The First Powerboats
What You Know About the First Steamboats Is Most Likely All Wrong
By Dave Gerr, © 2013 Dave Gerr

A clock repairer by trade, Jonathan Hull was—for some reason—overcome with the desire to drive boats through the water by engine-power instead of the tried-and-true wind or muscle. Being a clock repairer, and paid no more than average working-man’s wages, he had nothing like the funds required for what was—in the early 1700s—such an earth-shaking undertaking. Even though he somehow managed to wangle a patent on his concept from Caroline, Queen of Great Britain, money for such obvious nonsense was in short supply. Nevertheless, in December of 1736, Hull pressed ahead. He very sensibly reasoned that—with the huge, glacially slow steam machines of the day—it would be impractical to fit an engine in a boat for self propulsion. Instead, Hull planned on building a tug—a steam tug. Lack of money, prevented successful completion of his project, however. So it was that the doggerel verse came to be.

Continued on page 4

Martin’s Yarns - Page 22
How an 8th grade science project explains boat corrosion

When my daughter came home with her annual science project, I reminded her of last July, when the boat was on the hard and I had asked her to replace the zinc. A fairly long conversation ensued about why one metal can protect another metal and what was really going on under the boat all season. She immediately said, “Then I’ll do a project on corrosion!” which I knew would include help from Dad and even ABYC. So where to start? I set her up with a copy of ABYC E-2 Cathodic Protection (father-of-the-year award is in the bag with that move!) and a couple of other choice titles. After a bit of Internet research as well and a couple of YouTube videos, she had her experiment.

The component list was relatively short:
1. 6 Mason Jars
2. “Instant ocean” from the pet store
3. Copper, zinc, steel nails, brass, aluminum and stainless steel pieces
4. Copper wire

She and I proceeded to cut and drill the metal coupons and then attach them with a short length of wire, bare on each end. The salt water was mixed to a specific gravity of 1.024, mimicking seawater, and the jars were filled. The coupons were immersed in the water, attached by the copper wire; we now had our galvanic cells as well as the metal by itself as a control.

Now came the waiting game; what would happen? Each metal was chosen and coupled according to the galvanic series table in E-2. Some metals paired in the jars were very close on the galvanic scale, while others were very far apart. Would steel be protected by aluminum? What would copper and stainless steel do?

She was very diligent in her note taking, twice a day she would make observations on the condition of the metals, day by day things were changing.

Continued on page 8
Westlawn has taken strong steps designed to lower education costs and assist students to follow their dreams and attain their goals. These steps include new discounts for ABYC members, Westlawn’s unique zero-interest tuition payment plan, and finding ways for students to obtain otherwise expensive design software at low or zero cost.

**ABYC Members get a 20% discount on all Westlawn courses**
All ABYC members (except for student members) receive a 20% discount on all Westlawn courses. Contact Westlawn student services to confirm eligibility and apply: info@westlawn.edu

**Westlawn offers a ZERO-INTEREST tuition payment plan** for all four modules of our professional diploma program, Yacht & Boat Design, for our short course, Elements of Technical Boat Design, and for all our continuing-education courses. Complete details are on the enrollment form for the course you are interested in. Monthly payments are low. The goal is for our students to complete their studies at affordable prices and with no student-loan debt.

**FREE Student AutoCAD!**
Westlawn has arranged for active Westlawn students to download AutoCAD online directly from Autodesk. This is a full version of AutoCAD student release. It is not a trial version. Active Westlawn students can log into the designated sign-up page through the Westlawn student forum.

This is the lowest cost for full AutoCAD ever—no cost! The commercial price of AutoCAD is $4,195, an enormous savings.

**Orca3D Hull Modeling and Rhino General 3D-Modeling Software at Deep Discounts!**
In addition, Westlawn has arranged with DRS C3 Advanced Technology Center for deep student discounts on the Orca3D hull modeling plug-in software for Rhino, plus Rhino in addition, if needed.

Orca3D Level 1 (hull design and fairing with intact hydrostatics and stability) is $1,390 commercial but just $125 for Westlawn students, a $1,265 savings!
Orca3D Level 2 (all of Level 1 plus speed/power analysis and weight and cost tracking) is $2,780 commercial but just $250 for Westlawn students, a $2,530 savings!

Orca Level 1 is all that’s required to complete Westlawn studies, but it makes sense to take advantage of this student discount to get Level 2, which will make your advanced work go more quickly and will serve you well in your career.

You need the general-purpose Rhino (Rhinoceros) 3D modeling program to run Orca3D. If you don’t already own Rhino, DRS C3 Advanced Technology Center has arranged a special Westlawn discount package price for Orca3D plus Rhino, as follows:
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- Orca3D Level 2 & Rhino $401 (commercial price $3,775)
- Orca3D Level 2 & Rhino/Flamingo/Penguin/Bongo $671 (commercial price $4,475)

Savings over the full commercial prices range from $2,907 to $3,804 depending on the package!

**The minimum suite of basic CAD software needed to complete Westlawn’s full Yacht & Boat Design Program is AutoCAD plus Orca3D Level 1 & Rhino. The total cost of this suite of CAD software programs is just $288! This matches the lowest cost for the minimum required CAD software ever!**

**FREE Scan& Solve FEA/Simulation Software by Intact Solutions!**
Students can download the student version of Intact Solutions’ Scan& Solve finite-element-analysis and simulation software for free. The free student version has some limited functionality, so students may upgrade to the academic version of Scan& Solve for $295. This is the full-featured commercial software at a special price. (The commercial price $995.)

Savings over the full commercial price is from $700 to $995!

To take advantage of these deep discounts for Westlawn, students must follow the student-purchase procedure on the Westlawn student forum. You must be a currently active Westlawn student with a valid Westlawn student ID card.
Mechanics of the day usually wore disposable paper hats (as did Hull), hence the “paper skull.” Such derision haunted Hull till he died destitute in London. A hundred and fifty years later steam tugs were masters of harbors around the world.

Robert Fulton . . . Well No
The fact is, that—back in school—your books probably told you that Robert Fulton and his Clermont was the first successful steamboat ever built. This would, of course, make her the first successful powerboat, period. The fact is, though, that these books are wrong.

Steam from a Marquis
Even before the unfortunate Mr. Hull, there had been serious attempts to build working steamboats, and the attempts continued. Some fifty years later a French Marquis—Claude Francois Dorothee, Marquis de Jouffroy, to be precise—caught the steam-power bug. Being a Marquis has its advantages, and de Jouffroy had the financial wherewithal to design and build a working boat. He named it the Pyroscaphe (literally heat boat), and built her in 1783. The illustration shows one of the original drawings de Jouffroy made for his Pyroscaphe. You can see that she’s remarkably modern in basic concept. A slender hull powered by a pair of paddlewheels (side wheels), and driven off a single central steam engine. Forty-three feet long and 6 feet 4 inches wide, the Pyroscaphe was run successfully on the Saone, at Lyons. Thousands of spectators observed the trials, and local officials recorded the event. The French Pyroscaphe was the first successful, fully operational, self-propelled motorboat in the world. The drawing of her (above) is a real peek back into a forgotten history. Robert Fulton didn’t get his Clermont going until twenty-four years later.

A Failure for the Marquis
Indeed, de Jouffroy built a second steamboat in July 1783 that was 151 feet LOA and 14 feet 8 inches beam. This remarkable vessel carried freight and passengers against wind and current for sixteen months, between the ports of Lyons and Lile Barbe. Once again, there are thousands of eyewitness accounts and official records confirming de Jouffroy’s triumph. At this moment, powerboats and steam navigation were all set to take off, when—as is all to often the case—bureaucracy stepped in. Our inventive Marquis applied to the government for permission to start a steamship company—really, in 1783! The government—acting as governments often do—passed the buck to the French Academy of Sciences for review. As luck would have it, one of the members of the board was Doctor Denis Papin. Papin was himself an unsuccessful steamboat tinkerer. Either because of his own failures or because of envy, he declared de Jouffroy’s results inconclusive and recommended against the government license. So much for powerboats for a time.

Cannon Boats
Of course, there was some good reason for skepticism. For one thing—until the Pyroscaphe—no one had ever succeeded in making any motor-propelled boat (and there had been many attempts). Second, the folks who dreamed up such ideas were often madder than fruit bats. One scheme for instance was to propel a boat forward by the recoil from a cannon. Talk about loud engines! The indefatigable Scotsman who dreamed up this approach actually tried it. After consuming some 30 barrels of gunpowder, the boat had barely made 10 miles. Rocket-propelled boats would remain unworkable for 300 years.

America Takes a Whack at It
Wacky ideas, or skeptical bureaucrats notwithstanding, the tools were at hand and success had been achieved. It was
The First Powerboats - continued

now just a question of time. In fact, a fellow named James Rumsey—a former Revolutionary-War veteran, and a native of Maryland—purchased a large pond expressly for experimenting with steam navigation unhindered. Rumsey’s boat was demonstrated successfully on the Potomac, in December 1787, just four years after de Jouffroy’s successes in France. Not only did hundreds of witnesses confirm Rumsey’s solid results, but no other than the esteemed General Horatio Gates attested to it in writing. (Surely you remember General Horatio Gates? No. Well, he was the Revolutionary-War general who defeated the British General Burgoyne. If it wasn’t for Gates, American readers of The Masthead would probably still be paying for things with pockets full of pounds and pence.)

Oared Steamers?
Rumsey’s great rival was another American, John Fitch. Fitch tried paddle wheels on his steamboats, but found that they, “labored too much in the water.” He replaced the paddlewheels with banks of independent steam-driven oars. As you can see from the drawing, an odder method of propulsion would be hard to conceive. Nevertheless, Fitch succeeded in persuading the states of New Jersey, New York, Delaware, Pennsylvania, and Virginia to grant him sole and exclusive rights to steam navigation on their waters. His first boat was launched, in Philadelphia, in 1787 (the same year as Rumsey’s). Incredibly enough, it ran. Fitch built two other still larger boats, and one operated as a passenger boat from Burlington to Philadelphia at about 7 knots.

Fitch’s End
Now, Fitch was ready to roll. He built a still larger boat called the Perseverance. It would take advantage of his exclusive steam-vessel rights in Virginia by operating on the Ohio River. (The U.S. was divided up rather differently back then.) Storm damage kept the boat from being completed on time, and Fitch’s exclusive state steering rights were in default. This caused Fitch’s financial backers to desert him, and dashed his dreams. Though Fitch traveled about and experimented with numerous boats—one even propeller driven, in New York City—no one paid much attention. Despondent, Fitch committed suicide by taking poison. His journal reads:

The day will come when some more powerful man will get fame and riches from my invention, but nobody will believe the poor John Fitch can do anything worthy of attention.

One has to sympathize with Fitch, but neither he nor anyone else in America could know that he’d been beaten out by almost a quarter of a century by the Marquis de Jouffroy.

Stevens, Livingston, and Roosevelt
Not long after Fitch still another American inventor took up the case for powerboats. John Stevens, working with his brother in law, Chancellor R. Livingston, and a friend, Nicholas J. Roosevelt, set out to build a working steamer.

Livingston and Chancellor had made a trip, back in 1790, on still another experimental steamer built by Samuel Morey, and run on the Connecticut River. (Powerboat nuts were popping up everywhere.) Morey’s odd boat had a single paddle wheel on the bow, and ran at the disappointing speed of 3.5 knots. Sevens, Chancellor and Roosevelt went on to build a couple of modestly successful boats of their own,
The First Powerboats - continued

when Livingston went off to France. Here, he met up with one Robert Fulton. But more about this in a bit.

The Modern Powerboat
Stevens—now left more or less on his own—continued his efforts, and in 1804, he launched and ran the boat shown in the photograph. This is a truly remarkable boat. The photo (taken in the early 1860s) is of the original vessel, not a replica, and it shows the first fully modern powerboat. It’s driven by a centrally located steam engine powering twin counter-rotating propellers. Yes indeed, in 1804 Stevens was propelling a powerboat with a modern screw propeller. You can see in the photo that these are almost exactly the same as today’s standard props. You’d hardly look twice if you saw them on an old small tug hauled out in some boatyard. What’s more, Sevens used twin counter-rotating props because he found that the single propeller had a tendency to drive the boat to one side (in circles), an effect only recently fully understood. Twenty-five feet overall, and 5 foot 6 inches beam, Steven’s powerboat did a reliable 9 knots on the Hudson over 200 years ago! In every respect the modern powerboat was born. The engine of this boat is still at Steven Institute, in Hoboken, New Jersey.

Robert Fulton at Last
Well then, what about Robert Fulton? It’s a bit of a mystery as to why he and his Clermont usually get the credit as the first successful steamboat. The Clermont wasn’t run until 1807, years after all the other boats mentioned so far. Still, Fulton was a successful inventor who had witnessed John Fitch’s sea trials when he was a boy. Fulton met up with Livingston in France in 1801, and Livingston—as we’ve seen, already a steam enthusiast—had the kind of personal fortune needed to make a go of this sort of mania. By 1803, the pair had combined forces to build a 70-foot steamer. This boat broke in half from the weight of her heavy engine, but the machinery was salvaged, and she was rebuilt, but only made 4 knots.

Clermont on the Hudson
In 1806, Fulton returned to the U.S., and with Roosevelt’s backing, started building the now-famous Clermont. The drawing (next page) shows a general impression of her from a contemporary newspaper. Little more is definitely known, but the Clermont was about 150 feet LOA and 13 foot beam. She was rebuilt and strengthened several times early on to permit her to carry the weight of her engine safely. Eventually, she ended up at 16 feet beam. Thousands lined the Hudson on trial day to jeer at Fulton’s Folly. Perhaps this is the key to Fulton’s and the Clermont’s fame. The incredulous multitude’s jeers became cheers as the bizarre—for that time—Clermont powered her way up the Hudson at a stately 4 knots.

It’s hard to recapture the amazement, shock, and even horror of the average man who first viewed this unfathomable development. Fishing boats scuttled back in to port. Unwary spectators gazed on transfixed in horror. One “honest countryman” ran home to tell his wife that he’d just seen: “the devil on his way to Albany in a sawmill.” When the truth of the Clermont’s purpose and triumph became known, however, the congratulations and jubilation were universal. All this fuss—right in the middle of the nation’s largest port and major city—perhaps, overshadowed the earlier more
The First Powerboats - continued

successful and better-fitted-out powerboats, which had preceded her.

Stevens and the Phoenix
John Stevens, in fact, had—in the mean time—built a much larger boat, the *Phoenix*. As you can see from the picture, she was not only larger than the *Clermont*, but was faster and better conceived. Among other refinements, she had boxes or splash guards around her paddlewheels which the *Clermont* did not. The *Clermont* was a wet, wet boat on deck as the paddles threw a great deal of water. Still, Fulton and Livingston had beat out the passenger-carrying *Phoenix* by a few days and so obtained the exclusive steam-navigation license for New York. Undaunted, Stevens motored his *Phoenix* offshore and down to Delaware, where the boat served quite successfully commercially for six years. This was, incidentally, yet another first for Stevens—the first open-ocean passage by a powerboat.

Turbine Speed
The rest of course is history. Steamboats continued to evolve, growing into ocean liners and cargo vessels of several hundred feet, and into fast patrol boats and yachts. Perhaps, the greatest of the early high-speed boats was *Turbinia* (photo next page). Designed by Sir Charles Parsons, and built in 1894, *Turbinia* was 103-feet 9-inches overall, an amazingly narrow 9-foot beam, and displaced 44.5 tons. After adjustments and propeller redesign, she did 32.76 knots in 1897, making her the fastest boat in the world and the fastest boat in history to that time. She was powered by a 2,100-hp steam turbine. Her engine turned three prop shafts, each fitted with three propellers. (The steam turbine engine was the first of its kind in a boat, hence her name).
The most obvious was the steel nail/aluminum (-760 to -1000 mV) combination (-600 to -710 mV). The steel remained unchanged while the aluminum started to bubble. The second most noticeable was the brass (-300 to -400 mV) and zinc (-980 to -1030) combination. Where the brass alone was deteriorating, the zinc was beginning to turn dark in color with no change to the brass.

This is where she finally got it, we use zincs to keep the more valuable metals protected underwater. At this point, her research stopped, and her report was written and submitted. (She got an “A” by the way). But I had different plans! With an excellent test setup, I decided to introduce a DC stray current with a power supply; just a couple of amps, just for fun. Mimicking a bonding system, I attached the negative of a DC motor and power supply to the brass/zinc combination and tossed the motors and the supply’s positive wire in the water. Add the power and there you have it—rapid DC stray current corrosion. The results were catastrophic and instantaneous! The good news is that it was only on a massive scale until the bare ends of the positive wires corroded off. Once that happened, we settled into a slow and steady decomposition of the associated metals.

Bottom line: In its pure form this is not rocket science. The reason we follow ABYC standards is to keep the electricity where it’s supposed to be. If the rules of E-11 are followed, then issues like this and many others solve themselves. That said, as we all know boats are not mason jars. Years of additions, subtractions and modifications can make even the most obvious fault difficult to find. The best troubleshooters I know start with the simple and slowly progress to the more obscure. So, next time you come across an issue that has you scratching your head, break it down to the simple first; so simple, in fact, it can be an 8th grade science experiment!

For more on corrosion and marine metals, see these articles in previous issues of The Masthead:
Persak & Wurmfeld and Derecktor Shipyards are proud to introduce the next generation of modern sailing yachts. The 44m Performance Schooner is the very definition of performance without compromise.

The hull is fast, comfortable, safe, and seaworthy. The schooner rig allows for a flexible sail plan that can be optimized to a wide range of wind speeds while reducing both sheet loads and rig height. The appendages are modern yet easy to drive. The result is a vessel supremely comfortable on a cruise, yet quick and aggressive on the race course.

The arrangement affords comfortable accommodations for ten and includes a separate Owner’s area, four guest staterooms, a full dining area, and a raised salon to enjoy panoramic views.

The vessel shall be built to the highest construction standards and benefit from generations of yacht building experience of the Derecktor family.

Class: LRS +100A1 SSC Yacht Mono G6 (+) LMC UMS
Flag: MCA LY2/3
Hull: Construction Aluminum
Deck Construction: Composite
Rig Construction: Carbon (GL compliant)
44M Performance Schooner - continued

Special Features
- Schooner rig that can be optimized for wide range of wind speeds
- Sculpted flush deck with full beam raised salon and dining
- Modern hull design and appendages
- Optional electric pod drive propulsion
- Separate Owner’s quarters with dedicated entry

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Principle Dimensions
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<th>Length, overall</th>
<th>Length, waterline</th>
<th>Beam, maximum</th>
<th>Draft</th>
<th>Draft, keel up</th>
<th>Displacement</th>
<th>Ballast</th>
<th>Sail Area, upwind</th>
<th>Power</th>
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<td>60 mt</td>
<td>960 sq.m</td>
<td>485 kW</td>
<td>10</td>
<td>8 + captain</td>
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Westlawn alumnus Jeremy Wurmfeld and Webb grad Carl Persak are the core design team for all projects at Persak & Wurmfeld.
Growing up in the coastal town of Marblehead, Massachusetts, Krisha Naroski Plauché has been a boating enthusiast all her life. She has raced small boats, PHRF races, Block Island Race weeks, Newport to Bermuda, Marblehead to Halifax, and has traveled all over the Eastern Seaboard as well as the Med, most recently aboard a 43-foot sailboat. During her childhood, her father would buy boats for specific races and restore, repair and outfit these boats for either profit or the family’s own enjoyment. Krisha worked many hours on these projects. Her family would keep boats for two or three years then move on. There were years of sportfishing, then powerboating, then sailing, but mostly sailboat racing.

Obtaining her first Coast Guard license at the age of 18, Krisha worked in local harbors throughout college. She has been an ad rep for Soundings & Trade Only and Sail Magazine. Having an interest in interior design, she was also assistant director of marketing at the Boston Design Center, New England’s center for interior design. At the BDC, Krisha developed significant relationships with several high-end fabric, furnishing suppliers and with famous designers. This also familiarized her with the many resources and innovative materials for the future of interior design.

In 1998 Krisha’s family purchased an existing yacht interior design business called Yacht Interiors of Essex, out of Connecticut. This was a long established firm and had been in business since 1984. Her family, in fact, had worked with YIE on several of their own yachts. In 2002, they retained Krisha to open a Massachusetts office for Yacht Interiors of Essex. At that point (also in 2002), Krisha decided to attend Westlawn to hone her skills, and enrolled in Westlawn’s Interior Design Methods course. When she married in 2004, Krisha relocated to Florida and took the opportunity to open a new office under a new name, Onboard Interiors.

Onboard Interiors outfitted and styled the newest line of Jeanneau Yachts 45Ds.

Fabric selected for the Jeanneau 45Ds
While aboard her powerboat, which she'd just delivered to Florida, she was looking at a “life is good” hat. This got her thinking, “Life is good onboard!!” which became Onboard Interiors’s trademarked tagline.

Onboard Interiors is a full-service, interior-design firm specializing in custom marine interiors for powerboats and sailboats both private and commercial. The firm focuses on vessels from 30 to 200, feet, with an interest in the upscale yachting lifestyle. Clients include local celebrities’ yachts, superyachts, and a historical J-Class yacht. Onboard Interiors offers a wide variety of services, whether for new boats or for refinishing, and products from conceptual CAD designs to the selection of the finest in fabrics, furniture and accessories specific to the marine environment.

The firm specializes in offering a personal approach to designing to each client’s individual needs, and prides itself in personally meeting clients aboard their vessels, taking measurements, reviewing the design options, and completing the design process with the final installation on budget and on schedule.

The design approach of each project Onboard Interiors undertakes is based on an appreciation of the style and model of each boat and an understanding of how the client intends to use it. Choosing from the various designs of boats on the market today is a very unique process, personalizing the interior to fit each client’s lifestyle adds the finishing touch. Honoring the exterior lines of each vessel, Onboard Interior’s design works to marry the new interior to the fixed elements of design onboard.

Plauché’s background with a United States Coast Guard 100-ton captain’s license; a certification from Westlawn Institute of Marine Technology in interior design methods; along with several years employed as a yacht designer provides her with the hands-on and technical tools she needs to guide Onboard Interiors. She is a contributing author in many industry magazines, a member of the Massachusetts Marine Trade Association, and an advisory board member of Sail Salem. In June 2012, Krisha was accepted as an associate member of ASID, the American Society of Interior Designers—the oldest, largest and leading professional organization for interior designers.

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The ice-strengthened cruise ship Lyubov Orlova was built in Croatia in 1976 for operation under the Soviet-Russian flag. Measuring 4,251 gross tons and with a length of 295 feet, it could carry up to 110 passengers. The Lyubov Orlova operated out of Vladivostok and specialized in cruises to the Arctic and the Antarctic. In 1999, the ship was transferred to the Cook Islands registry and underwent a refurbishment before returning to its Antarctic cruises. In 2002, it underwent further renovations before returning to cruises in the Arctic and Antarctic.

On 27 November 2006, it grounded near Deception Island off the Antarctic Peninsula, but was towed off the rocks with minimal damage by the Spanish ice-strengthened research vessel Las Palmas. While in port in St. John’s, Newfoundland, in September 2010, the Lyubov Orlova was arrested by the charterer, Cruise North Expeditions, for debts resulting from a cancelled voyage. The crew members also asserted claims for unpaid wages. The vessel was then sold to Neptune International Shipping for recycling, in February 2012.

It wasn’t until January 2013 that a tug arrived to tow the cruise ship to the Dominican Republic for scrapping. One day after departing St. John’s, on 28 January 2013, the tow line parted. Due to severe weather, the tug was unable to re-establish the tow and it departed. Concern arose because there are a number of offshore oil and gas platforms in the vicinity. The anchor-handling vessel Atlantic Hawk, under contract to Husky Energy, got a line on the vessel and towed it away from the offshore structures. Once the vessel was no longer a threat to the offshore structures and in international waters, Transport Canada decided to not pursue salvage efforts.

The Lyubov Orlova was set adrift on 4 February 2013 in the North Atlantic approximately 250 miles east of St. John’s. Transport Canada asserted that the owner remains responsible for the ship’s movements. On 22 February, the Lyubov Orlova was found drifting in position 49-22.70N, 044-51.34W, as reported by the US National Geospatial-Intelligence Agency in its Notice to Mariners. This places it approximately 1,300 nautical miles west of Ireland.

Any similarity to the Flying Dutchman is purely coincidental.

Dennis Bryant is a maritime consultant, specializing in regulatory and environmental issues. He maintains an almost daily blog and his website is found at: www.brymar-consulting.com
Bow cones may be easily added to a hull, using Rhino’s Sweep 2 Rails function (Fig. 1).

Begin by designing the hull surface so that the edge that would normally be the stem is, instead, the tangent line, pulling away from centerline as it rises from the forefoot to the deck (Fig. 2).

Next (Fig. 3), mirror the hull about the centerline, using Rhino’s Mirror command, and compute waterlines on both surfaces, using Orca3D’s section command. Next, use the Arc command, with the Tangent to Two Curves option to draw an arc at the sheerline, bridging the two surfaces and tangent to the two sheerlines. When using the command, position your cursor near the end of the sheerline; Rhino will show a tangent line and the end point of the sheerline. After selecting the second point on the opposite side, press Enter to draw the circle from
those two points, and press Enter one more time to select the correct arc (there are two arcs that satisfy the conditions; the correct one will be obvious).

Start the Sweep 2 Rails command, and select the two edge curves as the rails. Then select the arc as a cross section curve (Fig. 4).

In the Sweep 2 Rail Options dialog (Fig. 5), select “Refit within,” and enter a reasonable tolerance. Under Rail Curve options select Tangency for both A and B rails, and click OK.

The surface will be created, and you can now select it and recomputed the Orca3D sections. Be sure to check the outward normal direction (Analyze>Direction); if the direction arrows are not pointing outward, use the Flip option to correct the outward direction (Fig. 6 & 7, next page).

www.orca3d.com Learn about Westlawn student pricing on Orca3D software, page 3.
**Fig. 6**

Incorrect outward normal direction

**Fig. 7**

Correct outward normal direction
With each generation we tend to get heavier. The same holds true with boats, equipment/accessories and engines. In this article, we will take a look at ABYC S-30 Outboard Engine and Related Equipment Weights. S-30 is classified as an industry conformity standard with the intent of providing a guide for determining outboard engine weights for flotation and capacity. While S-30 is a relatively short standard, it is fairly far reaching and important because it is referenced in numerous standards including H-5 Boat Load Capacity, H-8 Buoyancy in the Event of Flooding/Swamping, H-35 Power and Load Capacity of Pontoon Boats, and H-28 Inflatable Boats to name a few.

A little background, S-30 was first published in 2002 in response to the increased market share of four stroke outboards and the lack of updating of the federal tables.

<table>
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<th>Comparison for S-30 to CFR Weights</th>
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<tr>
<td><strong>Engine HP</strong></td>
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<td><strong>CFR Weight</strong></td>
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<tr>
<td><strong>S-30 2012</strong></td>
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<tr>
<td><strong>Percent Increase</strong></td>
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Before then, engine weights for determining capacity and flotation were the pulled from the table in 33 CFR subpart H Table 4. An important consideration is all the weights in the revised edition of S-30 exceed the weights in the CFRs. As per all ABYC standards, this insures that the standard meets or exceeds the federal requirements.

There are a couple of obvious changes to the standards. First, there are only 9 columns instead of 10 and the column headings have changed. As four stroke do not have remote oil tanks, the “Remote oil tank” column was removed and all the fluid weights associated with the...
Know It All Contest Solution to the December 2012 Question
On Hooked and Cooked Weight and CG location
(This Issue’s Know it All question is on page 20)

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:
The owner of Hooked and Cooked, a 48-foot diesel sportfisherman, has asked you to determine the boat’s weight and the fore-n-aft location of its center of gravity. Making sure that Hooked and Cooked is level and on a rugged cradle, you've brought in a pair of hydraulic jacks. Each jack has a cylinder area of 4.9 square inches. Lifting the aft end of the cradle with the pair of jacks, you get a pressure on each of the jacks of 2,590 psi. Lowering the aft end and then lifting the forward end of the cradle, you get a pressure on each jack of 1,570 psi. You've measured the distance to the center of the jacks at each lift and have carefully marked these distances to the bottom lower corner of the transom on the sketch you've made of the boat and cradle. You have also weighed the cradle separately, and found it was 2,428 pounds.

What is the weight of Hooked and Cooked and where is the longitudinal center of gravity (LCG) located?

The Winners Are:
We received an amazing nine correct answers for this question. Clearly, the sheer brainpower of Masthead readers is beyond estimation. There is, apparently, no problem our readers can’t solve. Correct answers were submitted by: Westlawn Instructor Nick DiMatteo; Jim Trimble; Jean-Francois Bedard; Gabriel Massano; professor Andres Espina; Jimmy Krogan; Westlawn grad Peter Banks; James Gagnon-Coupal; and naval architect Alan Gilbert. Each has demonstrated a combination of insight, perspicacity and erudition that can only be characterized as wizardry. Naturally—under the rules of the Know It All contest—only the first three correct answers received can be awarded the coveted Know It All certificate. Our three Know It Alls are thus Nick DiMatteo, Jim Trimble and Jean-Francois Bedard. In recognition of their unalloyed sagacity, brainpower, and gumption, each should henceforth be addressed only as “Mr. Know It All.” Naturally, Know It All Certificates, Westlawn T-shirts and caps are on their way to our three distinguished winners.
And the Solution Is:
The weight of *Hooked and Cooked* is the load taken on each jack combined minus the weight of the cradle, so:

Aft weight = 4.9 sq.in. x 2,590 psi x 2 jacks = 25,382 lb.
Forward weight = 4.9 sq.in. x 1,570 psi x 2 jacks = 15,386 lb.

Boat weight = 25,382 lb. + 15,386 lb. - 2,482 lb. cradle = 38,340 lb. (17.12 tons)

Once you have the boat weight you can sum the moments of the different loads/weights and divide by total weight to find the LCG (longitudinal center of gravity):

\[
\text{LCG} = \frac{(25,382 \text{lb} \times 136 \text{in.}) + (15,386 \text{lb} \times 340 \text{in.}) - (2,482 \text{in} \times 238 \text{in.})}{38,340 \text{lb.}} = 211.4 \text{in.}
\]

Going a step further we can determine the CG as a percentage of waterline length. Measuring the waterline, we see that it is 512.2 inches (42.7 feet) long. So:

512.2 in. - 211.4 in. to CG = 300.8 in.
300.8 in. ÷ 512.2 in. = 0.5872 or 58.6%

This is consistent with a suitable LCG location for a planing hull of this type. In fact, a good basic check on your LCG-location results is that the LCG should be between 50% and 60% of WL length on almost all boats of normal form. Some very high speed planing hulls may have LCGs aft of 60%.

The displacement/length ratio (DL ratio) of *Hooked and Cooked* is:

\[
\text{DL ratio} = \frac{17.12 \text{ tons}}{(0.01 \times 42.7 \text{ ft. WL})^3} = 219.98, \text{ use 212}
\]

This is a reasonable DL ratio for a planing hull of this size and type.

This is one of the more useful methods for obtaining the weight and LCG of an existing boat. The method can be employed with a pair of load cells or scales instead of hydraulic jacks. You can also use it to find the LCG of a boat hauled in a Travelift with calibrated scales on each of the two sling straps. The load on the forward and aft slings, combined with the slings locations on the boat provide the same information we used above to find LCG.

\[
((25,382 \text{ lb.} \times 136 \text{ in.}) + (15,386 \text{ lb.} \times 340 \text{ in.}) - (2,482 \text{ in.} \times 238 \text{ in.})) = 211.4 \text{ in.}
\]

\[
\frac{38,340 \text{ lb.}}{211.4 \text{ in.}} = 178.0 \text{ in.}
\]

\[
\frac{211.4 \text{ in.}}{512.2 \text{ in.}} = 0.412, \text{ or 41.2%}
\]

ABYC-S30 and Heavier Outboards - continued from page 17

engine, 2-stroke oil, 4-stroke oil, lower gear case oil, etc, were factored into “running weight.” Running weight also includes the heaviest propeller. Further, the horsepower ranges were redistributed and additional ranges were included to better capture the 250-, 300-, and 350-HP engines. And of course the weights were updated.

To get the most out of the standard, read the NOTES. For instance, building a boat designed for a short shaft engine, the dry weight could be decreased by 10% per Note 1. Or, if the boat has a permanent fuel system, the portable-tank weight in column 8 may possibly be omitted per Note 5. The notes even cover how to address diesel outboards.

When three common engine horsepower are compared (9.9, 90 & 150 HP) between the CFR and 2012 revision of S-30, the total weight increased between 14 and 32 percent (see table). And the weights increased 4% and 2.5% for the 90 HP and 150 HP respectively between 2005 and 2012 version of S-30. The news is not all bad, the 9.9 HP actually decreased by 8% from 2005 to 2012. So why is this important? In one conversation I had with Dave Marlow, ABYC Technical Board Chair, he stated that across the Brunswick lines of boats, over 150 models had to be re-evaluated for capacity and flotation based on the revision of S-30. If I have your attention now, you may also want to review the 2012 versions of H-5 and H-8 as they have also had changes affecting capacity and flotation. Again, it is important to check the capacity calculation and floatation requirements with the new weights from S-30 for the 2014 model year and make appropriate production and labeling changes.
Who Will Be The March 2013 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've been asked to work on the design of the 60-foot, composite, performance cutter, Outta Sight. She has a lifting bulb fin keel, which hoists vertically in its trunk and is to be lifted by an electric motor powering a reel winch. The total fin-keel weight, fin and bulb, is 17,900 lb. Hoisting time is to be 6 seconds with a lift of 7.8 ft.

Given this information, and assuming a uniform hoisting speed, what would the tension in the hoist line be? Using 6x37 flexible stainless steel wire rope of 316 alloy, what diameter would you specify, to ensure a safety factor of four? Assuming a motor efficiency of 70%, what horsepower would the hoist motor need to be?

See and Hear Dave Gerr’s Interview with Mad Mariner Magazine

Mad Mariner, the online daily boating magazine, interviewed Westlawn director Dave Gerr on July 20, 2010. In this wide-ranging, half-hour radio show, Gerr discusses almost all aspects of Westlawn, including history, operation, student and alumni successes, costs, and more. Click on the links below to listen to the full interview and watch the accompanying slide show of over a hundred boats designed by Westlawn alumni.

Click Here to watch on Windows PC
Click Here to watch on Macintosh
We Get Mail

Do you have a question or comment regarding *The Masthead* or anything related to boats? E-Mail these to Norm Nudelman at nnudelman@westlawn.edu. We will post your question in the next issue (space permitting) and we will do our best to answer you.

Readers provide information on understanding HIN numbers for foreign-built boats as a follow-up to the article Reading the HIN, in the December 2012 issue of *The Masthead*

From: Peter Eikenberry:

One problem that doesn't affect domestic builders but does affect foreign builders and importers, is the Manufacturers Identification Code (MIC). All US builders and importers are required to get a MIC. Importers should make sure to do this. Countries in the European Union, and elsewhere are also assigning MICs to their builders. Often these MICs are identical to the MIC issued to US builders. So confusion can occur when registering or documenting a vessel over who the builder is. HINs assigned by a foreign builder are not valid in the USA. They must have a valid US MIC. The reason is, the importer is the person responsible for making sure the boat complies with US standards, not the builder. The US Coast Guard has no jurisdiction over a foreign builder, but they do have jurisdiction over the importer. So the MIC identifies who the importer is. This may mean that an imported boat has two HINs but the one that identifies the importer is the one that is valid in the US. This does not apply to boats manufactured in Canada. The US Coast Guard has a Mutual Recognition Agreement with Canada and has set aside a block of MICs for Canadian boat manufacturers. So Canadian HINs are valid in the US.

Peter D. Eikenberry Sr.
New Boat Builders Home Page: [http://newboatbuilders.com](http://newboatbuilders.com)
Boating Safety News: [http://newboatbuilders.blogspot.com](http://newboatbuilders.blogspot.com)
Boat Building News: [http://newboatbuildersnews.blogspot.com](http://newboatbuildersnews.blogspot.com)

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Dave,

I always enjoy reading *The Masthead*. I think the page explaining Hull Identification Numbers (HIN) (December 2012 Page 13) was one of the better explanations of a somewhat confusing system. One of the many nuances of that system is the numbering of foreign-built vessels. If they are designed and built for import and sale in the US, the manufacturer is required to obtain a Manufacturer’s Identification Code (MIC). However, if they are designed to be sold overseas and ultimately end up in the US, the manufacturer does not have to obtain a Coast Guard MIC but can use any letters they want. If you go into the Coast Guard MIC database

[http://www.uscgboating.org/recalls/mic1.aspx](http://www.uscgboating.org/recalls/mic1.aspx)

with a MIC for a foreign manufacturer you may find that the manufacturer of the semi-custom sailboat you are looking at was built by someone who builds canoes in Idaho. This doesn’t come up too often but it is one of the issues your readers should be aware of.

Kim I MacCartney
Principal Marine Surveyor
ACE Recreational Marine Insurance
May day morning 1940, Pop asked me if I wanted to take a boat ride. “Oh boy,” I replied, “I sure would.” We walked down the street to Pop’s shop where the 50-foot New Jersey State patrol boat was docked. Pop had just repowered her with a pair of 250-horsepower Hall Scott Invader engines. She was built by Pop’s friend Charley Leek, and designed by naval architect Lockwood Haggas. Captain Ray Huber aka “U Boat” and his mate Elwood welcomed us aboard. U Boat was a happy, hail-fellow-well-met kind of, fun-loving guy. Elwood later captained a large state boat.

Elwood fired up the Hall Scotts as Elwood untied the lines. We headed out Absecon inlet into the ocean, off Hamid’s million-dollar pier (once one of the largest attractions in Atlantic City). Pop took off his shirt and proceeded to go down into the engine room. I watched down the engine hatch as Pop ordered U Boat to open her up. We ran south for about 15 minutes wide open. Pop leaning in front of the engine had a stopwatch in one hand and a revolution counter in the other hand. He thrust the revolution counter into the fly-wheel center while watching his stopwatch. At exactly 60 seconds, he hollered, “2,168 rpm.” He repeated the process on the other engine and hollered, “2,175 rpm.” Soon Pop emerged from the engine room with a big smile on his face and put his shirt on. He then gathered up a little dart shaped bronze thing attached to a big reel of white braided line. This gizmo I was to learn was a Negus log. He proceeded to pay out what looked to me about 300 feet of line and tied it to a cleat on the aft deck. At this time, we were about a mile southwest of the Atlantic City bell buoy. “U Boat,” Pop hollered, “Keep her wide open and head for the bell buoy. Then put her on a course for the Barnegat Bell.” “Oh boy,” I said to myself, “At 10 years old I am on a wide open trial run on a 50-foot patrol boat out in the ocean.” The twin Hall Scott Invaders, 250-horsepower each, were purring along just fine. The instant we passed the bell, Pop hit his stopwatch.

U boat had big grin on his face as the light dawned that the Navigator was a hell of a lot faster with the 250-horsepower Hall Scotts than she was with the 225-horsepower Kermath engines that Pop had replaced. Elwood served the crew coffee and me a soda as we flew past Brigantine, New Jersey. We bounced around a bit as we passed Little Egg Inlet and approached Holgate. Along the beach, there were a lot of small pilings sticking up. I learned they were for attaching pound nets. Small boats came out from the beach and pulled the nets in and removed the fish to take to market.
Navigator Sea Trials - Continued

As we passed a lot of big mansions on Long Beach island, I noticed Barnegat bell buoy in the distance. Pop ventured into the cockpit with a stopwatch in his hand. The instant we passed the bell, he clicked the stopwatch, looked at the dial on the Negus log, made a few calculations on a pad and enthusiastically hollered out, “30 miles per hour.” We ran in Barnegat Inlet and across Barnegat Bay then up Forked River to the N.J. State Yacht Basin.

A few weeks after the Navigator trials, Pop contracted with the State of New Jersey to self propel the Transit, a 60-foot houseboat barge with a derrick, that previously was towed along the Inland Waterway to install the markers and buoys. He also contracted to repower a 38-foot state patrol boat, the Director. I worked that summer on the project and was very useful running, wires, cables, and pipes through places where grown men couldn’t fit. Several months after the job was completed, Pop still was not paid. One Saturday morning, a member of the State Board of Commerce and Navigation walked into the shop and told Pop, “Martin, We have you down for a $5,000 donation to the cause, (Senator Farley's election campaign).” Pop picked up a sledgehammer and screamed, “You get the hell out of my shop, you god damn one eyed son of a bitch!” as he chased him two blocks down the street.

Nine years after the aforementioned fiasco, I worked for the sons of the builder of the Navigator, John and, Cecil Leek who started a new company called Pacemaker. We produced a 29-foot Jersey sea skiff. The state of Maryland bought three of these boats, one of which is pictured below, but did not pay for them for a very long time. John E. Leek was really very short of cash to make payroll and pay his suppliers. Just in time, a man named Jack Sobel came along, bought a boat, and paid for it in advance. This saved Pacemaker.

In 1955, I had become a naval architect in private practice. In 1957, I received the Pacemaker design account, the first design being a forty footer. In 1960, I bought a thirty footer, the Bali Hai pictured above. It should be explained that John E. Leek died and Jack Leek and his brother were now running the company.

During the 1960 Marlin Tournament, I pulled into the Atlantic City State Marina weigh station to weigh in a nice marlin. The manager of the marina, Captain Tommy French, boarded the Bali Hai, loved it and suggested to the State Board of Commerce and Navigation that they purchase several Bali Hai sister ships and they did.

Westlawn graduate David Martin has spent a lifetime designing all types of boats. His books, Martin's Yarns and the Book of Dave Martin Designs are available on CD from Amazon.com.

CLICK HERE to purchase Martin's Yarns on CD, from Amazon.com.

CLICK HERE to purchase the Book of Dave Martin Designs on CD, from Amazon.com.
**News & Views**

**Yacht Builders Face Redesign Issues**

Yacht builders are facing potential redesign issues after the International Maritime Organization passed a measure requiring large vessels to catalyze their engines by 2016. The measure passed by the group, which includes more than 100 countries as signatories to their treaties, would affect U.S. yacht manufacturers since they would be required to catalyze yachts 24 meters and larger, or just over 79 feet, John McKnight, director of environmental safety and compliance for the National Marine Manufacturers Association, told *Soundings Trade Only*.

“That’s an issue because the catalyst systems out there now in the field... wouldn’t fit in many engine compartments, based on their current boat designs,” McKnight told Trade Only. “These yacht designers design two or three years out and the engine compartment would have to be reconfigured to fit in the new engines.”

There could be some relief for the recreational marine industry, McKnight said.

The NMMA and the International Council of Marine Industry Associations are currently working with U.S. and international yacht builders to address the economic and technical burden of implementing the standard. The NMMA has met with the U.S. IMO representative “and we are in the process of assessing whether recreational yacht builders would require an exemption from this rule or need more time to comply,” McKnight said.

Source: Ragan Haynes  
*Soundings Trade Only*, Jan. 15, 2013

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**E15 could be headed to the Supreme Court**

The National Marine Manufacturers association in concert with other interested groups claim that the U.S. Environmental Protection Agency exceeded its authority by granting a waiver that allowed the sale of fuel containing 15 percent of ethanol.

NMMA chief counsel of public affairs and director of regulatory affairs Cindy Squires told *Soundings Trade Only* that, “Based on the conversation so far, we are likely to be seeking a Supreme Court review.”

Further, Squires said, “We anticipate that at least one of those groups will most likely file. If that were to occur, we assume the other groups will follow suit. No final decisions have been made, but we’re all very seriously considering it.”

The NMMA was among the groups petitioning the court to reconsider a dismissal of the appeal in October. The challenge was dismissed by the three member court of Appeals for the DC Circuit but dissenting judge Brett Kavanaugh said that the EPA waiver “plainly violates” statutory text, according to court documents filed in January.

“When it comes to ethanol, the NMMA has done a number of government relations battles,” Squires said. “We always like to look at these types of battles as multi-pronged efforts. We’re very active about ethanol. We’re active in the courts. We’re looking at new legislative options, and we’re also looking at state options, as well. There are many avenues, so we try not to leave any stone unturned.”

We want to make sure we protect boaters from inadvertently putting E15 in the tank and destroying their engine,”

Source: Reagan Haynes  
*Soundings Trade Only Today*  
Posted on 11 February 2013
Essential Continuing Education
For Marine Surveyors, Boatbuilders, Managers and Small-Craft Designers

METAL CORROSION IN BOATS
(Course No: TT500)
This comprehensive distance-learning course will provide you with a firm foundation in the causes of metal corrosion and the current practices in its prevention, reduction and cure.
Topics include: galvanic corrosion, electrolytic corrosion, wastage, pitting, velocity effects, and cathodic protection. The causes and mitigation of corrosion of stainless steel, copper and nickel based alloy, aluminum, iron, and steel are studied. Special consideration is given to problem areas underwater, on deck and aloft, and in engine and fuel systems.

CLICK HERE for a detailed syllabus
CLICK HERE for more details and enrollment information on this and other Westlawn essential continuing education courses

FIBERGLASS BOATBUILDING: MATERIALS & METHODS
(Course No. BC 401)
This comprehensive distance-learning course provides instruction in the fundamental concepts of sound fiberglass boat construction practices and structural calculations.
This course focuses on current information on fiberglass/composite and related boatbuilding materials, and the best techniques for using them. Topics include: reinforcement fibers, resin systems, core materials, mold construction, production-facility requirements, boatbuilding methods, elements of strength of materials, laminate design and specification, assembly of components, and design examples.

NOTE: This course consists of lessons excerpted from Westlawn’s larger Elements of Technical Boat Design course and also in the full Yacht & Boat Design Program. On completion of BC 401, students may transfer into either program and receive full credit.

CLICK HERE for a detailed syllabus
CLICK HERE for more details and enrollment information on this and other Westlawn essential continuing education courses

ABYC Courses and Schedule for 2013
The ABYC education department has been providing industry certifications, training, high school and college curriculum, and industry seminars for over twenty years. They are providing the marine industry with the skilled workers required to build and maintain modern small craft of all types.
ABYC is currently scheduling on-site and factory training for 2013. Please call ABYC for custom tailored, flat rate, instruction by top industry trainers at your facility (410-990-4460, Ext. 104).
The Marine Technician Certification Program developed by ABYC with “NOCTI Certification”* has proven to be the industry standard. ABYC continues to provide the highest quality marine education and training throughout the country and throughout the year.
For course dates and descriptions Click Here

*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.
Advance Your Career, Train Your Employees
ABYC is the acknowledged leader and certifying body in education for the marine industry. We offer technical classes that progress from entry level to advanced courses, meeting the needs of every experienced marine professional seeking improved skills. ABYC educational programs support the career path of individual technicians and provide a training curriculum for marine businesses. Our goal is to provide continuing, convenient education to improve the quality and professionalism of our industry.

Learn About the ABYC Certification Program & Courses
Read about the ABYC Certification program, who should become certified, how to certify and the eight different areas you can get certified in.

Need to Re-Certify?
The two most important reasons to recertify are your career and yourself. If your certification is about to expire your certification is about to expire

ABYC Class Schedule Through JUNE 11, 2013

Check the ABYC Class Calendar for the full schedule & Register Online
Find an ABYC class in your area and then click on the link to read the course description, prices and to register online.

Intro. to Basic Electrical & Corrosion Protection (Chi, IL)
3/19/2013 » 3/22/2013  
Location: Lemont, Illinois

Diesel Engines Certification (St. Pete, FL)
3/19/2013 » 3/22/2013  
Location: Saint Petersburg, Florida

Marine Corrosion Certification (Halifax, Canada)
4/9/2013 » 4/12/2013  
Location: Halifax

Standards Certification (Jax, FL)
Location: Jacksonville, Florida

Marine Systems Certification (Dania Bch, FL)
4/16/2013 » 4/19/2013  
Location: Dania Beach, Florida

Marine Electrical Certification (Balboa Park, CA)
Location: San Diego, California

Marine Electrical Certification (Key West, FL)
Location: Key West, Florida

Marine Corrosion Certification (Key West, FL)
6/11/2013 » 6/14/2013  
Location: Key West, Florida

With integrity, pride in our product, and commitment to building long term relationships with our customers, Armstrong Marine, Inc. was launched with the goal to build the best boat on the water. It is that goal that drives us today.

With that in mind, Armstrong Marine set aside $80,000 for training in 2012, and the majority of the systems training will be through ABYC. Training with ABYC insures increased profitability through better trained and more efficient employees while also ensuring better safety and service.

Cory Armstrong, Owner, Armstrong Marine, Inc

Our goal at Diversified Marine Services, Inc. is to have all of our long term technicians certified to the “Master ABYC” status and to help pass this valuable information onto our client base. I feel like we are in partnership with the ABYC organization!

Thomas F. Kicklighter, Diversified Marine Services, Inc.
ABYC Webinars
ABYC is now offering webinars as a new and exciting learning tool to train marine professionals. Webinars are good for you and your company because they:

- Are relatively inexpensive
- Are monthly
- Are current and topical
- Can be viewed in real time or on your own time
- Can be archived for members
- Help you train your staff
- Give you a taste of an ABYC certification class

A typical webinar might feature an ABYC instructor or other industry expert doing a 60-90 minute talk with a PowerPoint presentation on a relevant topic. You might hear Ed Sherman talking about new battery technology or Captain Dave Rifkin discussing corrosion or John Adey explaining the details of a new ABYC standard. We have learned how to stream these presentations to your computer in your office with top quality sound, graphics and deliverability.

Order a pizza and gather your technicians in for a shop lunch. Have them all listen and view the presentation. Each one of them will learn something to take to the boat with them. This will make expertise and knowledge synonymous with your company and your technicians.

Go to the class calendar on the ABYC Website and sign up for one.

2013 Events Program
RINA organizes a programme of international conferences, workshops and training courses covering a broad range of experience and opinion on research, development and operation on all aspects of naval architecture and maritime technology. For more information about any event, click on a title.

SURV 8 - Surveillance, Search and Rescue Craft
20 - 21 March 2013, Poole, UK

HPMV CHINA 2013 - 18th International Conference on High Performance Marine Vessels
12 - 13 April 2013, Shanghai, China Call For Papers

Marine Coatings Conference
18 April 2013, RINA, London, UK

Annual General Meeting
11:00, 24 April 2013, RINA Headquarters, London, UK

2013 Annual Dinner
Wednesday 24 April 2013, London Lancaster Hotel, London, UK

Warship 2013: Minor Warships
12 - 13 June 2013, Bath, UK Call For Papers

Marine Coatings - Risk Management Course
13 September 2013, London, UK

ICCAS 2013 - International Conference on Computer Applications in Shipbuilding
24 - 26 September 2013, Busan, South Korea Call For Papers

Pacific 2013: International Maritime Conference
7 - 9 October 2013, Sydney, Australia

World NAOE Forum 2013, and International Symposium on Marine and Offshore Renewable Energy
28 - 30 December 2012, Minato-Ku, Tokyo

Developments in Marine CFD 2014
December 2014, Chennai, India

For a complete listing of upcoming RINA events, go to: www.rina.org.uk/events_programme
Masthead Archive
All back issues of The Masthead are available online. CLICK HERE to read the back issues of The Masthead

NEW!! Online Searchable Combined Index for All Issues of The Masthead

With 24 issues and counting, there is a vast store of information in all the issues of Westlawn’s quarterly online journal, The Masthead. All issues are always free and always available online. But how can you find articles on specific topics or by specific authors in all these issues? We’ve made it easy! Click on the link below and you’ll get a searchable PDF file, which is the Combined Index of all issues. Use the find function to search for the information you want, then download or open that issue. The Combined Index will be updated with each new issue, so it will always be current.

CLICK TO ACCESS THE MASTHEAD COMBINED INDEX

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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. The Westlawn Yacht & Boat Design Program is also accredited by the Royal Institution of Naval Architects (RINA).

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 via distance learning.
■ 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.
■ To provide continuing education to marine-industry professionals.

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