

## FARR HORIZONS

*An inside look at our world of yacht design.*

### *New IRC Production Designs*

#### *IRC 41 by Austral Yachts*

The adoption of the IRC Rule at both club racing level and by some of the more legendary offshore events has sparked strong interest in boats that fair well under this single number handicap system. As a result of this interest, Farr Yacht Design received several commissions in 2004 for IRC oriented boats that allowed the team to embark on research work to understand the rule in some depth. While specific formulas used to determine the IRC ratings are not published, the style of boat favored by these formulas can be deduced by exploring various areas:

1. Examining the published rule policy.
2. Reviewing race results in great detail including those of our existing designs that have done well under IRC.
3. Applying to the rating office for trial certificates where variations in handicaps given for different design choices can be compared with VPP results.

A new 41-foot IRC design (D. 588) was commissioned by Austral Yachts in South Australia in a bid to offer the local market a quality cruiser/racer that could cope with the demands of real cruising off the Australian coast. The boat had to be a strong contender for handicap wins in both round the buoys and long distance events using IRC.

Austral Yachts have been producing boats for the Australian market for more than 30 years and are planning to expand their facilities and market area.

While IRC does have some clear trends, there is considerable freedom for the designer to develop superb hull shapes with favorable volume distributions, ideal appendage placements and good stability. Our team researched beam to

beam waterline ratios, LOA versus length waterline and other basic hull parameters over a wide range of boat sizes to find the right combinations. Heeled volume distribution and transom immersion effects were examined to give the boat good performance and handling over a wide range of weather conditions.

The keel is T-style with a lead bulb

supported by a cast iron fin to give the boat a low center of gravity and minimized wetted area. This arrangement also allows the rig and interior to be positioned for optimum hull center of buoyancy and produces a relatively simple structural solution.

The deck and interior have been



*FYD's new 41' IRC design for production build at Austral Yachts.*

*Continued next page...*

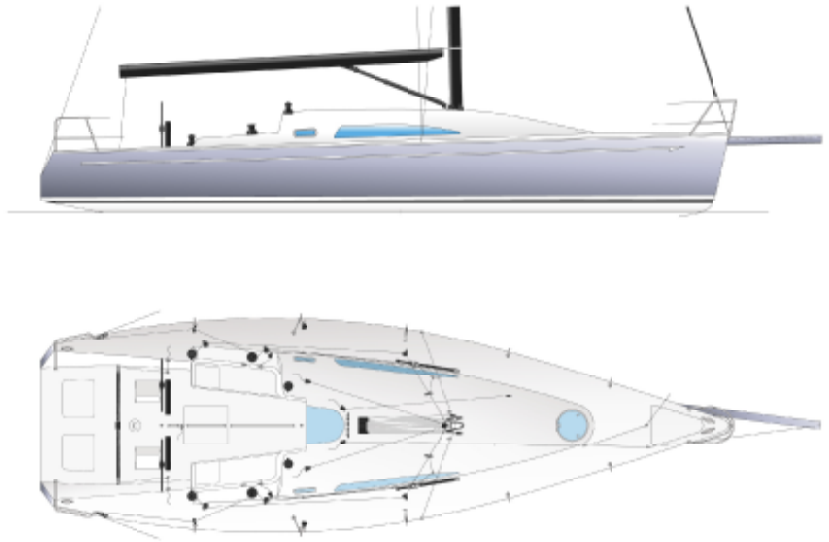
## *...IRC 41 continued*

designed around the dual requirements of comfortable, workable cruising accommodation and the necessary cockpit workspace for round the buoys maneuvers. A fairly standard and well-proven interior layout features a central saloon, berths forward and aft, galley to port, navigation station starboard and well-apportioned locker space. Options of double or single berths aft are available. The design of twin wheels afford the helmsman good viewing for sailing and offer a passage in the center of the cockpit for crew movement.

The rig is a standard 20-degree swept-spreader with the option of a prod or standard pole for downwind work. A carbon rig will be standard. Hull, deck and interior grid construction is in E-glass sandwich.

- ◆ LOA - 12.75m/41.8ft
- ◆ DWL - 11.34m/37.2ft
- ◆ Bmax - 3.94m/12.9ft
- ◆ Draft - 2.55m/8.4ft
- ◆ Displ - 7050kg/15540lbs

For more information on the new 41' IRC yacht, please contact Austral Yachts at Tel +61 8 8384 5487 or email [info@australyachts.com.au](mailto:info@australyachts.com.au).



*A deck layout perspective of the new IRC 41 by Austral*

## *New 33' for IRC Market*

Currently under development for Beneteau is a new 33 foot IRC yacht. This brand new FYD/Beneteau design collaboration will be presented at the Paris Boat Show in December 2006.

Stay tuned for updates in future Farr Horizons.

## *Hot New Contender for IRC*

Mick Cookson of Cookson Boats has recently launched the new Cookson 50 (our design #541) and is quite ecstatic about the end result.

The latest FYD/Cookson design effort is a 50 foot canting keel racer/cruiser that should appeal to the performance seeking sailor.

Mick has been testing the prototype in New Zealand and discovering even better ways to extract performance out of the unique canting keel with trim tab arrangement. The boat has displayed amazing all-around speed without the need for complicated canard or forward rudder systems that would occupy much interior space.

Mick is gearing up to build 10 of these well-appointed speedsters in 2005.

For more information, please contact [info@cooksonboats.co.nz](mailto:info@cooksonboats.co.nz).

- ◆ LOA - 15.24m/50.0ft
- ◆ DWL - 13.87m/45.5ft
- ◆ Bmax - 4.33m/14.2ft
- ◆ Draft - 3.00m/9.84ft
- ◆ Displ - 7000kg/15,432lbs



*The Cookson 50. Photo copyright Ivor Wilkins*

## Latest and Greatest Transpac 52 Design

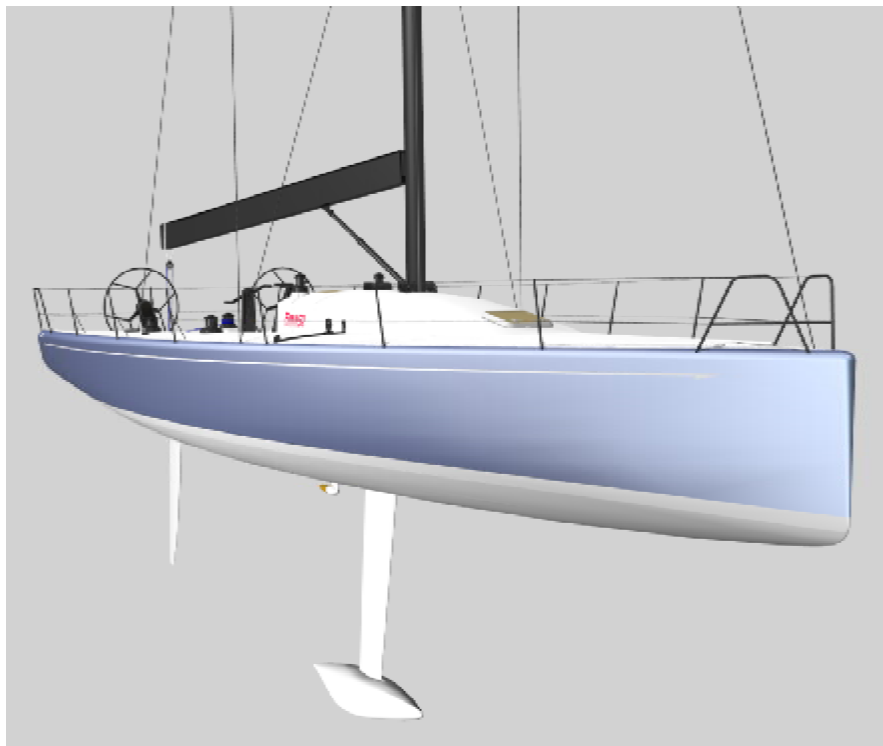
Our team has developed two new third generation Transpac 52 designs (#585 and #586) to compete in both European and US Transpac 52 competitions starting with the 2005 summer season. Commissions from a number of clients enabled FYD to pool together funds to significantly expand the research work originally conducted for designs #495 (*BEAU GESTE*) and #533 (*ESMERALDA*, *BRIGHT STAR*, *SJAMBOK*). This work coupled with the first hand experience of our design team crewing on the boats produced a wealth of knowledge to apply to the new designs.

Research for this program focused on the following areas:

- ◆ Beam optimization studies for the proposed venues/conditions
- ◆ Hull shape refinement
- ◆ Transom immersion and effective length studies
- ◆ Appendage sizing studies
- ◆ Foil and bulb shape optimization
- ◆ Review of existing boats performance and observations
- ◆ Deck layout refinements
- ◆ Construction refinements

Weather studies initially focused on Mediterranean venues and then were expanded to include US venues to explore if and how the designs should be adjusted to suit these areas. Design #585 was developed to meet the demands of a specific selection of Mediterranean venues; design #586 was developed to fit a broader mix of regatta conditions. This generation of designs has slightly narrower waterline beam and slightly wider maximum beam than our previous designs.

Within the “box” the Transpac 52 rule has few limits and allows the designer to apply their skills to developing the sweetest possible hull shape. Observations of our existing boats at various speeds and loading combined with the results of heeled and upright CFD studies have led us to make these new hulls more dinghy-like with straighter ends to maximize effective length at high speeds. Bow entry shapes were developed recognizing the



need for upwind performance in sometimes bumpy conditions while at the same time using the full length available in the “box”. For optimum performance in the wide range of conditions prevalent in the Mediterranean these new designs have minimized wetted surface and moderate beam for light winds yet transform into powerful, maximum length forms at high speed. Overall the shape will be slippery downwind and provide stability and good performance in upwind chop.

Appendage research and design applied the latest tools available to create better fin, bulb and rudder geometries. Great care was taken to position these relative to the rig to provide workable balance over a wide range of sail configurations and wind strengths. Bulb shapes have benefited from our previous wind tunnel, CFD and tank work for Volvo Round the World Race projects plus some new studies to make the fin and bulb complement each other for better lift/drag production.

The deck layout and cabin geometry have been designed to give working space for critical racing maneuvers and

sail changes and provide deck areas for efficient sheeting. A twin pedestal arrangement provides the necessary crew horsepower input for gybing and other racing maneuvers. Aft topsides at the transom have been whittled away to save weight and move the aft boundary of the working deck further forward. The wheels are set well outboard to give the helmsman the most effective driving position.

The interior arrangement has been simplified to its racing functionality. Structural detailing has been reviewed to reduce weight and maintain reliability. The resulting weight savings have been used to congregate weight centrally in the boat to reduce pitching inertia and allow some exchange of volumes between appendages and hull.

Rigs are fairly standard 20 degree swept spreader layout with a freestanding topmast without the “cathedral” style stay support system. The stay envelope has been carefully set out to achieve the most efficient sheeting of the overlapping code zero upwind sail. The mast has been designed to class rule minimum weight and VCG height.

## ***Building Updates***

### ***Wally 80 - Fast, Fun and Unforgettable***

The new Wally 80 has been receiving rave reviews in Europe and to date Wally Yachts have boats 4 and 5 under construction.

Sleek and innovative, the Wally 80 can be personalized with 16 different combinations of appendages, deck and interior packages. Appendage options include fixed, canting and lifting arrangements. Various deck styles offered are flush, deck house and the "terrace on the sea". Down below, the voluminous hull shape allows for three guest cabins with double bunks.

For more information, please visit [www.wallyyachts.com](http://www.wallyyachts.com).

### ***Farr 395 Back in Production. IRC Version Available***

Farr International recently announced the Farr 395 moulds were shipped to Argo Boats (Pty) Ltd. of Cape Town South Africa who recently commenced production of this fantastic racing yacht. The builder's facility is the same place where the South African Challenger for the America's Cup 2007 is being built.

The designers at our office are completing modifications to the original design that will enable the Farr 395 to be competitive under IRC. The design modifications include a new keel shape, smaller mainsail and spinnaker. The first hull will include these modifications and is slated to arrive in the U.S. by the end of May or early June.

Boating Partners Limited will market and sell the Farr 395 in the UK while Argo Boats handles the South African market. Farr International will be the master dealer covering the USA and the rest of the world.

For more information, please contact Farr International at Tel +1 410 268 1001 or by email [info@farr-int.com](mailto:info@farr-int.com).



*FYD designed the Wally 80's performance hull shape.*



*The modern interior on the Wally 80 was a design collaboration between Wally Yachts and Lazzarini Pickering.*

### ***Farr 85' at Latini Marine***

Recently FYD's Design Engineer Mark Bishop visited Latini Marine in Italy to inspect the construction of the Farr 85' (D. 535) high performance cruising yacht designed for Filippo Faruffini.

Mark reported the yacht was in a well advanced construction phase with all internal composite structure including the lifting keel tower in place. Internal finishing and painting had started in the forward areas and would continue aft. The integral tanks have been completed and successfully pressure tested.

The mechanical systems including tank piping, plumbing and electrical services have been installed and finishing services

are underway. Primary mechanical components such as the generator and engines are being installed. The deck lamination has been completed. Underdeck structure and services /line handling systems such as the halyard line tunnel are being installed. The external hull faring has been completed and a primer coat applied.

Anticipated launch date is scheduled for June/July 2005.

For more information, please contact Latini Marine at Tel +39 0774 355 486 or email [info@latinimarine.com](mailto:info@latinimarine.com).

*Building Updates continued on page 6*

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## Designer's Voice

### Visualization through Renderings

By Jean-Marc LeRoy, Designer

At the office of Farr Yacht Design, we utilize a number of different types of software to achieve various goals and objectives. When it comes to conveying ideas or introducing boats not yet built to the public, there is no match to the visualization and realism that a rendered 3D dimensional image has to offer. If you have seen our website, any of the recent Volvo Ocean Race publications or Beneteau ads for the new First 44.7 in your favorite sailing publication, you have seen samples of recently created renderings.

Base geometries for hulls, decks and appendages are designed using 3D modeling design software. Using this type of modeling allows designs to be put through design analysis, FEA (Finite Element Analysis) and hydrodynamic testing. When the final shapes have been created and are fully refined, they are assembled to form the key components that make the base of a rendering model.

Adding realism and dimensionality to an object is the end goal when it comes to renderings. In the past, images were created by the designer or artist who could produce perspective views of boats using pen and paper. Times have changed and pen and paper have been



*Perspective view of our Design #588 - IRC 41'*

replaced with mouse and monitor. These modern day tools produce a very high level of accuracy, which is hard to match, but a good hand rendered image does have a quality that is irreplaceable.

At times, the end product only needs to be a 2D profile line drawing with color and depth added to better define shape and form to get the design concept across. Other times a perspective view of the entire boat is needed to convey the proper information. Boat manufacturers find perspectives helpful to promote new products before the first one is built. In addition, individuals or teams seeking corporate sponsorship use these to aid their audiences to better visualize

the look of the latest racing machines. Whomever the viewer may be, the end goal is the same: to better understand what has not yet been built.

The software used to create images is a combination of a modeling program coupled with a rendering program. In our case, Rhinoceros 3D developed by McNeel and Associates is used. This is a NURBS (Non-Uniform Rational B-Splines) based program that mathematically represents 3D geometry accurately describing any shape from simple 2D lines and curves to more complex, organic 3D free-form surfaces or solid forms. This allows accurate and quick creations of surfaces in 3D that, when assembled, become parts such as winches, hatches, stanchions. Hulls, decks and appendages can also be created using Rhino 3D. Flamingo, which is also developed by McNeel, is a photometrical accurate rendering program that enables the application of different material properties to surfaces.

As the fast pace of software development continues its advancement, the quality and realism of images will only improve. Walk-through and fly-by videos of un-built objects almost seem commonplace now through virtual reality. Someday you may find yourself sailing along in an idyllic setting on a newly created Farr Yacht Design sailboat yet to be built.

Then again, sailing the real thing just can't be beat.



*Volvo Open 70 with groundplane and background properties (our Design #545).*

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## Designer Profile

### *Britton Ward* *Senior Naval Architect*



Senior Naval Architect and FYD Shareholder, Britton Ward was born in Montgomery, Alabama October 1973 and one year later emigrated with his family to Fremantle, Western Australia.

From an early age, Britt created designs such as houses, cars and boats. After completing some sailing courses at age 10, he began to sail competitively on Flying Ants in local and state events. Through to his teen years, Britt was heavily involved as a sailing instructor which also included boat upkeep and maintenance.

Australia II's win in the 1983 America's Cup had a big impact on Britt as he quickly realized the importance of sailing performance coupled with innovative design. By the 1987 America's Cup Defense in Perth, he was determined to become a Naval Architect in hope of working on an America's Cup design team.

While in high school, Britt took the opportunity to work in the marine industry at various work terms including a 2 week sea term on the Sail Training Ship Leeuwin and volunteering at West Australian Maritime Museum. He also assisted boat builders at laying of the keel for the HM Endeavour replica.

Britt learned of Webb Institute of Naval Architecture in New York and enrolled in 1991. Four years at Webb covered all aspects of Naval Architecture and Marine Engineering, but only allowed some limited exposure or direct application to Yacht Design. Work terms included working at Sparkman and Stephens in New York, assisting ACC Measurer Ken McAlpine in Australia, sailing as an Engine Cadet to Valdez, Alaska aboard an oil tanker and working as a welder and pipe-fitter at NASSCO shipyard in San Diego, CA. While at college, he was an active member of the collegiate sailing team competing at colleges along the Eastern seaboard and held offices as both Sailing Team Captain and Yacht Club Flag

Officer for many years.

Britt developed a sound appreciation for how important both artistry and technology are to producing well-balanced, high performance yacht designs while attending Webb. Upon graduating he felt it would be valuable to further round his engineering background in computational and experimental hydrodynamics and enrolled in the Ocean Engineering Department at MIT in Massachusetts. Graduating with a Masters in Ocean Engineering in 1996, he joined our team.

During his tenure, Britt has been an integral part of our research efforts for Whitbread/Volvo and America's Cup programs. He assumed the role of manager for the hull research program for both Oracle Racing's 2003 and 2007 America's Cup campaigns. He was also responsible for managing the Volvo Open 70 hull research project and assisting Volvo Event Management in the development of the new Volvo Open 70 Rule.

Some of his other responsibilities at FYD include; development of our Farr Yacht Design VPP, assisting with conceptual design and hull shape development, internal research and computer systems.

Britt is married to Jaye and has a 4 year old son named Hunter. He currently owns a Vanguard 15 (which unfortunately doesn't get sailed enough), however he does find time to sail with others regularly in Chesapeake Bay races.

## *Building Updates (cont.)*

### *Russian 42' Racing Yacht*

Non Commercial Partnership (NCP) in Russia have recently completed three 42 foot racing yachts built to our Design #534.

These yachts feature a twin wheel steering system and open transom. The lightweight carbon rig has swept back spreaders, large mainsail and non-overlapping headsails.

Down below, special interior finishes have been incorporated on each boat. Mahogany veneer was used in the bulkhead finishing of hull #1. Customization



*The new 42' racing yacht under sail.*



*Wood veneers warm the interior on the Russian 42' sailing yacht.*

of the interior of hull #2 included imitation leather draped on walls and bulkheads. Canadian cherry veneer with mahogany facings was used in hull #3.

NCP have recently announced hull #4 is under contract.

For more information, please email [tag\\_yacht@mail.ru](mailto:tag_yacht@mail.ru)

## Out and About

Farr Yacht Design team members have been trotting around the globe attending various regattas and boat shows.

In July 2004, President Russell Bowler and Vice President Bruce Farr both attended the Chicago Yacht Club's Race to Mackinac. Russell sailed on the TP52 **SJAMBOK** owned by Mike Brennan (D. 533) while Bruce participated in pre regatta practice aboard the TP52 **ESMERALDA** (D. 533). Makoto Uematsu's **ESMERALDA** won the Turbo Class and took home the coveted Mackinac Cup.

Palma de Mallorca welcomed many representatives from Farr Yacht Design for the prestigious Copa Del Rey. Senior Naval Architect Jim Schmicker joined the crew of the IMS 54 **CAM** (D. 539). The



*CAM, skippered by HRH Prince Felipe, is FYD latest IMS design effort.*

recently launched **CAM** placed 3<sup>rd</sup> in the IMS 500 class. Naval Architect Alon Finkelstein sailed aboard the Beneteau First 44.7 **SANTAANA** (D. 496). Bruce Farr and Senior Naval Architect Britton Ward also made a brief visit to Palma during the Copa del Rey. Though they did not participate in the regatta, Bruce and Britt did get the opportunity to watch the racing and cheer on the **CAM** team from a chase boat.

Design Production Manager Patrick Shaughnessy traveled to Sardinia in September to participate in the Maxi Yacht Rolex Cup. Patrick was a crewman aboard Carlo Puri's IMS 70 **ATALANTA II** (D. 490). While **ATALANTA II** did not have a podium finish, the Vismara 65 **MISTER A** (D. 487) placed first in the Cruising division.

Regatta attendance doesn't always earn us frequent flyer miles. The Screwpile Lighthouse Challenge, a re-



*Pictured left to right; Ann DeVilbiss, Bobbi Hobson and Jennifer Emmet out for an afternoon sail on a Beneteau First 36.7.*

gatta on the Chesapeake Bay, hosted Vice President Stephen Morris and Patrick Shaughnessy. Both sailed aboard Larry Bulman's **YELLOW JACKET** (D. 467) and the team took 2<sup>nd</sup> place in PHRF 1. Steve is a regular aboard **YELLOW JACKET**, while Patrick sails on several local Farr designed boats.

Designer Jean-Marc LeRoy spends most Wednesday nights aboard the Beneteau First 40.7 **DOWNTIME** (D. 354). Jean-Marc recently participated in the Annapolis Race Week and the Governor's Cup. Also taking part in Annapolis Race Week was Design Engineer Mark Bishop. Mark joined the crew of the Beneteau First 44.7 **MAGIC DRAGON** (D. 496).

The designers don't get to have all the fun! Secretary/Treasurer Bobbi Hobson, Executive Assistant Jennifer Emmet, and Administrative Assistant Ann DeVilbiss got to spend an afternoon cruising the Chesapeake on a Beneteau First 36.7 (D. 446). Design Engineer David Fornaro also joined the party along with Sue Hichens of Annapolis Yacht Sales.

Russell Bowler attended both the Farr 40 Worlds and Big Boat Series in San Francisco, CA to spectate the racing.

In early November Russell Bowler traveled to Les Sables d'Olonne for the start of the 2004 Vendee Globe. Russell attended in support of skipper Jean-Pierre Dick and the Open 60 **VIRBAC-PAPREC** (D. 498). **VIRBAC-PAPREC** represents Farr Yacht Design's first Open 60 effort.

During the months of October and November, Steve Morris and Patrick Shaughnessy again had the pleasure of crewing **YELLOW JACKET** on our own

Chesapeake Bay during the Tred Avon IMS Fall Finale in Oxford and the IMS Mid Atlantic Championships held in Annapolis. **YELLOW JACKET** placed 2<sup>nd</sup> in IMS 50 and 3<sup>rd</sup> in IMS 1 respectively.

January of 2005, found some of our staff members headed south to go sailing in the warmer climes. Patrick Shaughnessy was bowman on board Michael Brennan's TP52 **SJAMBOK** and won PHRF A in the 2005 Ft. Lauderdale to Key West Race. This is the feeder for the 2005 Key West Race Week (KWRW). For the series, **SJAMBOK** placed third in PHRF 1 with Patrick as bowman once again. Steve Morris and Jim Schmicker were also at KWRW. Jim was navigator on the winning PHRF 1 TP52, **ESMERALDA** owned by Makoto Uematsu. Steve sailed on **YELLOW JACKET**.

Between design work and sailing, many of our team members have also been busy attending various boat shows. Steve Morris attended the Newport Boat Show and Monaco Yacht Show. Russ Bowler traveled to Florida for the Ft. Lauderdale show. Of course the entire team made the rounds of our local Annapolis Boat Show.

Stay tuned for the next sailing events on the horizon. As always look for the FYD shirts and be sure to stop for a friendly chat!



*Steve Morris crews as much as possible on the Farr IMS 53 YELLOW JACKET, owned by Larry Bulman*

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## *News Flash!*

### *Farr Transpac 52's ESMERALDA and SJAMBOK break 2003 course record and top TP52 Class at the 2005 Pineapple Cup - Montego Bay Race.*

Mr. Makoto Uematsu's *ESMERALDA* and Mr. Mike Brennan's *SJAMBOK* placed 1st and 2nd in the TP52 Class with a mere 30 minutes between them. The third TP52 finished approximately 3 hours later.

The course record was broken by the first 9 finishers. *ESMERALDA* was second over the line finishing in 3d 5h 14m followed by *SJAMBOK* which finished in 3d 5h 45m.



*Mr. Makoto Uematsu, on board his  
Farr Transpac 52 ESMERALDA,  
surveys the rest of the fleet at Key West Race Week 2005.  
Photo Copyright Jack Hardway of Lighthouse Technologies*

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*We are pleased to  
announce Sailing World  
Magazine has bestowed  
the prestigious "Boat of  
the Year" award to the  
First 44.7 in the Racer/  
Cruiser Category.*