats to enormous superyachts. Our four key features in achieving such success is through the use of science, transparency to all rules and policies and open to user input, flexible options in ratings and scoring, and being affordable and applicable toward most boat types.

Since 1969 ORC has been dedicated to providing a professionally managed system of measurement and rating rule development for the big-boat racing community



to ensure there is an accurate, consistent and transparent means of delivering fair handicaps to promote fair and competitive racing. This is for all levels — Grand Prix and club-level racing alike — because everyone wants fair racing.

The recent surge in the growth and popularity of our rule system and the immense popularity of our continental and world championship regattas show that our system is working well. We invite you to come out and race using ORC to experience it for yourself.

We also hope, whether you are trying ORC for the first time or are just looking to understand more of what you may already know, that this Guidebook serves as a good resource for your understanding of this system.

We wish you the very best luck in pursuing fast, safe and competitive sailing.

Bruno Finzi

CHAIRMAN, OFFSHORE RACING CONGRESS





A PROVEN SYSTEM

BY DOBBS DAVIS

The need for fair handicap ratings between different boats of different types is as old as the sport of sailing itself, and in this long history there have been numerous approaches to solving this problem. These solutions can be broadly grouped into two different styles: empirical methods that rate boats based on observed performance, and rating rules that try to model performance around measured parameters and the formulations that then use that measured data to devise handicaps.

In each approach there are two ways to work the problem: in secrecy, where the data and measurements required for the rule may be revealed but not the formulations to devise the handicaps, or with transparency, where all data, formulations

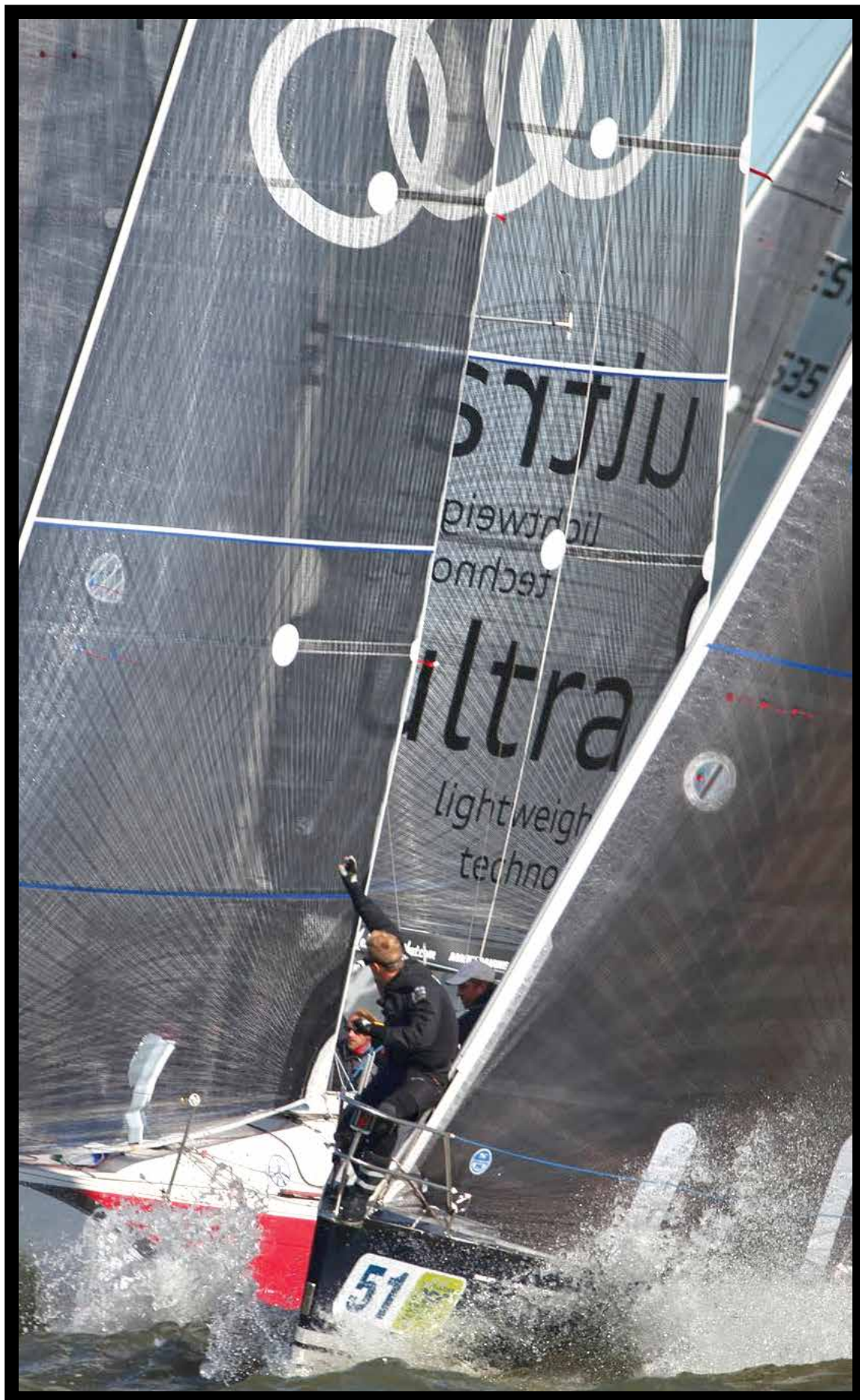
and rating methods are open to evaluate.

The secret approach is justified by rating authorities who believe users seek loopholes and exploit the rule system to design and build so-called "rule-beaters" that will win out of proportion to the abilities of their crews. By giving themselves the authority to change the rules in secret, these authorities can control any design trends they deem unfavorable to the health of their fleet. In doing so, however, they may also be biased and in favor of the boat types they feel are best for their fleet.

Secret systems therefore allow limited access to their data to try and prevent exercises in reverse engineering the rule formulations to determine what features are needed in the design of a "rule-beater." An open approach allows access and promotes it to try and accommodate a wide range of designs, to measure and understand them, and with input from users, to rate them fairly using the best tools available.

The Offshore Racing Congress, since its inception in 1969, has embraced this open approach. Using the best available science from aero- and hydrodynamics, coupled with the insights from yacht designers, race managers and sailors, ORC has developed and managed rating systems for use with nearly every type of monohull. Starting with IOR, then IMS, and now the ORC International, ORC Club and ORC Superyacht systems, ORC has grown annually for the past several years to be the largest measurement-based system in the world, used in more than 40 countries. In 2015, ORC rating offices issued more than 10,000 certificates worldwide.

The success and growth of this system is due to several factors, beginning with accuracy and relevance. The system is producing race results that make sense, rewarding the teams that sail their boats with the most skill. It's been successful across a broad array of boat types, whether grand-prix racers, cruiser/



At Quantum Key West Race Week 2016, the Storm Trysail Club used ORC Club for two classes in lieu of PHRF in order to get more objective and consistent ratings without having to convene a consortium as in years past. At the high-level ORC Championship events, such as the 2015 Volvo Estonia ORC European Championship in Parnu, the entry lists are growing every year with large fleets of both production and custom boats enjoying close competitive racing. Since 2011, every ORC World Championship has had 100 entries or more, and at this year's event at the Royal Danish YC in Copenhagen that figure may exceed 150 entries.



“The success and growth of this system is due to several factors, beginning with accuracy and relevance.”

racers, old and new designs alike.

Consistency is another hallmark of ORC. The VPP-based system is objective and universal, with no local variations determined by regional rule committees. Recognition by World Sailing as an International Rating System also ensures high standards of consistency worldwide.

Accessibility is important for owners and that means easy access to all ORC rules and policies, which are published and online at the ORC website. Online applications can be made for ORC Club and ORC Super Yacht certificates. ORC's Sailor Services website is also a unique online database with a free registered log-in that allows access to more than 90,000 measurement records from boats measured for the ORC and IMS rules, and free copies of any valid ORC Club and ORCi certificates issued by

any rating office dating back to 2009. For a small fee for each, Sailor Services also allows users to use an existing record of any boat's certificate and edit measurements to run a test certificate, get an ORC Speed Guide of polar performance data, or get a Target Speed Card showing upwind and downwind angles and boatspeeds specific to your boat on a windward or leeward leg of an inshore course.

Flexibility, of course, allows the system to flourish and meet the demands of wide variety of owners, organizers and programs. ORC certificates offer a variety of rating options, and these can be as simple or as complex as desired by the race managers. These can be expressed in either Time on Time or Time on Distance, tailored for specific types of racecourses or condensed into simplified ratings to work across a range of

wind speeds and angles.

The system is **Adaptable**: On each ORC certificate are non-spinnaker and double-handed rating options for when the boat may be raced in these modes without full crew, and even with full crew the crew weight can be entered to more accurately calculate a rating from the default value generated by the system.

There's **Local Support** for the system in that rating offices are located in each country so that response to the customer base is fast and relevant to the needs of the local fleets.

As a result there's **Excellence** in race management. Because ORC's rule is open and published, World Sailing confers on ORC the right to hold an annual ORC World Championship, where the highest standards of rule and race management apply. These standards have been developed and refined by ORC for the past 30 years in the organization's "Green Book," which is managed and updated each year with input from race organizers and sailors to produce the best possible events for handicap racing. Having Green Book standards also gives organizers the criteria needed to bid for the right to host future championship event. Currently, bids are stretched out two years in advance, giving sailors the chance to plan their racing programs well in advance.

Technical progress on rule improvement is made through research performed by the International Technical Committee, whose members represent some of the brightest minds in design and technology today. The ITC meets three times each year to work on rule changes that benefit rating accuracy for the entire ORC fleet.

Most importantly, the system is managed by a **Professional** administrative staff based in Europe and the United States, providing several important functions: implementing seminars on measurement, scoring and race management, assisting at events with scoring and race management, providing support for rating offices, and conducting rule analysis and respond to requests for rule improvement proposals. The staffs also develop, program and manage the software tools used for measurement, rating calculations and scoring, as well as provide communication services to educate and promote rule use.

YOUR PATHWAY TO A CERTIFICATE

THE TWO MOST COMMON ORC CERTIFICATES - ORC Club and ORC International – use the same VPP engine to generate the ratings, but have different levels of measurement input for their accuracy. For ORCi, its simple: everything must be measured before a Rating office will issue a certificate, and the services of a certified measurer are required to get these measurements. The result is a certificate with accurate ratings and which is good for all ORC racing worldwide at any level.

ORC Club is intended for local and regional-level races because the rating accuracy is only as high as the measurement input used to generate the certificate. Anyone can apply for an ORC Club certificate online at www.orc.org/clubcertificate and use the best information they have available from a variety of sources. When this information is not available, then default values are used which are designed to give the boat the least favorable rating – measurement is therefore encouraged whenever possible. Your local ORC Rating office will issue certificates and be a valuable resource for questions related to measurement, measurers and certificate process and cost. Consult the Notice of Race to determine which level ORC certificate is required for racing.

ORC CLUB

1. Gather measurement data for boat, sails, and rig. Best sources are (in order of quality):
 - Local certified measurer or class representative - for sails, sailmaker measurements
 - ORR full-measured certificate or sistership data found in ORC certificates in Sailor Services
 - IRC endorsed, ORR partial-measured or CSA certificates
 - ORC Club or IRC non-endorsed certificates
 - PHRF certificates
 - Product literature from builder
2. Enter data to online application at www.orc.org/clubapplication. If in the US, pay for certificate at www.orc.org/usa.
3. Data is received by ORC, sent to local rating office for review.
4. Rating office issues certificate and it gets uploaded to ORC database and retrievable online in Sailor Services

ORC INTERNATIONAL

1. Gather measurement data for boat, sails, and rig. Sources must be:
 - Local certified measurer
 - For sails, sailmaker measurements accepted
 - ORR full-measured certificate for the same boat
 - IRC endorsed or CSA measurement data accepted, plus additional measurements needed from a measurer
2. Data submitted by measurer to rating office, along with payment of any processing and measurement fees.
3. Rating office reviews data to ensure completeness and quality.
4. Rating office issues certificate and it gets uploaded to ORC database and retrievable online in Sailor Services. Because ORCi certificates are based on verifiable measurements and not estimates of defaults, they may be used in races and events that use ORC Club, but not vice versa.

FREQUENTLY ASKED QUESTIONS

Q What do race organizers do with certificate data?

A In structuring classes for events, organizers look at boat type and General Purpose Handicap or CDL figure to understand the speed and sailing style of the boat.

Q Can I compare my ORC rating to other systems?

A No, because other systems use different assumptions to arrive at their ratings. However, ORC's variety of rating options specified to course types, windspeeds, etc., are useful to see how ratings can vary between boat types across different windspeeds and directions.

Q How are ORC Club and ORCi certificates different?

A The VPP used for all ORC certificates is the same. However, because the data used in an ORC Club certificate may not be complete, the system then uses default data when measured data is not provided. This default data is designed to give the least favorable rating, therefore, the more measured provided the more an ORC Club certificate will resemble the accuracy of an ORCi certificate, which has only measured data.

Q Will my boat require re-measurement every year?

A No, unless changes are made to your boat, its rig, sails or stability, in which case you should contact the Rating office. Certificates do, however, require re-validation every year.

Q If the ORC VPP is updated every year, does that mean my rating changes yearly?

A Possibly, but the changes made to improve accuracy often affect the entire fleet so that there is often very little change between boats from one year to the next.

Q How much do ORC certificates cost?

A ORC charges each rating office a levy of 42 euro (about \$45) for each Club certificate issued, and €0 for each ORCi certificate, with the difference in retail price being determined by the rating office. For 2016 in the US, ORC Club certificates are \$100 for US Sailing members. Any measurement service fees are exclusive of this certificate pricing.

Much more information is available at www.orc.org

SCORING CHOICES

SCORING SPORTBOATS TO SUPERYACHTS

As a result of having the complete matrix of predicted boat speeds at various wind strengths and directions, ORC rating systems can provide a variety of methods to calculate corrected time. Scoring options offered include the most sophisticated, where the boat's performance is taken into consideration depending on the wind conditions, but also simple scoring options using single number scoring coefficients in either Time on Time or Time On Distance formats. Simple scoring options also include Performance line as a combination of Time on Time and Time on Distance. There is also the Triple number system that uses three different Time on Time coefficients to be used in light, medium and heavy breezes. All simple scoring options are also given for either inshore or offshore races.

This wide variety of scoring options may look complex, but it is actually one of the strengths of the ORC rating systems to offer race managers a variety to choose from that best suits their fleet, their race type and their race conditions. The factors race managers should consider when choosing which scoring type to use include:

Type and level of the fleet — it's better to use simple systems for club-level racing.

Type of race — windward/leeward or an offshore race

The difference between fastest and slowest boat — it's important to know how to divide classes and to combine entries for overall prizes.

Prevailing weather conditions — are they steady or variable during the race. Local preference of a particular type — For example, ToT or ToD, is there current in the area, and can it be predicted - if not, then ToT is better than ToD.

Because the ORC VPP can predict

the performance potential of different boat types, in theory it can rate them fairly against each other in any range of wind conditions and course types. In this way the Performance Curve Scoring option is the most accurate and can make handicap yacht scoring significantly more fair than any simplified scoring approach. This is the style used at ORC Championship events.

When used correctly, the differences in



corrected times calculated by ORC scoring options are often very small. In fact, it is not uncommon in a typical ORC Championship event of seven to nine races to have several ties in corrected time. This shows that these close margins reflect the differences in how each team reaches its potential to race the course in their boat type, and not how the boat itself rates in the handicap system. The use of ORC science thus equalizes all teams so that the race becomes a measure of their own potential to win.

ORC offers PC-based scoring programs (such as CyAltura and a new ORC program being offered soon) available for race managers to download from the ORC website, in addition to several other web-based programs also capable of scoring races using ORC ratings, including Manage2Sail, Velum and Yacht Scoring.

Each scoring type is explained in greater details in the ORC Rating Rules and on the ORC website at www.orc.org/scoring.

USING THE POWER OF THE ORC VPP with some slight modifications, a wide variety of other boat types can be rated. These include the ORC Sportboat class of high-performance boats from 19 to 30 feet, and the Superyacht class of boats of 99 feet and larger. The former typically compete in lakes and other protected inshore areas, whereas the latter compete both inshore and in short offshore races, often in exotic locales.

Sportboats are a fast-evolving class of boats that include series-built as well as a handful of custom designs that can use ORC ratings to race together when one-design racing isn't available. They race mostly locally, but many are trailerable and also hit the road to participate in championship events that attract entries from several countries. Sportboats have typically been scored using the Triple Number system.

With more than 100 superyachts competing around the world, the Super Yacht Racing Association and ORC have set up a rule system (ORCsyl) dedicated to rate these large and complex yachts that have proven difficult to handicap, until now. With a management and measurement team dedicated to service this high-profile class, an enormous variety of boat types have been rated successfully, from sloops to schooners that range from 50 to 600 tons in displacement. ORCsyl ratings use a matrix of eight possible time-on-time values calculated for light, light to moderate, moderate to strong and strong wind speeds raced on either flat or rough sea states.

ORC One-Design certificates are also available for select classes, which are found at www.orc.org/onedesign.



SAILOR SERVICES: YOUR ONLINE PORTAL TO THE ORC SYSTEM

BEING AN OPEN AND TRANSPARENT RATING SYSTEM

requires access to all its parts, and ORC's unique Sailor Services portal provides this for one of the most complex aspects of the system: the measurements and certificates for the tens of thousands of boats worldwide that have or have had ORC certificates issued in the past 20 years or more. Currently there are over 90,000 records in this database.

This service is designed to give boat owners, skippers, and other interested parties such as measurers, race organizers and sailmakers an opportunity to do the following:

- Search the online ORC certificate and boats database to access and get copies of any ORC Club or ORC International certificate issued by any Rating Office since 2009. The database also includes the available legacy IMS boat measurement data of the last 20 years.

- Download the measurement data from any boat in the database to edit its measurements of boat, rig, or sails (or also stability for ORCi certificates).

- Acquire an ORC Club or ORC International Test certificate calculated by the ORC VPP software.

- Maintain "My Boats," a personalized list of entries of certificate data to be reviewed and edited as needed, kept in an online folder.

A customized ORC Speed Guide output of polar performance data or a Target Speed card can also be generated using either existing measurement data of the certificate or by changing some measurements as may be appropriate. This feature is accessible from My Boats.

This service is a powerful tool that is intended to allow the user to research the rating change effect of simple changes to sails, rig, crew weight or other parameters, and to gain access to boat certificates in the ORC database.

This service does not, however, have all the functions possible through a Rating Office, such as exploring the effect of changes to the offset file (for changes in the hull or appendages) or righting moment changes for Club certificates. For these contact either your Rating Office or a naval architect who may have the ORC DVP software.

These various services are offered using a credit-based secure accounting system vended through PayPal. Discount pricing is available for large credit purchases.

Currently, test certificates cost about \$10 each, Target Speeds are \$10 each, and Speed Guides are about \$50, except when run off a test certificate, where they are \$40. All certificate copies are offered for free.

Also note that test certificates are not valid for racing. Your local ORC Rating Office must issue these.

THERE IS NO GREATER LITMUS TEST

for a rating system than having the best sailors in the game use it at an event where there is a mix of inshore and offshore racing to determine an overall winner among their peers. The system has to hold up to the intense pressure brought to it by highly competitive and resourceful sailors who will want to exploit any flaw in their quest for victory.

This happens every year at the ORC World Championship, a week-long event sanctioned by World Sailing which changes in location yearly yet still manages to attract well over 100 teams from dozens of countries to compete for the right to be crowned as a World Champion in each of three classes. ORC also has a policy to recognize the top all-amateur teams with Corinthian division prizes as well.

"The ORC Worlds are considered the pinnacle of big-boat competition for many racers," says Wolfgang Schaefer, who has been in several roles over the years as a sailor, regatta organizer and lately a Vice President of ORC who still competes regularly on his Farr 40 *Struntje Light*. "Because these are open events, they bring a tremendous variety of both people and boat types, from the most amateur teams racing their cruiser/racers to the most professional teams racing custom carbon boats. I think the worlds regattas have become very attractive and popular because of this, which has made the competition both very high in quality, yet also very accessible even for the club-based teams."

Another important factor for the success of the ORC Worlds events is the long history ORC has had in setting suitable standards for regatta organizers to host an event that will be fair, fun and competitive at the same time. ORC's championship rules and standards are contained within the pages of the *Green Book*, so-called for its long 40-year history of being published with a green cover and used regularly as an important reference tool for regatta structures and standards. Like all ORC rules, the *Green Book* is updated yearly with input from sailors and organizers to reflect the most current trends in how offshore sailors want to race.

For example, even though most big boat racing has reverted to being held on windward-leeward courses in the last few decades, the *Green Book* requires organizers to have some minimal number of offshore races of prescribed length to test their offshore skills as well. In some race areas this is preferred to be two short offshore races, whereas in oth-

The 2015 ORC World Championship in Barcelona hosted teams for a week of inshore and offshore racing along the scenic Costa Brava. The fleet was divided into three classes, with 23 teams in Class A, 38 in Class B and 35 in Class C. The majority of the fleet was production racer/cruisers. The custom race boats populated Class A. Crews were from 22 countries, including from as far away as the USA, Ecuador, Brazil and Peru,



WORLDS

with about half being composed of all-Group 1 (amateur) sailors. In a competitive series characterized by light to moderate conditions, the Class A World Champion by 1 point was Alberto Rossi's TP52 *Enfant Terrible*, the Class B World Champion was Pedro Campos's Club Swan 42 *Movistar*, and the Class C World Champion was Guiseppe Giuffre's Italia 9.98 *Low Noise II*.





TOGETHER



MARIA MUÑOZ SAILINGSHOTS/ BARCELONA ORC WORLD CHAMPIONSHIP (4)





Diversity is on display at the 2015 ORC World Championships in Barcelona where grand-prix TP52s and custom builds race alongside production racer/cruisers.

MARIA MUÑOZ SAILINGSHOTS/ BARCELONA ORC WORLD CHAMPIONSHIP

ers one long overnight race will suffice. These rules also specify numerous other details, such as scoring, class splits, protocols for measurement controls, etc.

"The *Green Book* helps define our standards to really help organizers and race committees know how to plan a world-class regatta," says Paolo Massarini, Offshore Classes and Events Chairman at ORC. Massarini is a well-honed veteran of years of international offshore racing but also has many years experience in organizing classes, events and race projects ranging from the Admirals Cup to the America's Cup, and from the GP42 to the Wally and ORC Superyacht classes. "When the standards are clear, then the sailors can also know what to anticipate in coming to an ORC championship regatta. Even though the regatta may be held in Finland, Italy, or even Korea, the *Green Book* rules make their planning and participation much easier, which I think helps contribute to the popularity of ORC events."

One U.S.-based sailor who has experienced this first-hand is Andrew Holdsworth from San Francisco. He took delivery of his Danish-built XP-38 *Extreme Ways* before the ORC World Championship in Kiel, Germany in July 2014 and competed in this event that featured a record 150 entries from 19 countries. He and his team did well for their first time at the Worlds, finishing ninth in Class B populated by 29 mostly similar 40- to 45-foot production racer/cruisers.

And in 2015 he was in Barcelona for the World Championship, where he won the Trofeo de Godo tune-up regatta but slipped deeper into the pack in a highly-competitive Class B in the main event, finishing 11th in a class of 38 entries, 1 point away from the top 10. Holdsworth is in preparation for the European Championship in Porto Carras, Greece, and shares his views on ORC regattas and how they compare with what he's experienced in the United States.

"These events are really fantastic," says Holdsworth. "The level of organization, the competition, the ambience on the water and on the docks are all superb, well worth it for me to come here and race. Even though we are racing under handicaps, the level is still very high and if you make one slip it shows in your results. In this way I think ORC is a very fair system because it does reward those who do well on the water and not just those who have the right boat type."

“The *Green Book* helps define our standards to really help organizers and race committees know how to plan a world-class regatta.”



**Giuseppe
Giuffrè's Italia
9.98 Low Noise
// won its 35-
boat Class C at
the ORC World
Championship,
edging out a pair
of well-sailed
designs from
X-Yachts in the
top-three.**

Holdsworth has a technical background and so he appreciates how the system rates almost all features of the boat, its sails and crew to create a fair rating.

“From an engineer’s perspective, this VPP approach makes perfect sense since it takes into account multiple features of the boat,” he says. “The rule seems very fair and the system seems to work well. When we took delivery of our boat in Kiel, we had just a short time to get it measured, set it up to the tuning guide, do some practicing, then go racing. When we sailed well we got good results, which was gratifying for us.”

One important feature of ORC championships is the rigor of measurement control necessary to ensure fair racing. All boats must have fully-measured ORC International certificates, they must pass equipment and safety inspections before racing, and at any time during racing they could be called in by the measurement control team and re-measured to ensure compliance with their certificate. This includes the boat and the sails as well as the crew, whose weight total can be declared at any value but is calculated into the rating.

“This system was developed over many years of pressure from the high-level regattas,

like the Admiral’s Cup and Sardinia Cup, when there was much more deliberate bending of the rules,” says ORC Chief Measurer Nicola Sironi. “There can be many reasons a boat can be out of trim, from the occasional random error to the deliberate oversight, so we want the penalties to be fair and proportional. If there is an honest error, we want to first clear it up and keep the boat sailing.”

The accuracy of these measurements directly relate to the accuracy in the ratings, which in turn affect the results – and when races in ORC championship events are routinely won and lost by only seconds in corrected time, this amplifies the need for strong measurement control.

The other important element is race management and proper use of the scoring tools ORC uses to calculate results. For the inshore races at ORC championship-level regattas, Performance Curve Scoring is used – this is complex but accurate system that uses the full power of the ORC VPP to evaluate how a boat performs relative to its rated potential.

At the Worlds this system is producing incredibly close results, commensurate with the ability levels of the crews and how they sail the course irrespective of their boat type. The

proof of this is that it’s not uncommon in ORC championships to have full-race boats to be sharing the podium with production racer/cruisers.

What is the downside of ORC championship events? Their popularity.

Holdsworth says when there are 30 to 40 boats on the start line, it’s critical to find a lane, hold it, and get to the favored side if there is one, like any other big-fleet experience. “In Barcelona because the bigger boats could have just enough edge to bounce us away from the favored side, and we’d have to struggle in the traffic,” he says. “In Kiel the sides were not so favored, and by playing a few shifts you could get back in the game more easily. So crowd control is important.”

And big crowds can also present other race management issues, such as recalls, course changes, etc., but ORC and their partner clubs at the Worlds have the top professional race managers, as well as multiple course areas, to create playing fields that are as fair as possible.

With 150 entries expected in 2016 at the Worlds venue in Copenhagen, and a similar turnout anticipated for Trieste in 2017, this may be a common feature to ORC Worlds racing for years to come.



Planting the Seed

From its vantage point overlooking Rhode Island's Newport Harbor, the New York YC enjoys a sweeping perspective of modern yachting.

Moored in the panorama are one-designs, custom race boats, classics, and performance cruisers. The challenge before the club's handicap racing and rules committee today, of course, is how best to accommodate them all, to the satisfaction of the owners and their crews. For its marquee summer event, Race Week at Newport Presented by Rolex, the club has embarked on a summer of exploration using ORC Club for its Navigators Racing class, replacing PHRF.

"We did an internal study and looked at all the current rating protocols, which gave us the incentive to want to know more about ORC," says NYYC's Phil Lotz. "We wanted to explore more about VPP-based rules that could do time on distance. We decided to use the summer this year to at least do due diligence with ORC on the racecourse."

To implement they asked PHRF entrants to obtain OCR Club certificates and IRC entrants to get ORCi certificates (and discounted entry fees to accommodate the added cost to owners). They will "shadow score" the fleet in order to get a better understanding of how it works and what resources are needed.

Storm Trysail Club's use of ORC for 2016

Quantum Key West Race Week was much more of a leap of faith, but STC's Richard Neville says it was necessary in order to continue to attract non-one-design competitors to the iconic wintertime regatta. With PHRF entrants dwindling over the years, the club adopted ORC Club as a low-cost PHRF alternative for competitors. The introduction to the U.S. racing audience was less-than-perfect, Neville admits, with scoring errors and unexpected outliers in the fleet causing consternation. It was, however, a simpler alternative to the event's consortium, which was created to better handle PHRF ratings of boats traveling in from outside region.

"Noting was working in South Florida and the regatta's PHRF numbers were dropping," says Neville. "The only alternative we saw was ORC Club, which is priced the same as a PHRF certificate and has a database to back it up. We gave it a try and it went reasonably well."

Like the New York YC, Storm Trysail identifies a need to improve the American handicap racing landscape, and will therefore offer it again in Key West in 2017. "It's a good solution for the type of program that wants to go to Key West and race under a proper handicap rule," says Neville. "The competitors [in 2016] were very receptive to it and it has potential to grow."

For the past two years Jay Tyson of the Chesapeake Cruiser-Racer Association has

been looking for solutions to get fair handicaps for a growing group of cruisers on the Chesapeake Bay whose local PHRF ratings were not reflecting the unique features common to these boat types. The style of racing these boats do is point-to-point races with a greater emphasis on fun than performance, but the results using the local handicaps were not satisfying.

"Bow thrusters, in-mast furling gear, and other features common to these boat types were just not being treated fairly," says Tyson, "so we came upon ORC as providing some solutions we could use that got us results which were much closer to reality, especially in light air for these heavy boats."

Tyson worked hard to get the members of the CRCA fleet to apply online for their ORC Club certificates, and using these and other sistership data taken from the Sailor Services website he dual-scored races using PHRF and ORC Club ratings.

"Jay has worked hard at getting the measurement data needed for boats not accustomed to racing," says Jonathan Bartlett of North Sails Chesapeake, "but the help of the ORC staff has been tremendous, as has the enthusiasm of the owners once they see how the results are better using this system. We expect it grow, since we've seen it bring both new racers into the game and people back into racing that have left due to unfair handicaps."

ORC CERTIFICATES

YOUR PASSPORT TO RACE

ORC certificates are summaries of the measurement and rating details, and come in two forms: ORC

Club and ORC International. The difference between the two is in the level of detail provided to the rating office: if the boat is fully measured, then an ORCi certificate may be issued. But if there are some measurements missing so that default values are used, then a Club certificate is generated.

The illustration shows an example of a Club certificate, which is on a single page with an optional second page, and can be translated into any language. This page contains all the rig and sail measurements available, accompanied by a proportional scaled boat drawing. Other measurement details and scoring options are listed in boxes on the page.

On ORCi certificates the scaled drawing is on the third page, with the first page being detailed rating data and the second page the detailed measurement data on the boat, sails, rig, and stability.

There is an optional second page to ORC Club certificates which shows time allowances expressed in seconds/mile for different wind conditions in the range of 6 to 20 knots of true wind speed for an optimum beat, and for over 52, 60, 75, 90, 110, 120, 135, 150 degrees of true wind angle to the optimum run.

For Club certificates, it's important to note that the accuracy of this performance information depends greatly on the quality of the input measurement data, and generally Club certificates are not as accurate as an ORCi certificate. Measurement data shown on certificates may be in either Metric or Imperial units.

Boat drawing: Proportional scaled boat drawing with rig and sail measure-

ments shown that match the certificate data. Details include:

- Rig features, such as number of spreaders, checkstay/runner pairs, shaded spar for carbon, mizzen if a split rig, etc.
- Bow and stern overhang styles to represent measurements of hull offset file

- Spar cross-section dimensions shown
- Mainsail, jib and spinnaker or gennaker dimensions and areas
- If a Code 0 is in the inventory, it is noted as Headsail set flying

BOAT		GPH	HULL	
Name	Bounty	504.0	Data File	USA/1266a.dat
Sail Nr	USA 61266		Offset File	SWAN6-
			Displacement	32,650kg
			LOA	20.12m
			MB	6.36m
			Draft	2.74m
			BAS Division	Cruiser/Racer
			Perf Accom	Yes
			Fiber Rigging	Construction: Cored
			Crew Arm Ext	Carbon Rudder
				Light Stanchions
			BSL	18.16m VCGD
			RL	13.51m VCGM
			LOA	17.78m Displacement/Length ratio
				5.649
			Water Ballast	0 Trim Tab
CLASS			CENTERBOARD	
Class	Swan 66		N/A	
Designer	Fries			
Builder	Nautor Swan			
Series	182007			
Age Date	01/2009			
Age Allowance	0.292%			
COMMENTS				
PROPELLER				
Installation	Shaft exposed	PRO 0.626		
Type	Feathering 3 blades	PPA 0.0953		
SCORING OPTIONS				
			OFFSHORE	INSHORE
			COASTAL / LONG DISTANCE	WINDWARD / LEEWARD
Time On Distance			489.9	556.2
Time On Time			1.2247	1.2137
Performance Line			PLT 0.759 PLD 0.8	PLT 0.920 PLD 143.5
Triple Number			Low 1.1287 Medium 1.5298 High 1.7604	Low 0.8570 Medium 1.2030 High 1.4391
SPECIAL SCORING				
Number		US6013		
Issued On		02/2016		
ORC Ref		USN0000184		
VPP Ver		2016 1.91		
Valid until		2/28/2017		
CREW WEIGHT				
Desired		1,000kg		
Default		1,560kg		
Non Manual Port		Yes		
Sails Limitations				
Headsails		7	Spinnakers	
Spinaker configuration				
Symmetric		No		
Asymmetric		Yes		
Flying H/S		No		
Spin. Pole		No		
Class Division Length				
CDL		15.809		
Stability				
LPS (Estimated)		126.0°		
Stability Index		136.0		
OSR Category		N/A		
Owner				
I certify that I understand my responsibilities under ORC Rules and Regulations				
Signature				



Official Leader in Rating Technology

2016

ORC Club Certificate Appendix

BOAT

Name **Bounty**
Sail Nr **USA 61266**

Certificate Number **US6013**
Issued On **6/2/2016**

TIME ALLOWANCES

Wind Velocity	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt
Best VMG	891.2	723.9	629.1	574.5	545.2	528.3	506.0
52°	570.7	470.9	412.3	383.7	372.2	366.1	359.8
60°	530.9	441.7	391.3	369.5	359.9	354.9	349.7
75°	497.7	417.3	376.7	358.9	348.5	340.8	332.7
90°	499.4	418.9	377.9	359.4	347.7	337.7	320.0
110°	529.4	430.3	377.6	355.4	341.9	333.8	318.9
120°	548.0	444.4	386.6	360.7	345.1	330.6	308.3
135°	619.7	495.4	423.0	380.1	358.8	344.3	315.2
150°	744.5	585.2	492.5	430.6	390.5	369.0	344.6
Run VMG	859.7	675.7	568.7	497.2	450.9	425.3	377.9

Selected Courses

Windward / Leeward	875.4	699.8	598.9	535.9	498.0	476.8	442.0
Circular Random	711.6	567.2	487.9	440.8	411.5	392.3	367.5
Ocean for PCS	884.5	672.9	552.1	477.7	429.4	396.3	352.0
Non Spinnaker	765.1	605.7	516.6	462.4	427.5	403.9	373.9

Velocity Prediction in Knots for True Wind Speeds

Wind Velocity	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt
Best Angles	44.8°	43.3°	42.7°	42.0°	40.8°	39.6°	38.6°
Best VMG	4.04	4.97	5.72	6.27	6.60	6.81	7.11
52°	6.31	7.64	8.73	9.38	9.87	9.83	10.01
60°	6.78	8.15	9.20	9.74	10.00	10.14	10.29
75°	7.23	8.63	9.56	10.03	10.33	10.56	10.82
90°	7.21	8.59	9.53	10.02	10.35	10.66	11.25
110°	6.80	8.37	9.53	10.13	10.53	10.79	11.29
120°	6.57	8.10	9.31	9.98	10.43	10.89	11.68
135°	5.81	7.27	8.51	9.47	10.03	10.46	11.42
150°	4.84	6.15	7.31	8.38	9.22	9.75	10.45
Run VMG	4.19	5.33	6.33	7.24	7.98	8.47	9.53
Gybe Angles	141.4°	144.6°	147.7°	148.1°	149.4°	150.8°	176.6°

- Roller-furled mainsail and/or jib graphic shown

- Sail number and name of the boat on the graphic

Rating office: Logo of the ORC rating office authority that issued the certificate. If a test certificate, this has the ORC logo with the words "Invalid for racing" noted in red. For some countries without a rating office, certificates can be issued by the ORC central office.

Crew weight: A default crew weight is calculated and listed here, but if preferred a declared crew weight can be made to more accurately rate the boat. There are no limits to the number of crew on board so long as the crew weight limit is not exceeded while racing.

Certificate: This lists ORC reference numbers and what version VPP is used. Because the VPP is improved each year, ORC certificates are valid only for the year shown on the certificate.

Special Scoring: Non-spinnaker GPH, Non-spinnaker Offshore Single Number, and Non-spinnaker performance line scoring options are shown in Time-on-Time and Time-on-Distance formats. When made active by the Rating office, this field may contain the boat's Double-handed ratings assuming a total crew weight of 170 kg.

Sail Limitations: The maximum number of allowable headsails (including Headsails set flying) and spinnakers to be on board while racing are shown here.

Spinnaker configuration: This shows the style of spinnakers and how they are flown on the boat, along with their maximum sail areas.

Class Division Length: CDL is the average of the effective sailing length (IMS L) and the rated length (RL) that is calculated from the upwind speed of the boat in a true wind speed of 12 knots. It is used to define class divisions in ORC re-

gattas based on a boat's upwind speed and length.

Stability: The Limit of Positive Stability (LPS) as measured or estimated is shown along with the Stability Index and the Category of the Offshore Special Regulations that the boat is eligible to race.

Scoring options: This summarizes the ratings for the boat using different scoring options. Simple options include Time on Distance (ToD) and Time on Time (ToT) single numbers for Offshore and Inshore (50 percent windward/50 percent leeward) courses, Performance Line scoring as a combination of ToT and ToD ratings, and Triple Number ratings for Low (less than 9 knots), Medium (9 to 15 knots) and High (greater than 15 knots) average wind strengths.

Centerboard: If there is a centerboard present, its dimensions are show here.

Propeller: The type of propeller and its installation style and dimensions are shown here.

Hull: Details on the primary dimensions of the hull and appendages in measurement trim. The IMS division is shown (Performance or Cruiser/Racer) depending on interior accommodations of series-built production boats. Dynamic Allowance is shown to characterize behavior in heavy seas or tacking, and details of materials used in the construction of the boat and its equipment (see IMS rules for more details). IMS Length, the Sink rate, Wetted Surface, and Rated Length are also shown.

Class: This summarizes the type of boat, its date of the launch of the first boat in the design series, and the age data of this boat's launch. Age allowance is also show, with a maximum credit given at 15 years.

Boat: The name and sail number of the boat as issued by the rating authority.

Comments: Any comments made by the Rating officer for this boat.

Owner: On official certificates the owner's details are shown here, but left blank for copies retrieved from the Sailor Services database.

EXCEL UNDER PRESSURE



Secret Mens Business - TP52 **Powered By Doyle Stratis ICE**

An entirely new fiber developed exclusively for Doyle, ICE combines the strength of Para-Aramids like Kevlar and Twaron, weight savings equivalent to 100% Carbon sails and an unmatched ability to resist flex fatigue. Stratis ICE is ready to deliver sails that will go the distance, time after time.

