The Masthead

The Journal of the Westlawn Institute of Marine Technology

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WESTLAWN’S MOST SUBSTANTIAL GRANT AND SCHOLARSHIP PROGRAM EVER!

The Kathy & Jerry Wood Foundation Provides Generous Financial Support

The Westlawn Institute of Marine Technology is pleased to announce the most substantial grant and scholarship program the school has ever offered! For qualifying U.S. students, tuition will be effectively reduced to levels last seen in the early 1980s!

This program has been made possible by the generous support of the Kathy & Jerry Wood Foundation, which has committed to donating $90,000, at $30,000 per year for three years (2010, 2011 and 2012), to provide tuition assistance for all Westlawn students who are eligible. Grants and scholarships will be available until the donated funds are expended for a given year.

Mr. Jerry Wood dedicated much of his life to the support of boating and education. In fact, he established the Annapolis Sailing School in 1959, which soon became the largest commercial sailing school in the United States. With his wife Kathy, he went on to create the first in-the-water all-sailboat show, which revolutionized boat shows, and lead Kathy and Jerry to create the United States Powerboat Show—also in Annapolis—two years later. Over the years, the Wood’s businesses have employed over 3,000 young people and young adults helping to train and mentor them to prepare to move out into the world to become well-rounded mature individuals.

Westlawn’s parent company is The American Boat & Yacht Council (ABYC) based in Annapolis, MD. ABYC headquarters is within walking distance of the Annapolis Boat Show and is even closer to Kathy and Jerry’s former Annapolis home.

“The connections between Westlawn Institute and ABYC and the history and goals of Kathy and Jerry Wood, are remarkable,” said Sallie Hamrick, President of the Kathy and Jerry Wood Foundation. “Not only are both organizations dedicated to boating and education, but also to enhancing

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ABYC/Hargrave Grants for International Students
FREE AutoCAD, Deep Student Discounts on Software & Drafting Supplies — Page 2

Two New Instructors Join Westlawn — Page 3
boating safety and to encouraging our nation’s youth to pursue the enjoyment of boating and careers in the boating industry. We are particularly touched that Jerry and Kathy will continue to serve the boating community by helping students learn to design boats and yachts that will be joyfully used for generations to come.”

“Westlawn is extremely grateful to the Kathy and Jerry Wood Foundation,” noted Westlawn director Dave Gerr. “The scholarships and grants the Wood Foundation are making possible will be a tremendous help to our students, and it’s even more satisfying to know that we’ll be continuing the tradition that Kathy and Jerry Wood established both assisting in education and in supporting boating.”

“ABYC’s president, Skip Burdon, was instrumental in making the connections that resulted in this invaluable support,” continued Gerr. “It’s a perfect example of how important it is to be part of ABYC, and of the deep commitment that ABYC has to boating education and standards.”

For U.S. Citizens Only
Under the terms of the funding, the Kathy and Jerry Woods grants and scholarships can be awarded to U.S. citizens only.

Grants for Newly Enrolling Students:
All students, who are U.S. citizens, who meet Westlawn admission requirements, will be eligible for a $1,500 grant toward their tuition in Module 1 in the full Yacht & Boat Design Program, or toward the tuition for the Elements of Technical Boat Design course.

Regular tuition for one module (U.S. students, 2010) is $2,680. Students enrolling with a $1,500 Wood Foundation grant may either pay the entire tuition balance of $1,180, or they may elect to enroll under the zero-interest monthly payment plan as follows:

$660 initial payment followed by 10 monthly payments of $52.00 per month.

Scholarships for Academic Achievement
GPA of 90% or Higher
Scholarships will be awarded to current students, who are U.S. citizens, who are enrolling in the next module of study at Westlawn. Students with a GPA of 90% or higher will receive a $1,500 scholarship toward the tuition of their next module, upon enrollment in that module.

Regular tuition for one module (U.S. students, 2010) is $2,680. Students enrolling with a $1,500 Wood-Foundation academic scholarship may either pay the balance of $1,180, or they may elect to enroll under the zero-interest monthly payment plan as follows:

$660 initial payment followed by 10 monthly payments of $52.00 per month.

Scholarships for Academic Achievement
GPA between 85% and 89%
Scholarships will be awarded to current students, who are U.S. citizens, who are enrolling in the next module of study at Westlawn. Students with a GPA between 85% and 89% will receive a $1,000 scholarship toward the tuition of their next module, upon enrollment in that module.

Students enrolling with a $1,000 Wood-Foundation academic scholarship may either pay the balance of $1,680, or they may elect to enroll under the zero-interest monthly payment plan as follows:

$660 initial payment followed by 10 monthly payments of $102.00 per month.

All tuition payment amounts and terms will be adjusted to reflect any change in tuition applicable to new enrollments.

The scholarships granted for academic achievement with a GPA will be the “Wood Scholarships,” and the recipients will be known as “Wood Scholars.”

Scholarships and grants from funds donated by the Wood Foundation may not be applied retroactively, and may only be awarded for enrollments that occur after June 21, 2010.

ABYC/Hargrave Grants for International Students
Through the generous support of ABYC and of Hargrave Custom Yachts, students who are not U.S. citizens can enroll using the ABYC/Hargrave scholarship, with grants of $250 for each module until the funds are expended.

Be sure to specifically request the ABYC/Hargrave Scholarship on your enrollment forms.

FREE AutoCAD, Deep Student Discounts on Software & Drafting Supplies
Westlawn has arranged for FREE student AutoCAD and for deep discounts on Orca3D and Rhino packages, as well as for discounts on MaxSuf and ProSurf. General purpose software is also available at academic discounts.

Be sure to refer to the Westlawn student forum for complete details to take advantage of these substantial savings.
We are pleased to announce that two new instructors have joined our ranks. Both talented individuals are intimately familiar with the Westlawn design curriculum and bring with them extensive, real-world experience in boat design and construction.

**Nicholas Di Matteo**

An avid sailor, Nick was senior design engineer at Tom Fexas Yacht Design for over 20 years. He has exhaustive experience in all aspects of boat design from project management, to bid specifications, through detailed design, to construction, to acceptance trials and testing. A Westlawn graduate, Nick also has a bachelor's degree in electrical engineering.

Nick has worked on mechanical and electrical engineering projects with the U.S. Navy PERA (Planing and Engineering for Repairs and Alterations) as a subcontractor on naval frigates and destroyers. Before his work at Tom Fexas Yacht Design, Nick was an instructor at Westlawn so he brings many long years of Westlawn affiliation with him.

**Eric Holohan**

Graduating Westlawn in the shortest time of any student in the past decade, Eric has spent three years living aboard a 40-foot sailboat, and has 20 years of experience in restoration, construction, and maintenance of small craft. He is a Lloyds certified marine surveyor and an ABYC Marine Master Tech, with diesel, composite construction, and electrical certificates.

Eric has his Yacht Master Offshore and Ocean certificates, with a radar license, and SOLAS certificate. He has been working as an assistant designer to McCurdy & Rhodes, naval architects, and continues to assist in the current build of their 50-foot historical oyster dredger project. Holding a U.S. Coast Guard 6-pack license, Eric was awarded the Hargrave Scholarship for Westlawn modules 3 and 4.

We are very fortunate two have two such fine new instructors on our team and we know that they will further enhance the Westlawn learning experience. Please join us in welcoming them aboard.

Left: The current Westlawn faculty and staff in the Westlawn director's office.

From left to right: Dave Gerr, director; Nick Di Matteo, instructor; Patti Schulte, student services coordinator; Eric Holohan, instructor; Norm Nudelman, provost
Dear Westlawn Students, Alumni and ABYC Members:

As you have read in greater detail within this issue of The Masthead, both Westlawn and ABYC have great news to share with you. Westlawn has been awarded a significant grant for at least the next three years for the purpose of offering scholarships to students, who are U.S. citizens. The exact grant and scholarship amounts and the conditions of the program are spelled out in the cover story of this issue. I want to personally thank Sallie Hamrick, the president of the Kathy & Jerry Wood Foundation for making these funds available to Westlawn students.

ABYC has also been awarded a grant of $55,000 in year one and at least an additional $20,000 for years two and three from the Kathy & Jerry Wood Foundation for the purpose of supporting an ABYC-based high school marine technology program and marine center of excellence. ABYC has elected to work directly with The Center of Applied Technology South (CAT South), an Ann Arundel County public secondary school in Edgewater, Maryland, to develop a model marine technology program that can be replicated across the country. It is envisioned that CAT South will use ABYC’s secondary school curriculum guidelines, text, workbooks, system simulators and equipments using in-part the funds awarded under the grant.

Kathy and Jerry Wood were the founders of the first in-water sailboat show in the United States, which was hosted in Annapolis, Maryland. Eventually, they worked to establish both the Annapolis Powerboat and Sailboat shows as two of the premier in-water shows in the United States. Kathy and Jerry also established the first sailboat school on the Chesapeake Bay. After their passing, I was fortunate enough to rent their former home on the Back Creek for eighteen months, three blocks from the ABYC headquarters, before my wife and I moved to the Chase Creek along the Severn River, in Arnold, Maryland.

Lastly, I want to inform you that after careful consideration by the ABYC Board of Directors and senior ABYC staff, starting with the July 2010 edition, the primary means of accessing ABYC standards will be WebSTIR; the 24/7 online electronic format. All members will have access to WebSTIR on the ‘Members Only’ side of the ABYC website. This decision was made after analyzing multiple factors including: ‘standards’ delivery trends across industries and around the globe; set-up, printing, and processing costs for both paper and CD versions; and our environmental obligation to support and promote an eco-conscious business model. For Westlawn students WebSTIR has always been your primary access method to the standards. However, in July you will now have access to the newly formatted version of WebSTIR that, among other things, contains additional features and documents at no additional charge; such as the updated USCG’s Rules and Regulations, the USCG Compliance Guidelines, the new EPA emissions regulations, and all the changes made in the ABYC Standards since 2003. Also, you’ll now be able to cut, paste and copy individual standards.

That’s about it from my end. Work and study hard, but also – make sure you find time to enjoy the summer with your family and friends. It’s all a balancing act!

Thanks for your time!

Skip Burdon
President, ABYC

ABYC’s Mission Statement

The Council’s mission is to develop quality technical practices and engineering standards for the design, construction, maintenance and repair of small craft with reference to their safety.

The Council shall also disseminate these standards and be the principal source of related technical information and education for the marine industry.
The 92-ft. sailing catamaran Totem is designed primarily as a modern styled world cruiser with occasional racing in mind. This design can be built both in composite and aluminum. The first boat is to be built of composite materials. It is a very comfortable boat with flybridge and accommodations for 14 people. 113-ft. carbon-fiber mast and 12-ft. deep, high-aspect-ratio, retractable dagger boards combined with state of the art hull design will insure top-notch performance.

CUSTOM TENDER

The 33- to 36-ft. custom tender is intended for large expedition megayachts. Designed to comply with the rules of nature rather than just classification-society rules, this boat is capable of surviving the most demanding and rigorous sea and wind conditions. It is a search and rescue (SAR) boat designed to save lives on the high seas. With seven watertight compartments, it will float even if you cut it in half!

The boat is under construction in aluminum to the highest standards for workboats to comply with Lloyds G5 category. After months of designing and analysis, in the end we came up with a very simple boat. It is a straightforward deep-vee hull shape with 24-degree deadrise at the transom. Two different power options are available for the same boat. One is with Inboard diesel engines and jets, and the other one with gasoline outboard engines. Power plants for both cases are based on maximum 375 hp per engine or 435 hp per engine. Expected maximum speeds are up to 45 knots and cruising speeds of around 36 knots depending on propulsion configuration. The boat is self righting as well, with capacity to safely carry 12 people on board.

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Building on the success of their e33 performance daysailer, e Sailing Yachts is working with designers Persak & Wurmfeld and builder Lyman-Morse to bring two new boats to market next year.

**e27 compact daysailer**

e Sailing Yachts’ new e27 daysailer boasts elegant lines, a large comfortable cockpit, easy sail handling and gives nothing away in performance. This boat is designed for no-hassle sailing and is perfect for singlehanding. The sails can be easily raised and trimmed without winches. Her v-hull combined with high stability and high-lift foils will make for a fast, dry ride. A carbon-fiber mast with swept spreaders and no backstay allows for an ultra efficient flat top mainsail and easy to handle roller-furling headsail.

**e44 performance cruiser**

The e44 aims to set a new standard for performance cruising. Based on the many exciting design elements and features that have worked so brilliantly on the e33, the new e44 performance cruiser will exemplify our winning combination of performance, comfort and ease of handling. The innovative cockpit will feature a sail handling and lounging area as well as a below-deck traveler to maximize comfort and ease of use. Owners will enjoy a smartly designed, spacious and well appointed cabin, and may customize the layout to suit personal interests.

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Westlawn alumni are invited to submit drawings and renderings of designs for publication in *The Masthead* that are “On The Drawing Board.” Selection for publication is a the sole discretion of the Westlawn Institute of Marine Technology. Designs should be emailed to nnudelman@westlawn.edu
Kevin Dibley
Dibley Marine Ltd.

**DIBLEY 42 IRC**

As soon as you see the word IRC and connect it with any-thing between 38’ and 43’, you will be excused from thinking heavy production type lead mines. It is this type form that seems to do well under this rule and not until you get into the 48’ plus lengths that lighter displacement hull forms can start performing to the rating. The cost comparison of a TP 52 and a 42-footer both in build and the 52 campaign costs are far more than triple. We have a group of yachties out there that want their yacht to light up and fly, but are either forced to go heavy and slow to have any chance under IRC, or go to a different rule/ handicap system all together.

There is talk from the RORC that they are going to review this anomaly, but in the mean time we have to work with what we have.

Recently we were commissioned to do some preliminary work on a new IRC 42-footer. We needed to find out where to draw the line in the sand without having to go heavy displacement, but not so light that we ended up with a great design that could never race to her rating.

It had to perform well on the wind as well as light up on reaching conditions, which most of our coastal races are down here in Australia and New Zealand.

The first item on the job list was to review what was currently racing out there in this size range. We looked at designs that have had decent success in this size range. Designers such as Christian Stimson, Mills, Corby, Farr, Ker, as well as some of the production boats such as Beneteau. We then started looking at sail plans until we picked one that we thought was about right for the type of racing she will be doing, as well as for general comparison. Now, the real work began with hull modeling. Using our Maxsurf modeling software, we tried out different scenarios on weight, volume distribution, prismsmatics, measurement trim, and even looked outside the square with soft chines and other configurations. We ended up going through 16 different models. We then put the designs through our Wins-VPP software to work and from this we can see which yachts were coming out ahead of the others in various courses such as windward/leeward, Olympic, offshore, and circular random. Four stood out and from those, we started looking at appendage and sailplan changes, and how

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**SPECIFICATIONS:**

- **LOA**: 12.80m 42’-0”
- **LWL**: 11.70m 38’-4”
- **BEAM**: 3.98m 12’-9”
- **DRAFT**: 2.90m 9’-6”
- **DISPL**: 5875kg’s 12,950 lb.
- **IM**: 17.133m 56’-2”
- **J**: 5.00m 16’-4”
- **LP**: 5.25m 17’-3”
- **ISP**: 19.24m 63’-1”
- **STL**: 6.71m 22’-0”
- **P**: 17.30m 56’-9”
- **E**: 6.15m 20’-2”

Continued on Next Page
the VPPs changed accordingly. Our goal from the beginning was for a fast reaching yacht that could hold her own on the wind with similar racing yachts of her size. As we analyzed the data, we kept these stronger angles in mind.

We were now able to pick the top two yachts and from this we started looking at the IRC rating. IRC is a rating rule that is administered by the RORC rating office in England. It is used world wide. Though the rule is published and guidelines can be followed to ensure you keep within the spirit of the rule, the actual calculations of IRC ratings is kept secret and contains subjective elements that change annually. The only way a designer can 'crack' it as such, is to study the trends of previous and current yachts and to then guess where the rule may be heading the following year. The spirit of the rule requires that designers and owners not seek means of artificially reducing the rating of a boat. In other words, increasing performance without a corresponding increase in rating. In general, the RORC have done a great job in this, but of course it is the designers job to make the yacht as fast as possible within the rating. RORC allows designers to get a fixed number of trial certificates per boat per year so we can see how various changes affect the rating.

We went through that exercise to see how the two yachts rated against each other and from there we were able to see how our VPPs were able to deal with the rating given. It sounds like a lot of work to reach a goal, but that is our job. And though we come up with our own results and opinions on where the client should go, another design firm may came up with something completely different based on their own interpretations. This is what makes yacht designing so interesting. Every yacht has its day and every designer has their particular way and style.

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Patrick Bray
Bray Yacht Design and Research

Bray 42m Ocean Explorer

This long-range motoryacht is the solution to the specific needs of an intrepid aviator/yachtsman, who not only required a helicopter landing deck on board, but a hangar as well. We accomplished this and more in our wide-body design that has spacious accommodation for 10 guests and up to 10 crewmembers.

To be able to fit an EC 135 helicopter on a vessel this size is a tall order. To hangar it away in a fully-enclosed stowage space without folding the rotor blades (for the ultimate in convenience) adds a whole new dimension to the project. The innovative solution is a system that lowers the helicopter down into the hull and provides shallow trough-hatches for the blades. In this way the owner’s helicopter can be protected from the ravages of saltwater corrosion while providing an open adventure deck for onboard activities - or a landing space for other friends flying in for a visit.

The hangar system places the helicopter into what would typically be the central engine room space, but in this case the below-decks area is split into port and starboard mechanical bays either side of the hangar. Through the use of diesel-electric propulsion we were able to fit a standard shafted drive system with the electric motors mounted on the prop shafts below the sole plates. A standard diesel propulsion system utilizing Aquadrive couplings is also an option.

To further enhance the outdoor space, we have added a fold-down transom beach that, when lowered, reveals the full-width stairs to the main deck. These stairs are split on the centerline and may be lifted individually to access the large dinghy garage positioned aft of the hangar.

The lower deck accommodation space has four comfortable guest staterooms, each with full ensuite heads. Forward is the two-deck crew accommodation with separate cabins and heads as well as a crew lounge. This area has its own stairway from the lower deck up to the bridge with access at all three deck levels. The guests have their own three-deck stairway further aft. Across from the main-deck crew lounge and crew stairway is a large commercial galley. Directly aft are the owner's stateroom to port (featuring closet-wall and spacious ensuite) head and the dining room to starboard, both of which enjoy spectacular views from the oversize hull windows. Aft, the full-width salon features comfortable lounge areas with 270-degree views through the expansive windows and sliding-glass doors, which lead onto the aft adventure deck.

The upper deck has a large captain's cabin with complete head and direct access to the bridge. There is a settee for crew (or guest appearances)
Bray 42m Ocean Explorer continued from pg 9

and a well-appointed helm with four flat-screen monitors. Starboard and aft past a semi-circular bar the space opens into a large sky lounge that again takes advantage of oversize windows port, starboard, and aft to take in exceptional views. There is considerable open deck space both fore and aft.

The flybridge is left open for portable furniture with a hot tub/plunge pool and sunpads located forward. There is also a curved bar and bench seats for storage. Up a ladder will take you to the observation lookout also fitted with a bench seat, great for watching whales or spotting reefs.

Range for this vessel exceeds trans-Atlantic at 12-knot cruise, and she is easily capable of higher speeds for local cruising. The super fuel-efficient, semi-displacement hull form (a progression of our extensively tank-tested hull technology) ensures superior powering characteristics and seakeeping, giving this vessel double the range of stability of average vessels. Both bow and stern thrusters allow for dynamic positioning of the vessel and the fixed/active stabilizers provide zero-speed stabilization capability. The hull is a conically projected, double-chined form with wide spray knocker, flared bow, and a transom stern. The longitudinal framing system, with its wide-spaced transverse webs, gives maximum strength and ease of construction. Advanced technology appendages, including a bulbous bow, midship bulb, stern bulb, and propeller bi-foils, combine to further reduce resistance. This efficiency allows for a wider beam that results in a more spacious interior for the size of vessel, and makes her quite unique.

PRINCIPAL DIMENSIONS (approx.)
Length Overall 42m (137'-10")
Length Waterline 37.85M (124'-2")
Beam 10m (32'-10")
Draft 2.75m (9'-0")
Displacement (S.W.) 340 M Tonnes (750,000 lbs.)

CONSTRUCTION
Hull Construction Steel
Superstructure Construction Aluminium
Class ABS, MCA

TANKAGE
Fuel Capacity 37,850 L (10,000 US gal.)
Fresh Water Capacity 5,675 L (1,500 US gal.)
Grey & Waste Water Capacity 1,900 L (500 US gal. each)
New & Used lube oil storage 375 L (100 US gal. each)
Jet Fuel 5,000 L (1,320 US gal.)

MACHINERY
Main Engines (electric) 2 x 700 HP Intermittent rating
Gensets (diesels) 4 x 280 kw, 1 x 55 kw
Watermakers (reverse osmosis) 2 x 1,000 US gal. per day

POWERING PREDICTIONS (estimated)
12 knots: 2 x 220 HP fuel consumption 25.0 gal/hr range = 5000 naut. miles
14 knots: 2 x 490 HP fuel consumption 53.0 gal/hr range = 2600 naut. miles
15 knots: 2 x 640 HP fuel consumption 69 gal/hr range = 2000 naut. miles

STABILITY (half loaded, intact, estimated)
Positive righting arm past 160 degrees
Downflooding point past 60 degrees
GM = 4.5 ft.
Garveys are traditional workboats from the New Jersey shore. They have great stability, large carrying capacity, and high speed for a given power. This 20-footer is of tape-seam sheet plywood construction, glued with epoxy and sheathed with glass. Like most garveys, Bosun Garvey makes an ideal workboat or fishing boat. The unique garvey hull form is shown in the lines drawing below.

Richard Groene built the Bosun Garvey pictured here for his own use, and did a very nice job of finishing her off with varnish trim and a fine paint job. Many garveys are pure workboats, and Bosun could have been finished workboat plain.

Shoal draft and beachable, garveys are ideal thin-water boats. Bosun Garvey is at home amid the rushes, reeds, and mud flat yet still able along the coast in rough going.

LOA: 20 ft. - 2 in.
DWL: 16 ft. - 5 in.
Beam: 6 ft. - 3 in.
Draft (hull): 0 ft. - 5 in.
Speed: 21 knots with 40 hp
       26 knots with 60 hp
       35 knots with 120 hp

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Hull #50 of Billy Joel’s Shelter Island Runabouts launched on May 13th

Shelter Island, NY - Coecles Harbor Marine is proud to announce the launching of the 50th Shelter Island Runabout. Conceived by singer/songwriter Billy Joel and designed by Westlawn alumnus Doug Zurn, the first Runabout was built for Mr. Joel and launched in 1996. Hull #50 is for a second generation owner; his father launched hull #02 in 1997.

True to CH Marine's reputation for hand-made quality and a one of a kind approach to boatbuilding, hull #50 has a cockpit that was designed by the new owner and custom built for relaxed lounging. Even the hull color is unique, blended shade by shade until the owner was satisfied. You won't see another runabout like her!

Hull #50 is equipped with twin Yanmar 315 HP diesels and Teleflex electronic engine controls. Instrumentation features the ultra slick Northstar S000i touch screen GPS/chart plotter and both wired USB and bluetooth wireless supporting MP3 players including Apple's line of phone and music storage devices. Down below, the interior is painted in a soft off-white finish with satin varnished teak trim and a teak-and-holly cabin sole. The owner specified Dornbracht faucets in both the galley and head for that extra touch of elegance.

Top speed for the new vessel is 48 MPH with a cruise speed of 41 MPH. Typical fuel consumption is 11.2 GPH at 29 MPH (25 KTS), with a cruising range of 446 nautical miles at that speed.

Hull #50 shared shop space with a new 30' hard top Nomad being built for a seasoned, Rhode Island fisherman. The 30' Nomad is to be launched mid summer.

Know It All Contest Solution to the March 2010 Question
On Standard Hull Speed
By Dave Gerr, © 2010 Dave Gerr

The Know It All questions and correct answers are important design tips for students as well as other marine professionals. We suggest that you file them away for future reference.

The Question Was:
Standard hull speed—the theoretical maximum speed in knots that a displacement boat can go—is:

\[ \text{Knots} = 1.34 \times \sqrt{\text{Waterline Length, Ft.}} \]

If your Aimless Angler were, say, 25 feet on the waterline, its so-called hull speed would be 6.7 knots [square root of 25 ft. = 5, and 5 x 1.34 = 6.7 knots]. The “1.34” multiplier defines classic hull speed.

Where does the 1.34 multiplier for hull speed come from? What is the scientific reasoning behind it, and what is the mathematical derivation of so-called hull speed?

The Answer Is:
There were quite a few answers submitted for the March 2010 Know It All contest. Some most inventive derivations were sent in. Happily, three brainiacs got it right. Bob Johnson, Henry Zambrano, and Jim Lawson have thus achieved the august
Know It All Contest Solution  (continued)

You have a well-constructed, fiberglass-composite, 46-foot sailing catamaran, Two Tranquil. Beam overall is 26 feet and displacement is 6 tons. Tranquil’s cutter rig has a sail area, with 100% fore-triangle, of 1,100 square feet. The mast and rigging are rugged and properly stayed. Chainplates are strong and correctly aligned. Sail-handling gear is well thought out and sized appropriately. The center of effort of Tranquil’s sailplan is 29.4 feet above the DWL.

With regard to stability and sail-carrying power, is Two Tranquil suited to offshore cruising and why or why not?

Who Will Be The June 2010 Know It All Winner?

Email your answer to: nnudelman@westlawn.edu

Want to see how much you know? Want to show everyone else how much you know? The first three people to submit the correct answer to the following question will win a Westlawn tee shirt and cap, and will also receive a Know It All certificate. The answer and winners to be published in the next issue of The Masthead.

You have a well-constructed, fiberglass-composite, 46-foot sailing catamaran, Two Tranquil. Beam overall is 26 feet and displacement is 6 tons. Tranquil’s cutter rig has a sail area, with 100% fore-triangle, of 1,100 square feet. The mast and rigging are rugged and properly stayed. Chainplates are strong and correctly aligned. Sail-handling gear is well thought out and sized appropriately. The center of effort of Tranquil’s sailplan is 29.4 feet above the DWL.

With regard to stability and sail-carrying power, is Two Tranquil suited to offshore cruising and why or why not?
Westlawn alumnus Richard McBride is the principal designer at McBride Design. His career in boat design has evolved from a series of practical working experiences - work on fishing boats, as a contractor on major (and remote) road construction projects, as a deer-culler, miner, cattle musterer and even a dog handler/photographer in Antarctica. Add to that Richard's experience as a solo round-the-world yachtsman in the very first boat he built, the City of Dunedin, and you have a very practical thinker and problem solver. The long days on a boat, alone in a huge ocean, reinforced the importance of planning and attention to detail. "I spent hours feeling the way the water moved around that boat, pondering little changes I could make right away, and bigger things I might do differently the next time around. Boat design is all about constant review - listening to what the current boats are telling you, thinking about how to improve each little thing."

McBride Design is located in the Port of Nelson New Zealand, near the Nelson marina with its broad range of pleasure craft, and fishing port with its busy wharves serving deep sea, inshore and sheltered water fisheries. From the office, we can smell the sea, see and hear the cranes working on the port, and see across to the shipyard.

Over the years, McBride Design has worked on a range of different craft, from big motor launches to runabouts, fishing or rescue boats right through to yachts designed for fast and fun sailing. Although there are huge differences in style, they all embody our philosophy of strength and performance. We expect every one of our designs to perform up with the best vessels of their type.

McBride Design is a small company in which each boat is designed precisely...
for its purpose. We are sailors and sea-lovers, and at times have made our living on working boats - so we are intensely practical in our designs. This is a company about boats that work.

We design a variety of boats to match the customer's needs, and a high proportion of our work is commercial boat design. In the design of working boats, both looks and function are critical. Most working boats are used on a daily basis, whether for fishing, aquaculture (e.g. mussel harvesting), passenger transport, cargo, or as rescue boats.

We carefully consider the fuel efficiency and speed conundrum, alternative power systems, water and waste management on board, and crew comfort. In every case, it comes back to detail, designing a vessel which is fit for its purpose.

The Latitude was designed for fishing out of the Port of Grey-mouth with its notorious river bar. She proved to be a strong and stable vessel, and handled even the worst conditions.

Design 221 is a 17m schooner-rigged motor sailer, currently exploring in the North Atlantic.

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**Charlie Noble**

A Charley Noble is a galley smokestack often found on classic boats and yachts. It is believed that this item was named after Charles Noble, a British merchant vessel captain (circa 1850), who made a point of having his crew polish his ship's copper stack often in order to keep the it shiny bright. Crewmen dubbed the stack as the "Charley Noble" and it has been called that ever since.

Dave Gerr says, “Here’s a drawing and a photo. I'm not sure these are exactly Charlie Nobles though. Most people would call them Charlie Nobles (if they knew the term), but I seem to recall that a true Charlie Noble has the T or H shape. Maybe I'm mistaken? Do you know??”
The National Marine Manufacturers Association (NMMA) recently released its 2009 Recreational Boating Statistical Abstract providing an in-depth look at the state of the recreational boating industry.

Although there was an overall decrease in sales of 9 percent in 2009, total sales in the recreational marine industry still equaled $30.9 billion in the United States alone. This is a large and vital segment of the economy. What’s more, these figures don’t include commercial vessels of any type nor boats (recreational or commercial) outside the U.S., in Canada and the rest of the world.

The economy saw declines in new boat sales of 9 percent, but new boat and motor sales alone totaled $8.5 billion, even at a 24 percent decrease. Adult participation in boating in 2009 was just under 66 million, down from 70 million in 2008. Total boat and engine exports were $1.8 billion and imports were $1.2 billion, for a trade surplus of $567.4 million, down 34 percent from 2009, which had the largest trade surplus since NMMA began collecting data in 1996.

"There’s no question the declines in the U.S. and world economy in 2009 had a significant impact on new boat sales, however, our industry continues to find ways to position ourselves for future growth by adapting to the ever-changing economic landscape to help position our industry for growth in the coming years," says Thom Dammrich, NMMA president.

"Despite the new boat sales decreases we saw in 2009, there was strong participation, increases in sales at businesses that serve existing boaters and solid accessory sales - all indicators that boating is alive and well and boaters will continue to take to the water to enjoy the lifestyle even in trying economic times."

Source: National Marine Manufacturers Association Chicago (May 24, 2010)

**Registration for IBEX 2010 is open**
Dates are: September 28-30 2010. **New Location:** The Kentucky Exposition Center, Louisville, KY

Registration link: http://www.ibexshow.com/attendee-registration.php and be sure to review the Seminar Programs At A Glance.

This is the best show for Westlawn students. There are virtually no boats, but there is an enormous amount of marine hardware, equipment, machinery, boatbuilding materials, and much more. There are many seminars on all sorts of topics relevant to the marine professional. See the seminars link above to review the programs and see which ones interest you.

Admission is free and Westlawn students get 50% off on seminars! Be sure to bring your current Westlawn student ID card.

Be sure to stop by the Westlawn booth and say hello. Let us know if you’d like to have a student dinner on one of the evenings of the show.

See more about IBEX 2010 on page 33 of this issue of The Masthead.

**Plans for 34th America’s Cup**

BMW Oracle Racing, America’s Cup defender, and Mascalzone Latino, the challenger of record, have released information about the 34th Americas Cup regatta which most likely will be sailed in 2013 or 2014.

Protocol for the event will be issued by Aug. 31, and the rules concerning the design of the boats are to be released Sept. 30. The official notice of race as well as sailing instructions will be released by Dec. 31, and the local in which the race will take place will also be confirmed by this date.

The challenge period will be from Oct. 1 through Jan. 31, 2011.

The syndicates noted a strong case has been put forward by the Golden Gate Yacht Club of San Francisco to hold the race there since BMW Oracle sails under their burgee. However other sites in the U.S. and Europe are still being considered.

Source: Soundings Trade Only Today May 07, 2010

**Oil Spill Cleanup Tips For Boaters**

Yacht paint manufacturers Interlux and Awlgrip offer boaters in the affected areas the following tips to help clean contaminated boats.

**INTERLUX GUIDELINES:** TREATMENT OF ANTIFOULING CONTAMINATED WITH OIL: The surface of an antifouling paint that has become contaminated with oil can become “blocked” i.e. preventing the biocide from being released, which subsequently leads to premature fouling. It will also result in a contaminated layer that will make adhesion of new antifouling applications difficult.

Source: Soundings Trade Only Today May 07, 2010

Continued on Next Page
Cleaning of contaminated antifouling surfaces:

For hard polishing and ablative antifouling paints that have been heavily contaminated the best method to use when treating the bottom is to use a paint-stripper such as Interstrip 299e to remove all the pollution and the paint, then scrub the substrate using Fiberglass Surface Prep YMA601 and a coarse Scotch-Brite pad. Rinse with fresh water. Repeat until the surface is clean (when the water cascades off of the surface with no beading or separating). Allow the surface to dry thoroughly prior to re-painting. The same process is recommended on metal boats however to avoid corrosion the metal substrate should be prepared by grinding or blasting after the cleaning process and prior to priming. To aid adhesion apply InterProtect 2000E primer per label instructions.

Sanding or sand blasting a surface that still has oil on it may drive the oil into the surface and cause a loss of adhesion of the subsequent coats.

If the coating of oil is light, power wash and then use a household detergent with water to scrub off any pollution. Then scrub using Fiberglass Surface Prep YMA601 and a coarse Scotch-Brite pad and rinse thoroughly with fresh water. Let dry prior to re-painting. Polishing paints such as Micron Technology, may be re-launched without painting assuming the film thickness of remaining paint is adequate (2-3 mils dry after scrubbing) & the next application is scheduled within 5 months.

AWLGRIP GUIDELINES:
TREATMENT OF TOPCOATS CONTAMINATED WITH OIL

Cleaning of contaminated topcoat surfaces:

Contaminated topcoats should be cleaned as soon as practically possible to minimize the damaging effects of the crude. If the surface of a topcoat is contaminated with crude oil, staining and possible degradation of the topcoat may result from the acidic nature of the contaminant. The recommendations below apply to Awlgrip®, Awlcraft® 2000, and Interlux® Perfection topcoats. If there is any doubt of the type of surface in question always test a small area first.

In the case of heavy contamination, the material may be a thick, sticky tar-like material due to its exposure to the elements. It is recommended that these surfaces first be cleared by wipe down with T0016, T0170 or Mineral Spirits followed by power washing, and then cleaned with Awlwash® at a 4 oz./gallon level (or household liquid detergents such as Dawn). The detergent washing step of the cleaning process must be done in manageable areas. Each area should be then be thoroughly rinsed with plenty of clean water before moving on to the next. DO NOT allow detergent solutions to dry on the surface.

Hulls exhibiting ‘sheen’ contamination may be cleaned with the regular concentration levels of Awlwash, though they too may benefit from a prewash wipe down with T0016, T0170 or Mineral Spirits to loosen the film.

In both cases, it is recommended that the newly cleaned surface be protected from further contamination with application of Awlcare®.

IN ALL CASES:

Contaminated waste water should be collected per local marina guidelines, local authority regulations and/or Clean Water Act requirements. Collecting the water and the emulsified crude will prevent spreading of contamination. Crude and solvent contaminated wipes must also be disposed of in a responsible manner.

For further assistance, call Interlux Technical Service, 1-800.468.7589 or Awlgrip Technical Service, 1.888.355.3090. For more information about Interlux products, visit www.yachtpaint.com/usa. For more information about Awlgrip products, visit www.awlgrip.com.
and pent-up demand from consumers who delayed purchases during the downturn. Powerboats are expected to see the fastest gains in the boat category, after recording especially sharp declines in 2008 and 2009. Demand for powerboats will also support gains, since powerboats are less strenuous to handle and maneuver than sailing vessels.

Recreational Boating (published 05/2010, 351 pages) is available for $4,800 from The Freedonia Group, Inc., 767 Beta Drive, Cleveland, OH 44143-2326. For further details, contact Corinne Gangloff by phone 440.684.9600, fax 440.646.0484 or e-mail pr@freedoniagroup.com. Information may also be obtained through www.freedoniagroup.com

ABYC Marine Electrical Certification Course

This four-day ABYC course is designed for the experienced technician with at least 3 - 5 years experience working with marine electricity. The student needs to be very familiar with ABYC electrical standards. Course topics include electrical theory, lead-acid batteries, using a multi-meter, battery testing, generator sets, inverters, grounding and bonding systems, troubleshooting and more.

At the time of registration, each student will be shipped a study guide which should be studied prior to class along with the ABYC standards. The class concludes with a 200 question certification exam.

Who Should Attend This Class
• Boat Builders
• Marine Surveyors
• USCG Personnel
• Technicians
• Marina Personnel
• Dealers

When: July, 13 – 16, 2010
Where: College of the Albemarle
205 Highway 64, South Business
Manteo, NC 27954
Member Tuition $885, Non-Member Tuition $1,140.
CLICK HERE For more information and registration

Source: ABYC June 4, 2010

Hurricane Season Starts
June 1

Atlantic
May 27, 2010

Hurricane Ike, 2008. 
High resolution (Credit: NOAA)

An “active to extremely active” hurricane season is expected for the Atlantic Basin this year according to the seasonal outlook issued today by NOAA’s Climate Prediction Center – a division of the National Weather Service. As with every hurricane season, this outlook underscores the importance of having a hurricane preparedness plan in place.

Across the entire Atlantic Basin for the six-month season, which begins June 1, NOAA is projecting a 70 percent probability of the following ranges:
• 14 to 23 named storms (top winds of 39 mph or higher), including:
• 8 to 14 hurricanes (top winds of 74 mph or higher), of which:

3 to 7 could be major hurricanes
(Category 3, 4 or 5; winds of at least 111 mph)

“If this outlook holds true, this season could be one of the more active on record," said Jane Lubchenco, Ph.D., under secretary of commerce for oceans and atmosphere and NOAA administrator. “The greater likelihood of storms brings an increased risk of a landfall. In short, we urge everyone to be prepared.”

Central Pacific, May 19 2010
NOAA’s Central Pacific Hurricane Center today announced that projected climate conditions point to a below normal hurricane season in the Central Pacific basin this year. The outlook was issued at a news conference called to urge Hawaii residents to be fully prepared for the onset of the hurricane season, which begins June 1.

“It is important to pay attention to forecasts and take each tropical system seriously,” said Jim Weyman, director of NOAA’s Central Pacific Hurricane Center. “Last year we had a scare when Hurricane Felicia approached, but fortunately it dissipated before hitting the islands.”

The seasonal hurricane outlook is produced in collaboration with NOAA’s Climate Prediction Center. For 2010, the outlook calls for a 70% chance of a below normal season, a 25% chance of a near normal season, and only a 5% chance of an above normal season.

Climate patterns similar to those expected this year have historically produced below normal activity in the central Pacific. Allowing for uncertainties, NOAA’s Central Pacific Hurricane Center expects two to three tropical cyclones in the central Pacific during the 2010 season.

For forecast updates and forecasts for other areas go to NOAA, National Hurricane Center at http://www.nhc.noaa.gov
SENECA FALLS - James A. Lombard III, D.V.M., 55, of Lower Lake Rd., died unexpectedly, Saturday (March 6, 2010) at his residence. Dr. Lombard was born in Troy, New York, on February 20, 1955, the son of Marfisa Morrone Lombard and the late James A. Lombard, Jr. After graduating from Troy High School, he attended the Massachusetts College of Pharmacy in Boston. He received his Bachelor of Science Degree in Biology and his Doctor of Veterinary Science from Ross University in St. Kitts, West Indies. Jimmy also studied yacht and boat design at the Westlawn Institute of Marine Technology.

Prior to obtaining his veterinary degree he designed and hand crafted a line of gentleman’s runabouts under the name of James Anthony Powerboats. To this day his powerboats grace the waterways from Annapolis to Phuket Thailand. Dr. Lombard loved designing pleasure craft, writing, and architectural design. He loved living on the water.

Westlawn was planning a story for The Masthead about Jimmy and his designs and corresponded with him over the past year. The following is a chronology of e-mails that I received from him during that period. Also enjoy the works of art created by Jimmy Lombard that have come to life as beautiful runabouts. Norm Nudelman, editor.

From: James Lombard
Sent: Friday, June 05, 2009 3:25 AM
To: nnudelman@westlawn.edu

Dear Norman,

I am quite sure that it was you who used to critique my work and lesson plans while I was studying the Westlawn course thirty years ago.

I have designed and built several boats since then and I have attached a photograph of my latest design. My hulls are hand-laid fiberglass with varnished mahogany decks. I think of you every time that I draw because you offered me sage advice:

"Never be afraid to erase." It has helped me more than you know, and as a result I spend just as much time erasing as I do drawing!

Thank you!

Sincerely,

Jimmy Lombard

The James Anthony Powerboat Company
2461 Lower Lake Road
Seneca Falls
New York 13148

Renderings by Stephen L. Davis

Continued on Next Page
Hello Norman,

It was really very nice to hear from you! Especially because you did not tell me to erase anything.

After high school, I attended the Massachusetts College of Pharmacy in Boston with the idea of using it as a pre-requisite for veterinary college so that I could follow in my uncle's footsteps.

After four years of study with only one year to go, I finally took a look at my grades and realized that it would be impossible to get accepted at veterinary college with that GPA. You see Norman, with 70,000 college students in Boston at the time, there was a party somewhere every night, and I do not think that I missed a single one of them.

Not wanting to make a profession as a pharmacist I dropped out with caprice.

I then decided to follow my second passion—boatbuilding and design. So, I enrolled in Westlawn.

I took a job with Sabre Yachts in South Casco, Maine and worked in the teak interior construction department known as "Hull." I loved the work yet it was keeping me from my Westlawn studies. So I asked for a part time position. I was told that no one has ever worked there part time. So I quit.

Two weeks later Roger Hewson, the company's founder, called me and said that he heard that I was studying at Westlawn, and that he had an idea for me. Roger wanted to develop owner's manuals for the then four Sabre models, the 28, 32, 34, and 38. There were no owner's manuals in the industry to speak of at the time. I remember people stealing them at boat shows, as other company's wanted to copy the idea. He said that he could use my help illustrating the manuals and that I could work part time! It went great.

Soon I was asked to do all of the company's drafting work for the boat designs. I became part of the seven-man design team and went back to full-time hours. So no, I never did complete the entire Westlawn course. However the Westlawn course got me exactly where I wanted to go, working for a big production company.

I soon was doing all the drafting, ad layout for a monthly full page ad in Yachting, Sail, & Cruising World magazines. As well as all of the brochure designs, and all of the marine photography, from the company's power launch "Saber Dance." However I was kind of the black sheep of the design team because I really did not like sailboats, so at night I would go home and draw powerboats!

Sabre provided me with a wonderful background in every aspect of boat design, boatbuilding and promotion. It was all possible because of Westlawn.

I worked for Sabre Yachts, in South Casco, Maine, for seven years beginning in 1980, and then I road the crest of a current real estate boom and sold my five lakefront acres so that I could move to New York’s Adirondack mountains and set up a Boatbuilding business.

Continued on next page
My middle name is Anthony, and thus The James Anthony Powerboat Company was born.

I can remember being on Indian Lake in the Adirondack Mountains as a little boy fishing with my father out of his little aluminum outboard. I heard this thunder coming down the middle of the lake and asked my father what it could be. He said, “That is a mahogany speedboat Jimmy.” I was awestruck at the sight and the sound.

I initially designed and built a 21’ runabout. I would take these boats to the Newport and Annapolis boat shows, and I built several for some very important people who would simply take out their check books and write me a check. It got to a point where the lead time to receive a new James Anthony was over one year.

I began to wonder if people were truly happy with their boats because their purchases seemed like impulse buying. My fears vanished when I designed a new 27’ version and four of the JA-21 owners immediately sent me deposits for this new 27’ boat.

In time, as my two children came along, I had great concerns when the economy dipped. You see I never had any financial backing and very little reserves.

So I decided to look into veterinary medicine again. I was accepted at a school in the West Indies, Ross University. I studied there for 3 years and did my final clinical year at N.C. State in Raleigh.

I squired away some student loan money over the years, and with a tiny down payment, I purchased an old veterinary hospital in the Finger Lakes one month after graduation.

I have been at it now for 11 years.

I used to be a frustrated veterinarian who build boats. Today I am a frustrated boatbuilder who is a veterinarian. Go figure?

So I have started designing again and have always maintained that I will someday build again, and this is what I am working toward.

I finished another new design just today. It is off to Steve Davis the marine illustrator next week for him to do his magic and breath another layer of life into her, as he did with my Vamoose.

I suggest that you wait until I receive this new design from Steve, he does not take long. And then you can also include her in The Masthead if you wish. She is a boat design for a specific concept that I have and I will describe it to you when I send it. (Editors Note: James passed away while we were awaiting his design commentary.)

It would be my honor to be included in The Masthead.

In the mean time I have attached a photograph of Vamoose’s sistership, Skedattle. (See page 19)

Thank you.

Sincerely,

James

Continued on next page
From: James Lombard  
Sent: Tuesday, October 13, 2009  
To: nnudelman@westlawn.edu  

October 13, 2009

Norman,

Thank you for your interest in my work.

You asked me to tell you what my personal favorite boat was that I had designed and built.

That’s easy.

Through studying boat design at Westlawn, I gained unexpected life experience meeting people who I would have otherwise never met. I designed and built my James Anthony runabouts for a VP at Time Warner, The mayor of Louisville Kentucky, a president of Sax Fifth Avenue, a brilliant 30 year old Annapolis millionaire, a tough as nails personal injury attorney in Manhattan, a wonderful Annapolis architect, a jewelry Industry giant, a Heisman Trophy winner who gave his first James Anthony 21 to Geraldo Rivera and then ordered a James Anthony 27. And also for a prominent hand surgeon for his private island in the Thousand Islands, on the St Lawrence River.

I also built a James Anthony 21 for Adrian Zecha, the famous hotelier. Then, when I designed the James Anthony 27, he ordered one by telephone from his home in Hong Kong. When it came time to begin building his boat, he would call me at all hours of the day and night, because he was, God only knows where in the world, with questions such as, “What color are you going to make my next boat James?”

The questions continued with regards to upholstery color, electronics, engine selection and so on. I soon realized that Adrian figured that I was the boat designer and builder and he wasn’t. So therefore he simply assumed that I was in a better position to make these decisions and he deferred all of the choices and decisions to me. I had the time of my life! So I built for him the boat that I would build for myself. Amanair II was a black James Anthony 27 with twin six-cylinder Volvo diesel engines with Duo-Prop counter-rotating stainless-steel propellers. They drove this 10,000 lb. boat at an easy 52 MPH.

Attached is a photo of Amanair II during sea trials in the Adirondack Mountains prior to display at The Annapolis Power-boat Show and subsequent shipment out of Baltimore Harbor to Singapore. She remains his personal boat at Amanpuri Resort in Phuket, Thailand today, twenty years later.

Sincerely,

James

James Anthony 27

Length: 27'-0"
Beam: 8'-0"
We were a live-aboard family with three active children at a freshwater marina on a tributary of the Willamette River near Portland, Oregon. Other kids were already swimming in the cove because it was that kind of day—hot and lazy. This was a common practice by adults as well as children during the warm summer of 1999.

Our sons Ian, age 10, and Lucas, age 8, asked to swim with their friends. Permission was granted, subject to close adult supervision by parents including their mother, a graduate nurse. The boys were both wearing Type II PFD life jackets, so it was great fun and presumably safe to play in the water. Our children were schooled in aquatic safety. Being young professional people, my wife, Sheryl, and I had taken every precaution we could for peace of mind in a water environment.

On the inside of the dock, the kids were having a great time floating down with the river current on an inner tube. Lucas moved away from the others toward his mother, who was keeping pace on the dock with the children's water activity. As he approached the ladder to get out of the water, he let out a loud gasp, immediately rolling onto his back in his life jacket, apparently unconscious. Sheryl yelled to the other kids to help him and jumped into the water herself. As the kids approached Lucas, they felt a slight tingling sensation in the water and immediately backed off.

Upon hitting the water downstream from Lucas, Sheryl's extremities went numb and she experienced extreme difficulty moving her limbs, which, at the time, she attributed to fear. Somehow, Sheryl managed to pull Lucas to the dockside where others assisted in getting him onto the dock.

I arrived moments later after hearing the commotion and, along with another onlooker, started giving him CPR, which we continued until the paramedics took over approximately 15 to 20 minutes later. Our beloved Lucas was pronounced dead at 6:30 pm at Portland’s Emanuel Hospital. One moment he was laughing and playing—an instant later, his short life was over, leaving our hearts broken forever.

As parents we suffered agonies of, “How did this happen?” This question then turned into, “Why did this happen?” We relived every moment trying to sort out what we did or didn’t do. It was not until the next morning that we were able to start unraveling the pieces of the mystery. The first assumption was that he drowned. However, he was wearing the best life jacket money could buy, which kept his face out of the water even though he was unconscious. He was pulled from a floating position only moments after rolling onto his back and CPR was started immediately. Also, at no time during CPR could we detect a heartbeat and his color was good. Neither of these observations would indicate drowning.

As Sheryl was telling me what had happened, she said she had never been so fearful in her life as to have her extremities tingle and go numb to the point where she could hardly move while in the water. Ian then related to me for the first time that he also felt a tingling as he approached his brother. Upon hearing all this it seemed clear to me that he did not drown, but that somehow, somehow, AC electricity was present in the water where the kids were swimming. Our Lucas had been electrocuted.

I then called the County Coroner’s office, requesting an autopsy if they had not already done so, because knowledge of the circumstances and common sense pointed to electrocution, not drowning. They argued that there were no burns on his body. I pointed out that Lucas had been in an electrolytic solution, which eliminated the resistance of the skin (ordinarily skin resistance results in burns when an individual is electrocuted on land). To my complete horror, they responded that they would not even know how to test for something like that.

I told them that testing was not difficult and that I was going to test the water in the area. I then called the local Sheriff’s Department and left a message telling them my suspicions.
With my digital voltmeter, I went to the area where Lucas had been, put the negative lead to a ground, dropped the positive lead into the water, and immediately got AC voltage.

I notified the Sheriff’s Department, reporting what I had found and that I wanted to get someone to confirm my test. They agreed to send out some deputies while I called in an electrician. He arrived later that morning, tracing the electricity to a powerboat that was in the area where the kids had been swimming.

Concerns about liability soon unleashed a stream of other investigators, all of whom were suddenly interested in determining the source of the current. The local utility company wound up sending a team. The owner and manager of the marina arrived. More deputies were called. Meanwhile, the electrician and I continued our investigation, focusing on the powerboat.

We found a 12V wire lying on top of an AC wire, which had gotten hot enough to melt its own insulation and that of the hot (black) AC wire. This put 120V AC into the entire ground system of the boat, including the engines and propellers. This, coupled with lack of an AC safety ground, forced the voltage and electrical current into the surrounding water. Freshwater is not a good electrical conductor; therefore the AC was unable to reach ground at a sufficient current to potentially trip the breaker. Because of its high salinity, the human body is a much better conductor of electricity than freshwater. (Saltwater is more conductive than the human body, which explains why electric shock deaths have not occurred in saltwater.)

As Lucas approached the ladder, he passed into the field of AC current and, for a brief moment, completed the circuit to ground. His heart was stopped instantly; the insidious path of electrical current took the life of our son.

At first we considered this a freak accident—a unique set of circumstances that just happened to us. But this event completely changed my life and my focus. I was determined to understand how this could happen and to do everything I could to keep it from happening again. I did not want anyone else to suffer the pain we had suffered. I, with the collaboration of my business partner, wrote a couple of articles for The American Boat and Yacht Council (ABYC), describing the accident and the action that I have taken to create public and professional awareness of the problem, to provide education and a better understanding of the concepts involved, and to encourage the following of the ABYC standards and the use of ground fault-type devices onboard boats and in marinas.

I determined to enhance my own knowledge so that I would have a solid understanding of the workings of AC currents in freshwater environments. With Andy Tufts, my business partner, we have done that using many different avenues, not the least of which was with ABYC. We are now both ABYC Master Technicians. Also, the thrust of our marine business changed significantly from emphasis primarily on sales to one concentrating on keeping boats electrically safe using ABYC standards. Our business motto became “Safer Boating Begins With A Safe Boat.” Online, I also started checking out freshwater drownings with the suspicion that many were possibly electrical current related.

Much has happened in the years since and all of it good. The awareness of “electric shock drowning” as a serious freshwater issue has significantly increased. A USCG-funded ABYC grant implemented by Capt. David Rifkin and James Shafer has greatly added to the understanding of how AC current behaves in freshwater. The truth is that most people electrically shocked in freshwater, unlike my son, are drowned. This is because of skeletal muscle paralysis.
Electric Shock Drowning  (continued)

caused by low levels of AC current using the body as part of its return path to its source. This is what Sheryl experienced when she jumped into the water to rescue Lucas. That she didn’t drown or get electrocuted was due to the voltage gradient of the electrical current from its source. She entered the water farther from the faulty boat leak than Lucas. Depending upon several bodily factors, a range of say 15 to 30 milliamps (mA) of AC current will create muscle paralysis, and the drowning of even good swimmers is the result. An AC current flow of around 100 mA will put the heart into fibrillation, and death will likely follow within seconds. This is a very serious problem, but it is preventable.

First and foremost, no one should go in the water at a marina. Signs should be posted on every pier warning people to stay out of the water. Since not everyone will read this article and since people often ignore signs (as happened in the case of 19 year old girl in 2005) or may fall into the water accidentally, the only certain cure is to have GFCI-type devices installed on boats that would automatically interrupt the flow of electricity in the case of a fault. There have been at least 60 needless fatalities and 100 unwarranted casualties from freshwater electrically induced faults.

Some time after Lucas’s death, two Multnomah County River Deputies and I conducted a random sampling of 50 boats in three freshwater marinas in the Portland area. We found 13 boats leaking potentially lethal electrical current into the water. A ratio of 26 percent of faulty boat wiring leads one to wonder if the number of reported electrical deaths in freshwater is only the tip of the iceberg. If you have any doubts about your boat, it should be inspected by an ABYC-certified technician. Do not depend on an electrician with experience only on land. Let’s boat safely and save lives.

The Long-Term Solution: Equipment Leakage Circuit Interrupters (ELCI)
Lucas’s death will not have been in vain if my efforts and involvement with ABYC have played some small part in the creation of a new ABYC E-11 standard that will require the installation of an Equipment Leakage Circuit Interrupter
Wouldn’t it be nice to rate the performance of all sailboats on a scale of one to ten?

Here’s the problem—we have different ways to rate a sailboat’s potential performance in the form of design ratios, handicap rules and ratings, and level ratings. In fact, rating systems have been around for centuries, dating back to England and the realm of Queen Elizabeth I . . . over 400 years. In all that time, sailors and designers have continuously argued over what makes a boat go fast, and what should be measured and rated in order to allow disparate designs to compete on equal terms. VPP programs and CFD codes have tried to make performance ever more definable, but these tools require sophisticated software code and specialized people to run them. An alternative solution is to race in one-design boats, but unfortunately not everyone wants the same boat. On top of that, not everyone wants to race. Still, we want to be able to judge performance—we always want to know about fast a boat is or may be.

A similar problem crops up with advertising hype—this or that boat is a racer/cruiser, cruiser/racer, racing machine, or simply just a dog that can’t get out of its own way. Who defines these things, and how is anyone supposed to make sense out of it all?

A rating number from 1 to 10 might simplify things for the average sailor and designer. What can we do with the information we already have without resorting to a consultant. Is there some way that anyone can rate
any boat on a scale from 1 to 10? Has anyone done this? Yes, someone has.

Back in the mid-1980s, I designed a “Boat-in-a-Box” sailboat—that is, a boat that could ship inside a standard 40-foot shipping container—for a client in Texas, Mr. A. Peter Brooks. At the time, he and I both were also consulting for Cat Ketch Yachts Inc., the builder of the Herreshoff and Sparhawk cat ketches. Brooks was a retired business consultant and author, and he did some writing and marketing for the company. I designed all the carbon fiber free-standing masts for the boats. Brooks invented the idea for what he called the “S#” Number—a single number between 1 and 10 which could rate the performance of all sailboat designs. This idea was published in *Telltales*, a southern Texas boating magazine, in April, 1988. I have never seen anything like it, before or since.

The concept is rather simple and is based on the Displacement/Length ratio (DLR) and Sail Area/Displacement ratio (SAD), which you can see defined in the sidebar. We know that DLR relates to drag—heavier displacement for a given length results in more drag, and boats with high DLRs are slower than boats with low DLRs. We also know that SAD relates to power—more sail area for a given displacement results in more speed, and boats with high SADs are faster than boats with low SADs. We could also plot SAD versus DLR in a chart, and see how the spread of data points relates to boat performance. We use these same ratios—SAD and DLR—to calculate S#, so we don’t need any new computer program to achieve our goal—just one new equation.

The equation for S# is an exponential and logarithmic function using DLR and SAD as the primary variables. I am going to remove the slash “/” from SAD/D so that it is less confusing in the S# equation—we’ll use the term “SAD.” Although the S# equation looks complex, it can be easily programmed into a calculator or a spreadsheet. Here it is:

\[
S# = 3.972 \times 10^{ \left[ \frac{-DLR}{526} + 0.691 \times (\log(SAD) - 1)^{0.8} \right]}
\]

Brooks developed this equation with the assistance of Dr. Fred Young, at the time dean of the College of Engineering at Lamar University in Beaumont, Texas. I spoke with Dr. Young by telephone some years ago just to make sure I understood the equation correctly, and he was very helpful.

Brooks collected a list of boat designs and their particulars from various published sources and calculated their S#. Then he classified the boats according to the following categories:

- Lead Sled: S# = 1 to 2
- Cruiser: S# = 2 to 3
- Racer-Cruiser: S# = 3 to 5
- Racing Machine: S# = 5 to 10

The reasons for the ever-broadening scale of category names is simply a function of the logarithmic scale embodied in S#. This appears to be an asymptotic function. You can never reach the number 10, and you can never reach the number 1, both of which are the asymptotes.

Now we have a way to definitively categorize boats, not a wishy-washy, vague notion; we got a unique number for each and every design! You can download the spreadsheet that I used to calculate the SAD and DLR numbers by clicking [HERE](#). Included in that spreadsheet is the S# calculation (pink column), and next to that is the category name for each boat. I sorted the data according to descending values of S# so that you can see how the categories play out. Also included in the spreadsheet is S# Chart 01 of SAD vs DLR for these boats. There are other charts there, too, which you can study or modify at your leisure.

The magazine sources for these sailboat designs are:

<table>
<thead>
<tr>
<th>Displacement Length Ratio (DLR):</th>
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</thead>
<tbody>
<tr>
<td>DLR = \frac{\text{Disp., Tons}}{(0.01 \times \text{DWL, ft.})^3}</td>
</tr>
<tr>
<td>Where: DLR = Displacement/Length Ratio</td>
</tr>
<tr>
<td>Disp. = Displacement, long ton (2,240 lb.)</td>
</tr>
<tr>
<td>DWL = Waterline Length, ft.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sail Area/Displacement Ratio (SAD):</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAD = \frac{\text{SA, sq.ft.}}{(\text{Disp., cu.ft.})^{0.67}}</td>
</tr>
<tr>
<td>Where: SAD = Sail Area/Displacement Ratio</td>
</tr>
<tr>
<td>SA = Sail Area, sq.ft.</td>
</tr>
<tr>
<td>Disp. = Displacement, cu.ft.</td>
</tr>
</tbody>
</table>
listed at the top of the data table and in the left-most column with the date of publication in the second column. They are all published data from advertisements and design reviews that I have collected over the years. As I review the magazines, I continually add data to this table. The original *Telltales* data that Brooks used and published in 1988 can be downloaded by clicking [HERE](#). I find it discouraging that in recent years the magazines have been slacking in publishing worthwhile design data on boats. Sometimes, it is difficult to get even the most basic of information—some small piece is frequently missing, and you don’t necessarily find it on the manufacturers websites. But we gather what we can.

Now here is where my contribution to S# comes in. Overlaying this chart of SAD vs. DLR, I have calculated and plotted the traces of constant S# so that you can see how they subdivide the boat population. This is chart (S# Chart 02). In the data table, I highlighted in yellow a few of my designs, and then have labeled them in the chart, just to give you some context.

So what do we see? S# Chart 02 can be interpreted as follows:

A boat that is very lightweight and has lots of sail area will have a low DLR and a high SAD. It has a high power-to-weight ratio, and so it will be very fast. Its S# will be between 5.0 and 10.0. It will be a “Racing Machine.”

On the other hand, a very heavy boat that has a small sail area will have a high DLR and a low SAD. It has a low power-to-weight ratio, and it is not going to be a very good performer. Therefore, its S# will be between 1.0 and 2.0. It will be a “Lead Sled.”

For S# values between 2.0 and 3.0, the boat will have a decent amount of volume to carry people and goods...
but won’t necessarily be a real hot-shot sailer. We can place these boats in the “Cruiser” range.

For $S#$ values between 3.0 to 5.0, the boat will be in the middle ground between “Cruisers” and “Racing Machines”, so we can call them “Racer-Cruisers” (or “Cruiser-Racers” if you prefer.)

Therefore, the net result of the $S#$ is a clear delineation of sailboat performance using a convenient scale from 1.0 to 10.0, and by this we give definitive meaning to typical descriptive names. In fact, Brooks claimed that the $S#$ is a fairly reliable predictor of PHRF or IMS rating. For two boats of the same length, the one with a higher $S#$ will be faster, will take less time to sail around a course, and therefore will have a lower rating. However, in the same article, this footnote appears:

“Both Dr. Young and the author stress that the ‘S’ number is not a handicapping or rating system, but a guide to probable boat performance vs. other boats of comparable size.” I personally agree with that opinion.

Something else that is quite interesting is shown in the next chart ($S#$ Chart 03) also included in the spreadsheet. I had the notion to divide $SAD$ by $DLR$ and plot that against $S#$ and got a surprising result. All of the data forms a unique cluster in a very well-defined curve. These are two independent functions plotted against each other. Rarely in science do we see such a profound correlation of data. I am not absolutely sure of the ramifications of this, and maybe I am reading into it more than I should, but I would have expected a broader spread of data points in this chart. The relationship of the $SAD/DLR$ ratio to $S#$ is extremely solid as indicated by the cluster of points along its trend line. The equation for the trend line shown at the top of the chart is another way to approximate $S#$ in a simpler cubic equation. Throughout the lower categories, $S#$ follows the trend line almost exactly, and it is only in the Racing Machine category where there is some scatter away from the trend line. If we plot $S#$ versus some simple dimension or factor such as LOA or Displacment, we see no discernable relationship to $S#$ at all. But $S#$ vs. $SAD/DLR$ gives us a very unique view of sailing performance.

I am not mathematician enough to explain why this works as we see it. I have, however, on occasion, presented plots like $S#$ Charts 02 and 03 to clients to review the performance they have in their current boats or are trying to achieve in a new design. It seems to give them a clearer understanding of what their
The Masthead

A Performance Rating Number for Sailboat Design and Analysis (continued from page 29)

current boat does or their new boat is going to do. S# is a way to be a little more scientific in layman’s terms. This gives us a better tool to clearly showcase performance without having to go to the model tank, measure resistance factors, plot results, correlate them to full scale, and then do VPPs on top of all that. A picture says a thousand words, and this seems to do a pretty good job.

You will also see in the data table and in the charts a calculation and plot of Ted Brewer’s Motion Comfort Ratio (MCR) plotted against S#. (See sidebar for MCR.)

You are all free to use this database and spreadsheet as you please. You may add to it as you do your own designs or review the designs for others. You may change it around and expand it however you want. You may do other analyses and manipulate the data at your will. Send it to your friends, fellow designers and fellow sailors. Pass it around. Discuss it. Use it. The S# is for the public domain, and I hope it adds to our better understanding of sailboat performance. Time will tell.

Eric Sponberg is a naval architect specializing in small craft design in St. Augustine, FL. He has long been a proponent of sailing yachts with free-standing rigs, his latest design being the new Globetrotter 66. Sponberg holds a degree in naval architecture from the University of Michigan, a Professional Engineer’s license in Connecticut, and a Chartered Engineer’s license in the United Kingdom. His website is: www.sponbergyachtdesign.com

Ted Brewer’s Motion Comfort Ratio (MCR):

\[
\text{MCR} = \frac{\text{Displacement, lb.}}{0.65 \times (0.7 \text{ LWL, ft.} + 0.3 \text{ LOA, ft.}) \times (\text{Beam, ft.})^{1.333}}
\]

Brewer created this formula as a method for approximately gauging the comfort of a boat at sea. Higher values are more comfortable but are usually associated with heavy vessels. Typical MCRs vary from around 5.4 for a Lightning daysailer, to 42 for the Whitby 42 (Brewer cruising design), to in the low 30s for a Bob Perry Valiant 40, and around 60 for a heavy Colin Archer double ender. MCR is a handy rough-guide “screening” and comparison number. It, in and of itself, is not intended to rule in or out boats for cruising in any way.

Electric Shock Drowning (continued from page 25)

(ELCI) device on boats (already required by code for land-based damp environments such as bathrooms, kitchens, hot tubs, etc.).

In our situation, if the 120V AC ground wire had been bonded to the metal components on the boat (i.e. the negative side of the battery), the energizing of the 12V DC system with the 120V AC would have most likely tripped off the shore power breaker, severing electrical current flow. Or, if a Ground Fault Circuit Interrupter (GFCI) breaker had been installed by the marina ahead of the boat’s shore power, even 10 mA of current would have tripped it off. So, bottom line—if the boat had been properly wired with an ELCI device or the marina placed a GFCI in front of the shore power cord, our son would still be alive today.

Once adopted and implemented on a vessel, the ELCI device, along with ABYC E-11 compliance, coupled with other pertinent ABYC electrical standards, will significantly reduce the odds of an electrically induced death because of an onboard wiring problem. Following standards will not only keep people on the boat electrically protected, but those in the water around the boat will be safe as well. After the accident, GFCI breakers were installed on each of the marina’s shore power distribution points. The only problem has been with new people coming to the marina, who have tried to bypass the GFCI because their boats have electrical faults and they’re tired of resetting breakers.

My business partner and I did extensive research into this issue and have conducted seminars for law enforcement personnel and local, national, and international marine investigators. We also serve as a resource for several agencies if there is a suspicion that electricity might be a factor in a drowning. Our intent is to set up a website giving technical information on the functioning of electrical currents in freshwater. If this information had been available to us we would not be still grieving the loss of our son. If my story doesn’t say anything else, understand that a relatively simple fix could have prevented years of pain.

Editors Note:

Thanks to Kevin Ritz’s hard work and to the dedication of ABYC’s staff and project technical committee (PTC) members, the requirement for ELCIs is going into effect on July 31, 2010.

[This article originally appeared in Boat/US Seaworthy Vol. 27 No.4 October 2009.]

For more information on his article, contact: Kevin Ritz: kevinritz@gmail.com

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*NOCTI (National Occupational Competency Testing Institute) is a regular provider of the assessments on which many certifying bodies depend for measures of applicants’ standards-based knowledge and skills. Certificates benefit employers by showing that applicants have acquired specific skills. The status of having a certified staff can lead to higher sales and customer satisfaction.
Training Links & Events Schedules

Current In-Class ABYC Training Courses

For a course description or to register, CLICK HERE

<table>
<thead>
<tr>
<th>DATE</th>
<th>EVENT NAME</th>
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<tr>
<td>Jun22,10-Jun24,10</td>
<td>SC400 ABYC Standards Certification, Miramar, FL</td>
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<tr>
<td>Jul 13,10-Jul 16,10</td>
<td>EL400 - Electrical Certification Course, Dare County NC</td>
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<tr>
<td>Jul 13,10-Jul 16,10</td>
<td>GE400 - Gasoline Engine &amp; Support Systems Certification, Philadelphia, PA</td>
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<tr>
<td>Jul 22,10</td>
<td>Summer &quot;Proctored Testing Program&quot;, All Locations</td>
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<td>Sep 07,10-Sep 10, 10</td>
<td>DE400 - Diesel Engine &amp; Support Systems Certification, Mystic, CT</td>
</tr>
<tr>
<td>Sep 07,10-Sep 10, 10</td>
<td>GE400 - Gasoline Engine &amp; Support Systems Certification, Miramar, FL</td>
</tr>
<tr>
<td>Sep 14, 10-Sep 16,10</td>
<td>**SC400 - ABYC Standards Certification, Fenton MI</td>
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<td>Sep 14,10-Sep 17,10</td>
<td>MC400 - Marine Corrosion Certification, Annapolis, MD</td>
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<td>EL400 - Electrical Certification Course, Delta, British Columbia, Canada</td>
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<td>EL200 - Basic Marine Electrical, Mystic CT</td>
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<tr>
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<td>EL400 - Electrical Certification Course, Toronto Ontario</td>
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<td>EL400 - Electrical Certification Course, Annapolis Maryland</td>
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<td><strong>MMTA</strong> MC400 - Marine Corrosion Certification, Thomaston, ME</td>
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<td>Nov 16,10</td>
<td>Fall &quot;Proctored Testing Program&quot;, All Locations</td>
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<td><strong>MMTA</strong> GE400 - Gasoline Engine &amp; Support Systems Certification, Thomaston, ME</td>
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<td>Dec 14,10-Dec 17,10</td>
<td>EL400 - Electrical Certification Course, Tampa FL</td>
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<tr>
<td>Dec 14,10-Dec 17,10</td>
<td>MS400 - Marine Systems Certification, Mystic Seaport</td>
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</table>

For a course description or to register, CLICK HERE

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45th Tampa Boat Show
September 10 - 12, 2010
Tampa Convention Center
Tampa, Florida
www.tampaboatshow.com

35th Norwalk Boat Show
September 23 - 26, 2010
Norwalk Cove Marina
Norwalk, Connecticut
www.boatshownorwalk.com

25th Nashville Boat & Sportshow
January 5 - 9, 2011
Nashville Convention Center
Nashville, Tennessee
www.nashvilleboatshow.com

81st Chicago Boat, RV & Outdoors Show
January 12 - 16, 2011
McCormick Place - North
Chicago, Illinois
www.chicagoboatshow.com

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2010 Conference & Training Programme

INNOVATION IN HIGH PERFORMANCE SAILING YACHTS
(INNOV’SAIL 2010)
30 June – 1 July 2010, Lorient, France
http://www.rina.org.uk/innovsail2010

HIGH SPEED MARINE CRAFT
29 - 30 September - 2010, London, UK
http://www.rina.org.uk/highspeedcraft2010

FUNDAMENTALS OF CONTRACT & CHANGE MANAGEMENT FOR SHIP CONSTRUCTION, REPAIR & DESIGN
13-15 October 2010, London, UK
http://www.rina.org.uk/Fundamentalsoct2010

SYSTEMS ENGINEERING IN SHIP & OFF-SHORE DESIGN
21-22 October 2010, Bath, UK
http://www.rina.org.uk/systemsengineering

PRESIDENTS INVITATION LECTURE
November 2010, London, UK
http://www.rina.org.uk/presidentsinvitationlecture2009

THE WILLIAM FROUDE CONFERENCE
24-25 November 2010, Portsmouth
http://www.rina.org.uk/Williamfroude

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Founded in 1930, the mission of the Westlawn Institute of Marine Technology is threefold:

- To provide our students with the skills and knowledge required to build a rewarding career in the profession of yacht and small-craft naval architecture.

- To support continued growth of the recreational and small-craft marine community through the development of well-trained, safety-oriented, boat designers developing better products for the benefit of the boating public.

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Click on the Back issue that you would like to read:

- **April 2007** Tech. Article: Passenger-Compartment Ventilation Fundamentals
- **June 2007** Tech. Article: Stability is the Key – Part 1, Sailboat Initial Stability
- **Sept 2007** Tech. Article: Stability is the Key – Part 2, Sailboat Reserve Stability
- **Dec 2007** Tech. Article: Basic Criteria for Powerboat Stability
- **Mar 2008** Tech. Article: The Concepts and Applications of Tons and Tonnage
- **June 2008** Tech Article: Practical Speed and Powering Calculations
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- **Mar 2009** Tech Article: High Strength Metals – Part 1, Stainless Steel
- **June 2009** Tech Article: High Strength Metals – Part 2, Copper & Nickel Alloys
- **Sept 2009** Tech Article: All About Cores (What Lies Beneath the Skin) – Part 1
- **Dec 2009** Tech Article: All About Cores (What Lies Beneath the Skin) – Part 2
- **Mar 2010** Tech Article: All About Cores (What Lies Beneath the Skin) – Part 3

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The Journal of the Westlawn Institute of Marine Technology

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- You are invited to submit photos and commentary of recently launched boats of your design for publication in *The Masthead*.

- You are also invited to submit drawings, renderings, and commentary of your designs that are “On The Drawing Board,” for publication in *The Masthead*.

  All work selected for publication is at Westlawn’s sole discretion.

Who We Are

Westlawn is a not-for-profit educational affiliate of the American Boat and Yacht Council (ABYC). Our school is nationally accredited by the Distance Education and Training Council (DETC), and is listed as an accredited school by the U.S. Department of Education and by the Council for Higher Education Accreditation.

Our Mission

Founded in 1930, the mission of the Westlawn Institute of Marine Technology is threefold:

  - To provide our students with the skills and knowledge required to build a rewarding career in the profession of yacht and small-craft naval architecture.

  - To support continued growth of the recreational and small-craft marine community through the development of well-trained, safety-oriented, boat designers developing better products for the benefit of the boating public.

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