Keeping Your Engine Humming
Part I, Outboards

Outboard engines are the most popular type of propulsion for boats and for good reason. Outboards are the only engines that are built from the water up specifically for boats and the range of sizes and power is unmatched by any other propulsion types, from two-horsepower dinghy engines to 350-horsepower behemoths. Outboards are more powerful for their weight than inboards or I/O’s and take up no valuable cockpit space. On top of that, they are easy to access and service and are easier to replace or upgrade.

Larger modern outboards are controlled by computers and are more efficient than past models. But as with all things marine, there are some things you can do to keep your outboard healthy and happy and extend its useful life.

Different Strokes for Different Folks

While all outboards do the same thing—make the boat go—there are two ways outboard manufacturers go about getting power to the prop. Some engines (the majority of older ones) use two stroke technology. This means that lubricating oil is mixed into gasoline and then burned in the engine (this can be done by pre-mixing or by a special pump that injects it with the gas). This oil is critical to the lubrication of the engine and only special oils can be used. Four strokes, on the other hand, circulate lubricating oil throughout the engine, just like the family car. The oil has to be changed at regular intervals, and again, special lubricating oils designed for marine use must be used.

Continued on page 6
Engine Cooling

Thanks for a much read and appreciated publication. I would like to add a bit, however, to the article on engine cooling systems. There was no mention of keel cooling as a safe, efficient, and cost-effective way to cool an engine. With a keel-cooled engine, a seawater pump is required only if the engine is equipped with a wet exhaust. By some estimates, a dry stack and keel cooling eliminate 75% of problems with a marine diesel engine!

I had my last boat in commercial use for 15 years (in salt water) and never had to replace a manifold. Needless to say, my current vessel is keel cooled and the wet exhaust has been eliminated in favor of a dry stack.

Niel Pfundt
Bellingham, Washington

Keel cooling (a series of copper tubes along the outside of the hull through which the engine’s coolant is circulated next to seawater) can be a good alternative to conventional raw-water or heat exchangers.

Some manufacturers, such as Nordhavn, use them, but most boatbuilders choose heat exchangers, which are less expensive. While keel coolers eliminate strain- ers and raw water pumps, with their notoriously troublesome impellers, they are subject to damage from underwater objects and groundings and produce drag (especially problematic on planing hulls). Keel coolers require a dry stack exhaust, which usually produces more noise and more heat. And since they cannot be painted with anti-fouling paint, they must be cleaned regularly if they are to be efficient. Finally, keel coolers are most effective in cooler northern waters.

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Although your article concerns cooling system failures as a cause of overheating engines, you might also consider excessively advanced ignition timing, especially since the rest of the cooling system checks out fine. My experience with a twin engine power plant with one overheating engine revealed one distributor in a markedly different position relative to the other. A quick check showed the distributor was loose enough to have rotated out of position. This happened just out of the yard after winter service. The engine was in time to start up but rotated out in running. With no timing light, I rotated the distributor back to about the same position as the other one; the engine sounded better and quickly cooled down.

Boats are different than cars and it is unlikely that anyone on the flybridge would hear the cackling, rattling, pinging noises of an engine when the timing is off. Needless to say, the boat went back to the yard for corrective action.

Len Gay
Onset, Massachusetts

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Your article regarding replacing hoses was timely; I finished replacing most of the hoses on my boat in the spring of 2007 and had some advice from a gentleman who does it for a living. I purchased the hose, fittings and a new holding tank to avoid the problem described. I believe some manufacturers, such as Nordhavn, use them, but most boatbuilders choose heat exchangers.

• Use liquid dish soap, even if you are not replacing the hose on the fitting. He says the soap dries out and forms a seal that’s as good as any caulk. He once set up a display for a boat show that way and after a week at the show could barely get the stuff apart.

• When you use heat, heat only one side of the end of the hose. That is enough to loosen the fit. If you heat both sides, the hose will likely be too flexible to allow you to get the fitting in.

Bill & Maurita Cormack
North Dartmouth, Massachusetts

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I too enjoy reading Seaworthy, often learning or feeling good that I have avoided the problem described. I believe the Overheating Troubleshooting Guide has appeared before and I wanted to add my small input. On my Sabre 42, I also put up with steam mixed in my exhaust. Everything in the Guide was done, but to no avail. I mentioned the problem to another sailor who also works on marine engines and he suggested I look at the exhaust hose.

Sure enough, even though it appeared to be in good condition, it was decomposing on the inside. This would produce intermittent “clogs” and the back pressure into the muffler elbow produced high temperatures and steam. Replacing the exhaust hose eliminated the problem. I should have used the “Closed Cycle” engineering concept that would have called my attention to the final link, the exhaust hose.

Frank Matanzo
Melbourne Beach, Florida

Polyethylene Tanks and Permeability

I have a ’96 Four Winns 238 Vista. It has a 50-gallon polyethylene fuel tank (manufactured by Moeller) located amidships, forward of the engine compartment bulkhead, under the mid-sleeping cabin.

A few years ago, I began detecting gasoline odors in the sleeping cabin. I did the normal checks and found that while no fuel was leaking, all the connecting fuel hoses (fill, vent, supply) had deteriorated.
rated, permeating fuel odors. They were promptly replaced. I also replaced the fuel sender and gasket, on the outside chance that it was leaking. However, while the fuel odor diminished, it did not disappear. I suspected the fuel tank and performed a pressure test. The tank held pressure for over a week until I discontinued the test. No evidence of liquid fuel has ever been found anywhere in the tank compartment (verified by visual inspection).

On a hunch, I performed the same test on the tank that is used to test fuel hoses: I rubbed a clean cloth on the top of the tank; it smelled strongly of gasoline.

I contacted Four Winns, but other than recommending the fuel tank compartment be inspected by a professional, they offered no explanation as to why the top of the tank (and by extension, the rest of the tank) would exhibit the same symptoms of that of a deteriorated fuel hose. I have since constructed a passive (no electricity required) fuel tank compartment ventilation system that works in conjunction with bilge/engine compartment ventilation. This at least removes the gases that build up in the unvented tank compartment. I’m also going to completely drain the tank prior to winter storage to help prevent continued permeation.

I did a little research and found an EPA study on plastic fuel tank permeation. As I understand it, polyethylene tanks permeate significant amounts of fuel after prolonged contact with gasoline. Apparently, the lighter components of gasoline migrate through the polymer structure, resulting in fuel on the outside of the tank that evaporates, leaving behind traces of odor.

This EPA study was concerned with an RV/marine fuel tank configuration of open vents and their contribution to the overall problem of unburned hydrocarbon pollution. It was found that fuel tank permeation was a significant contributor. So much so that they’ve been researching better, less permeable, tank construction. So my questions are:

1. Have you encountered this kind of problem before and,
2. Are any of your staff aware of this phenomenon and,
3. Is there a significant safety hazard presented by this condition?

Robert Ford
Snohomish, Washington

The answer to your first two questions is yes, we are aware of the problem (“concern” might be a better word). There is a coating that will soon be applied on poly tanks to significantly reduce the permeation rate. Unfortunately, it cannot be used on existing tanks.

The Coast Guard says that if permeation exceeds a certain level, extra ventilation must be added. You’ve already done that. You might also make sure that the hoses you purchased are J1527 A-1 or A1-15 and not the B hoses, which have a higher rate of permeation.

While fumes are always a concern, we know of no accidents that were believed to be caused by fumes from poly tanks. It’s certainly a good reason to run your blower before starting your boat’s engine.

How NOT to Cover Your Boat

The other day while I was checking on my 32-foot Trojan, I noticed something peculiar on another boat. The attached photos illustrate why you should not tie anything to a jack stand supporting the hull. The boat with the yellow jack stand sits directly next to mine, and if you’ll notice, the jack stand is completely off the ground. The jack stand sits directly under the bow section. We have had 35+ inches of snow to date, which applies pressure to the other ends, resulting in the raised jack stand. The boat is now being supported by five stands instead of six. It makes me nervous to think that it could easily fall off the stands and onto mine.

The boat with the blue jack stands sits one over from mine, and by the looks of his method of securing the canvas, he is also looking for trouble.

Glenn Hanson
Duluth, Minnesota

TowBoatU.S. in the Frozen North

We have been avid boaters for 10 years and have had to contact BoatU.S. on only a few occasions, but we are compelled to write this letter. We boat in the Merrimack River in Massachusetts in the summer.

Last year, being the intense boaters we are, we decided to take a run upriver early Easter Sunday morning. The air temperature was approximately 32 degrees and the water temperature was 39 degrees. We realized this was not the smartest thing to do but we just had to get on the water. After launching and traveling approximately 1.5 miles, the engine stalled while idling. After repeated steps of plug removal, the engine still would not turn over. We called TowBoatU.S. The gentleman quickly acknowledged our location and said they did not currently have a boat in the water. That was completely understandable, seeing as the average temperature was 30 degrees and we recently had snow with more in the weekly forecast. To our amazement, BoatU.S. informed us that they would be onsite in 45 minutes. You can’t do better than that on a frigid Easter Sunday. We just wanted to express our extreme appreciation to TowBoatU.S. Their responsiveness, knowledge of the local waterways and professionalism are top notch.

Sherri and Bill
Seabrook New, Hampshire
Leaks Below the Waterline

Several years ago, an ABC news reporter announced the sinking of a Russian submarine and added gravely, “The cause of the sinking is unknown; it was reported that the sub may have flooded.”

This spring, there will be boats that sink at the dock and the owners will likely give a similarly shortsighted analysis, “The boat sank; the bilge pump must have quit.” The question is where did the water come from? And the answer, based on past claims experience, is often from mistakes made last fall when the boat was winterized. Two places tend to be the culprits: 1. The intake hose. If you winterized the engine last fall by closing the intake seacock and putting the intake in a bucket of antifreeze, was the hose resecured properly? 2. The intake sea strainer. If you winterized the engine by opening petcocks, did you also drain the sea strainer (as you should have) and close the petcocks?

In both cases, when you open the intake seacock this spring, water can begin trickling in via the loose hose, a bent strainer or an open petcock. They should be inspected carefully. While you’re at it, check all of the through-hulls, including the hoses, hose connections, stuffing boxes and, on I/Os, the outdrive boots. Inspecting through-hulls should be at the top of your spring commissioning list.

Leaks Above the Waterline

To anyone strolling down the dock, the boat shown here appears to be meticulously maintained; the hull is clean and shiny and the teak has been oiled to a rich honey color. But, as is often the case with boats (and cars, houses, etc.), maintenance attention appears to have been lavished mostly on cosmetics; some obvious problems were ignored, one of which involved the boat’s mast (Claim #0005714).

The inset photo tells the tale. The chain plate that secures the mast’s shrouds pulled out when a long neglected leak finally rotted the securing bulkhead. The photo shows the remaining chain plate bulkhead, which was equally rotted and indicates just how long the leak had been evident. Note the watermarks and dark stains on the bulkhead and shelf.

The problem of rot isn’t limited to sailboats. Your typical family cruiser, either power or sail, has a wood “skeleton” that includes deck and cabin cores, bulkheads and maybe wood stringers and floors, all of which become increasingly more vulnerable when a leak is allowed to persist. Sources of leaks include stanchions, deck fittings, and ports.

While they may not sink the boat, small leaks above the waterline should never be ignored. Caulking should also be near the top of your to-do list, before oiling the teak and waxing the hull. Your boat might not be so impressive to passersby at the dock, but it will look a lot better to you.

It’s a Long, Long Time from May to September

There is a tendency among some well-meaning harbormasters to try and get one more season out of a mooring. This is typically done in the name of frugality, but mooring chain is no place to save money. The chain shown here had been inspected and given a clean bill of health by the harbormaster in May. The picture was taken in August, after the chain had parted and allowed a 44-foot sailboat to break free and drift up on a beach (Claim #0708180). The surveyor’s report noted, “The time required for the chain to reach this degree of deterioration is much greater than just three months... the chain would have been in an unsafe condition in May.”

In saltwater, three years is about the maximum you can expect chain to last safely. The fourth year is dicey and anything beyond that will likely lead to failure. In any case, whenever a chain is inspected and it’s evident that rust is getting the upper hand, trying to eke out one more season’s use is not worth the risk.
No Fuss, No Muss, Lots of Rust . . . or Maybe Just a Little

Aside from rotted wood, water also has an adversarial relationship with metal, especially when the water contains salt and the metal is steel (note the engine mount above).

Even some grades of stainless steel can be affected. We could go into a long explanation about which grades of stainless steel are best at resisting the various types of corrosion, but the bottom line is that nobody can look at a stainless steel fitting and say for certain that it is made of 316 stainless (good) or 304 stainless (not so good). This is true even with the people who import the stuff, and there have been many cases when hardware manufacturers found that the “stainless steel” they were importing was more steel than stainless.

The bow eye on the right looked like a stout stainless steel fitting but after a few seasons of splashing through waves, it became clear that it wasn’t. The same is true of some hose clamps. You can get an early indication that something is amiss with a magnet (stainless steel isn’t magnetic) but any cracks, pitting or heavy rust (some light surface rust is acceptable) indicates the fitting is likely to fail and needs to be replaced.
Many larger engines—both two and four stroke—have electronic ignition and fuel injection, which makes them more reliable and efficient, but limits the amount of maintenance an owner can perform. Still, basic servicing can be done by most do-it-yourselfers.

Installation

The multitude of outboard engine models on the market means that an engine can be more precisely matched to a specific boat, but this makes the installation of an outboard even more important. Improper installation can shorten an outboard's serviceable life. The engine may operate passably, but long term damage can result if the installation is faulty. Outboards come in several shaft lengths and installing a too-short shaft can lead to the prop ventilating (spinning in air), while a too-long shaft creates excessive drag and will make a boat feel sluggish. Wiring is another issue that plagues installations; the wrong harness or too-small wire can cause incompatibility among electronics and render low oil or overheat alarms useless. The wrong size steering cable can cause binding. In one case, a cable was installed incorrectly and broke after only a few hours of use, sending the boat into an abrupt turn that nearly tossed the driver overboard (Claim #9674670). Since most owners don't install their outboards, it's good practice to have an experienced mechanic go over the setup before buying a used boat. Finding a single disconnected oil alarm wire can save you a $7,000 repair bill. It's also important to make sure that any holes drilled in the transom during installation are well sealed. A leaking hole can cause the transom core to absorb water, which will eventually rot. In one claim (#0207655), the outboard, along with the transom, was torn completely off the boat after it hit a large wake; the boat sank. The parts were recovered and it was determined that the transom had rotted due to long-standing leaks in the outboard's mounting holes.

Ask the Expert

Seaworthy asked Jim McDougal, a marine surveyor and master technician who investigates outboard failures—over 18,000 so far—what an outboard owner can do to extend the life of an engine. “Easy,” he said. “Three things: Maintain the cooling system, use good quality fuel, and service the lower unit on schedule.”

Keeping Cool

According to Jim, one of the most common causes of outboard breakdowns is overheating. Unfortunately, when owners hear a warning horn and are slow to shut down the engine, the engine can be destroyed; if the gauge reads hot or the alarm sounds, shut down the engine immediately. The majority of overheating claims are caused by a failure of the rubber water pump impeller, an item that needs routine inspection and replacement. Impellers have a reliable life span of a couple of years, which is reduced to a few seconds when run without water. Sand and mud is abrasive and can quickly lead to premature failure and over time the blades can break off. The impeller should be inspected once a year—look for cracks where the blade meets the hub. If there is any question, it should be replaced; consider it cheap insurance. “Since you're going to have to remove the lower unit to inspect the impeller every year anyway, you might as well replace it. Saving a few dollars now can cost you big in the future,” says Jim.

Clogged intakes are another common cause for overheating. In many cases, seaweed or mud blocks the intake, causing a decrease or stoppage of cooling water. Anytime you run aground or through shallow water, you run the risk of a cooling system blockage. Though the cooling water exits under water where you can't see it, nearly all outboards have a “tell-tale” hole out of which a separate, smaller stream of water comes, indicating the pump is working. If the stream stops, decreases in volume, or begins steaming, there is a problem with the cooling system that needs to be investigated right away.

One sure way to extend the life of your engine—two or four stroke—is to flush the cooling system after each use, especially if the boat is used in salt water. Jim says that engines run in freshwater can also benefit since there may be a build up of silt or sand in the cooling system. Some engines have a built in flushing port to which you simply attach a garden hose and run the engine. Think of it in the same way as brushing your teeth—flush after each use. For a small outboard, you can run the engine in a bucket or a trash can. Larger engines that don't have a built in flushing feature can use “ear muffs,” a device that slips over the intakes and accepts a garden hose. The engine is started (make sure it is out of gear), the hose turned on, and within minutes, the engine's cooling passages are cleared.

The Proper Fuel

Over the years, gas had changed significantly. The newest challenge to affect boaters is the addition of ethanol. Adding up to 10% ethanol to gas is not harmful to outboards—all major manufacturers approve its use. The problem is that ethanol absorbs water. A little water is OK, since it can be burned with the gas, but ethanol can absorb enough water to cause the water/ethanol mixture to separate and sink to the bottom of the tank. If a four stroke engine sucks up a slug of water/ethanol, the engine will quit—possibly at a very inconvenient time. On the other hand, if a two stroke engine sucks it up, the engine could be damaged since the critical lubricating oil is missing. The best way to prevent this type of damage is to minimize gas tank condensation by keeping it full.

Jim notes that low octane gas is another major problem, especially for two stroke engines. Low octane can cause detonation—an apt word, since it also describes what a destroyed piston looks like after low octane gas has been used. Most modern engines run on 87 octane, but some...
If the outboard is fitted with a sacrificial anode on the anti-ventilation plate (also sometimes erroneously called an anti-cavitation plate), replace it when it is about half wasted. Some engines have a timing belt that gets replaced every 100 hours. A routine inspection should include looking carefully for leaks at gas hoses and clamps (and oil lines if the engine doesn’t run on pre-mixed gas), checking for pinched wires or loose connections, and sticky control cables and shift linkages.

Four stroke engines need their crankcase oil changed every 100 hours or yearly. Follow the owner’s manual for recommendations for the proper type and viscosity oil. The NMMA has been certifying two stroke oil for years and last year, they also began certifying four stroke oil; those oils carry the FC-W mark and are a good choice.

**Lower Unit Maintenance**

Despite the advances in engine technology, lower units are still pretty much the same as they have been for years. Jim says that changing the lower unit oil yearly, and verifying there are no leaks that might cause water to get into the unit or oil to leak out (the lower unit can be pressure and vacuum tested—it’s a relatively easy procedure), is the most important thing you can do for your lower unit. Oil contaminated by water is milky and no longer provides proper lubrication of the internal gears and Jim says that it’s one of the most common failures he sees. Replacing worn lower unit seals is not a big job and its another area where a few dollars now can save you big later.

**Other Maintenance**

If the outboard is fitted with a sacrificial anode on the anti-ventilation plate (also sometimes erroneously called an anti-cavitation plate), replace it when it is about half wasted. Some engines have a timing belt that gets replaced every 100 hours. A routine inspection should include looking carefully for leaks at gas hoses and clamps (and oil lines if the engine doesn’t run on pre-mixed gas), checking for pinched wires or loose connections, and sticky control cables and shift linkages.

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**The Proper Prop**

Entire books have been written about propellers (the best is *The Propeller Handbook* by Dave Gerr), and it’s not hard to see why. Propellers have very exact measurements for diameter and pitch (the angle of the blade faces) and the relationship is such that changing one changes the other. Most outboards come equipped with a standard propeller that is a compromise for many different installations. Since each boat model is different and every boat is used differently, the standard prop is probably not a perfect fit and it pays to spend some time finding a match. An outboard engine should just be able to make its rated WOT (wide open throttle) RPM. If it is able to exceed that speed, the prop has too little pitch and the engine can be damaged from over-revving. If an engine can’t make its WOT, the prop has too much pitch, which can result in excess carbon in the piston area, which can eventually destroy the engine. The proper prop is one that is pitched for the way the boat is normally used; if you’ve usually have a few beefy friends aboard, use a prop that allows maximum RPM. Props don’t last forever; eventually, you’re going to strike something in the water and damage the blades. Even though a dinged prop may seem OK, it’s probably that its effective dimensions have been altered and will likely leave you either underpropped or overpropped. Fortunately, propeller shops can rebuild propellers that aren’t too badly damaged. Jim says aluminum props are a good choice since they tend to destroy themselves rather than the much more expensive lower unit gears if they hit something. Stainless steel props offer better overall performance and are more suitable where you’re less likely to hit something in the water. Outboard engines have the advantage of being able to swap out various props without having to have the boat hauled each time, making it simple to replace a damaged one or for your dealer to find the correct one. And isn’t simplicity one of the best reasons to own an outboard?  

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**Two Stroke Oil**

“TC” stands for two cycle and “W” means water-cooled. The National Marine Manufacturers Association (NMMA) began testing and certifying TC-W oil because two stroke engine manufacturers were concerned that consumers were not using the proper oil, which was resulting in premature engine wear. As engines got more powerful and sophisticated, the need for even better oil became apparent. The second certification, TC-WII, was an improvement over TC-W. And TC-W3, the newest designation, is better still. According to NMMA’s Tom Marhevko, Director of Engineering Standards, TC-W3 is necessary to allow newer engines to produce fewer emissions and is now required by two stroke engine manufacturers. All oils certified by NMMA have to go through a battery of tests to earn the TC-W3 award, although Marhevko stresses that boat owners should strive to use the oil recommended by their engine manufacturer.
Buying a Used Boat?
Some Thoughts on Hiring a Good Marine Surveyor

Like a lot of first-time buyers, it’s fair to say that the 42-year old restaurant executive was head-over-heels in love with a boat—in this case, a 28’ sport fishing boat—and couldn’t wait to finish the paperwork and take title. But first—and this really irked him—the local bank was saying he had to have it surveyed. The man reluctantly called the broker who gave him a short list of names. After a little price-shopping over the phone, the executive had his surveyor and was only one step away from owning the boat.

The survey inspection went well; at least it went quickly. The boat was hauled out of the water and the surveyor spent a couple of hours poking around the boat, occasionally pausing to scribble a few comments in a notebook. Two days after the inspection, the survey arrived with only a few minor recommendations. The surveyor had placed a value on the boat that was acceptable to the bank and in short order, the executive had his boat.

It would be nice to say that the restaurant executive and his new sport fishing boat lived happily ever after, but it wasn’t to be. Over the following weeks and months, problems arose with a rusted engine mount, a worn cutless bearing and the grim discovery of rot in two bulkheads. Every one of the boat’s seacocks was “frozen” open and a badly leaking hose almost sank the boat. Finally, a helpful engine mechanic who was doing some repair work noticed the boat’s water heater mounted in the engine compartment wasn’t ignition-protected and strongly recommended that it be replaced. The end result was that two years and several more repairs later, the sport fisherman was up for sale. It had been an expensive lesson on the value of a good marine survey.

Finding a Good Surveyor
Finding a competent surveyor may be the last step in a boat purchase but it could easily be the most important and should never be taken lightly. Being a competent marine surveyor, on the other hand, requires a good deal more than business cards and a cell phone. First it takes expertise, a lot of expertise. The American Boat and Yacht Council (ABYC) publishes 68 standards totaling over 650 pages that cover everything from a boat’s deck hardware to fuel and electrical systems. Being a competent marine surveyor requires a comfortable working knowledge of all the ABYC standards. In addition to ABYC standards, a surveyor must know National Fire Protection Association standards, the Coast Guard’s safety requirements and be familiar with various construction standards (ABS and Lloyd’s). Needless to say, a good marine surveyor must have a mind for technical details.

These standards are continually being revised, and a surveyor has to keep abreast of the changes, which means reading technical books and attending education seminars. The latter involves paying for airfare, hotels, and meals. Good surveyors also invest in expensive copying machines, computers, fax machines, moisture meters and multimeters. In a few cases, they may purchase specialty equipment like hardness testers and ultrasonic thickness gauges. Becoming a surveyor, a competent surveyor, involves making a considerable financial commitment.

Since anyone can call him or herself a marine surveyor, the industry is in the position of having to police itself. There are two major surveying organizations, which, among other things, have programs to certify or accredit their members: the National Association of Marine Surveyors (NAMS) and the Society of Accredited Marine Surveyors (SAMS). A NAMS surveyor must have at least five years of experience working as a full-time marine surveyor and pass an exam in order to use the initials NAMS-CMS (NAMS Certified Marine Surveyor) after his or her name. A SAMS surveyor who has worked five years as a full or part-time surveyor and has passed an exam can use the AMS (Accredited Marine Surveyor) credentials. Both organizations have apprentice members who have not yet earned their certification.

Another source for experienced surveyors is the BoatU.S. Referal Listing (www.BoatUS.com/insurance/survey.asp). Before a surveyor can be placed on the list, he or she must fill out a two-page application containing questions about experience, training and business references. The applicant must also send a sample survey, including prices, and meet certain qualifications for experience and performance. The surveyor’s application and sample surveys are evaluated by an eight-person committee that is responsible for setting the Association’s standards. The committee also reviews member complaints, and if necessary, removes a surveyor from the listing.

There are a handful of other surveyor organizations, some of which are more credible than others. There are also some very competent marine surveyors who, for one reason or another, don’t belong to any surveyor organization. If you’re not sure whether BoatU.S. Marine Insurance will accept a survey from someone you’ve been talking to, check with an underwriter (800 283-2883).

What’s Covered on a Survey?
Even among the best surveyors, there is no consensus on what is or isn’t covered on
a pre-purchase survey. NAMS and SAMS both publish voluntary survey report guidelines for their members. (NAMS publishes “Recommended Guidelines for Yacht Condition and Valuation Surveys” and SAMS publishes “Recommended Survey Report Content.”) Seaworthy did a poll (results below) of SAMS and NAMS members who survey recreational boats and found that much of their inspections are consistently the same. A comfortable majority of surveyors say they always sound the boat (using a plastic hammer to detect voids and delamination), reference the ABYC standards and test electronics to see if they’re operable.

There were also some significant variations. For example, only a slight majority of surveyors always use a moisture meter and slightly less than half say they always take the boat on a sea trial (assuming a sea trail is possible). There are even bigger differences with engine inspections. A few surveyors are former mechanics that know engines and are qualified to do a complete inspection while others have little hands-on experience. Most have at least some familiarity with engines but stop short of a complete inspection—oil analysis, compression check, etc. Using a scale of 0 (no inspection) to 10 (complete mechanical inspection), the poll average of 6.05 indicates most surveyors spend at least some time with engines. Based on the age of the boat, the number of hours on the engine and what is found during the inspection, a surveyor will often recommend that a mechanic do a more complete analysis. It’s usually good advice, although some surveyors include a disclaimer recommending an engine inspection with every survey. The same is true of sailboat rigs—going aloft—and electrical system inspections. The latter can take many hours and is usually recommended with some imports or older boats. The number of hours on the engine and what is found during the inspection, be sure to ask if it’s OK. Most surveyors prefer you be there, if for no other reason than to make sure you understand whatever problems they encounter. However, there are a few surveyors who prefer to work alone.

4. How much? Once you’ve found the best person for the job, go ahead and ask about price. Don’t forget to ask what’s included. Some surveyors want an up-front deposit and a few want to be paid in full. You may also be asked to sign a written agreement. As with any contract, read it before you sign.

### Questions to Ask Before Hiring a Surveyor

Tom Benton, a marine surveyor in Oklahoma, considers it a red flag whenever a conversation with a prospective client begins with a discussion of price—“How much do you charge for a survey?” Benton acknowledges it’s a fair question, one that he expects to be asked eventually, but it really bugs him when it’s the first question. Other surveyors interviewed for this article echoed similar sentiments; it’s a fair question to ask after establishing a surveyor is qualified to survey the type of boat you’re considering.

Here are some questions to ask before asking about price.

1. How long have you been surveying boats? Many years of experience is no guarantee of competence but, as with any profession, it’s a good start. Also, what marine-related experience does the surveyor have? A lot of surveyors came to the profession via boat repair yards, which is another plus; doing repairs gives the surveyor a good understanding of why and where a boat is likely to develop problems.

2. What professional organizations do you belong to? Aside from being a member of NAMS or SAMS (some are members of both), a surveyor should be a member of the American Boat & Yacht Council (ABYC), which is the organization that writes the standards used by most of the major marine manufacturers. The National Fire Protection Association (NFPA) is another standard organization that writes fuel and electrical standards for boats. (Note: Aside from being members of ABYC and NFPA, the surveys themselves should include appropriate references to the standards.) Although very few surveyors belong, a membership in the American Society of Appraisers (ASA) is almost a guarantee that the surveyor takes a highly professional approach to valuations.

3. May I be present? If you plan to be there during the inspection, be sure to ask if it’s OK. Most surveyors prefer you be there, if for no other reason than to make sure you understand whatever problems they encounter. However, there are a few surveyors who prefer to work alone.

9. Do you require a signed survey agreement before doing a survey? Always 44.3% Sometimes 22.4% Never 33.3%

10. What payment do you require before doing a survey? None 57.9% Partial payment 6.7% Must be paid in full 35.4%

11. On a scale of 1 to 10, how thoroughly do you inspect engines? (0 = not at all; 10 = complete engine inspection, including oil analysis and compression check.) Average 6.05

12. If you do a complete engine inspection, is there an additional charge? Yes 65.0% No 35.0%

13. Do your surveys reference ABYC? Always 83.7% Sometimes 15.1% Never 1.2%

14. Do your surveys reference NFPA? Always 61.8% Sometimes 32.7% Never 5.5%

15. A typical pre-purchase inspection (onboard) for a 30’ boat takes Over 10 hours 2.4% 5-10 hours 62.8% Less than 5 hours 34.8%

16. A typical pre-purchase report for a 30’ boat is Over 15 pages 42.7% 5 – 15 pages 56.5% Less than 5 pages 0.8%
A few years ago, there was a spate of carbon monoxide (CO) poisonings around the country, often involving houseboats. In a 10-year period, there were 111 reported poisonings on western lakes alone, nine of which were fatal. Since then, the USCG and National Institute for Occupational Safety and Health (NIOSH), along with the American Boat & Yacht Council (ABYC) and BoatU.S., have studied the problem and offered solutions, from education and training of operators to legislation banning teak surfing and requiring warning labels, while the industry has improved CO alarms. Though reports of CO poisonings may have slowed, they haven’t stopped. Last June, a seven-year old girl died on Lake Powell after being overcome with CO and several non-fatal reports have been received in the past few months. The accidents are typically attributed to two causes—missing, defective, or disconnected CO alarms, or exposure to CO on the exterior of the boat.

The issue with CO detectors goes back to 1992, when the ABYC first wrote A-24 Carbon Monoxide Detection Systems. In 2001, A-24 became a standard that required installing CO alarms in new boats with sleeping accommodations (it should be noted that ABYC standards are voluntary and manufacturers are not required to follow them, though most do). When the standard went into effect, there were no alarms specifically designed for boats. Household alarms, and even RV alarms, which are built more ruggedly, did not always work reliably in boats. It wasn’t that the alarms didn’t detect CO—they did. The problem was that the resins, glues and other chemicals used in boats tended to make the units sound off frequently. Eventually, some owners got tired of the constant squawking and would simply disconnect them. Unfortunately, an unplugged alarm does no good. Two years ago, a couple was killed in Florida as they rafted up with two other boats, all of which had their generators running to power air conditioners. The victims’ boat had an operable CO detector, which had been unplugged, probably due to false alarms.

Three years ago, CO alarms were re-engineered to drastically reduce false alarms and owners now report far less nuisance alarms. Alarms are like any electronic item onboard—subject to corrosion, vibration and dampness—but new CO alarms that meet the UL 2034 Marine Standard will withstand boat use much better than other types. Even so, it might surprise you to learn that the useful life of a CO alarm on a boat is five years from the time they are put into service. CO alarms that use the boat’s 12-volt system should be wired to the battery directly (with a proper fuse). In one claim, two people died because the CO alarm was wired into the boat’s ignition system and was only operable when the main engines were on. CO from the boat’s generator was to blame for the deaths (Claim #9911155).

Many CO problems occur outside the boat. The unfortunate seven-year old girl mentioned earlier died while she was swimming behind two beached boats that were running their engines to charge the batteries. It’s important to remember that most boats, unlike the vast majority of cars, have no catalytic converters that greatly reduce (by 99%) CO. The amount of CO produced by a modern marine engine (or worse, a pair of them) is enough to kill an adult in less than a minute, if concentrated in a small area. On a windless day, the deadly
An otherwise healthy, robust 33-year-old California woman almost died of hypothermia after her small skiff capsized on a warm, sunny day and she had to be rescued by a passing boater. The woman had been in 58-degree water for only about 15 minutes and was shivering but otherwise appeared to be okay. During the ride back to a nearby pier, she made the near-fatal mistake of sitting upright near the breezy bow. Soon after she was ashore, the woman collapsed and stopped breathing. She was revived by nearby lifeguards and transported to a hospital where she eventually recovered.

It isn't unusual in early spring for the water to be mid-winter frigid while the air feels as warm as summer. It verges on false advertising: The day is sunny, the air temperature is warmer than it's been in months, and the boat is ready. The water, however, is late to the party. In some areas, it never gets very warm. Boaters in the Great Lakes, the Pacific Northwest and much of New England rarely see offshore water above 55°F. Boaters in these areas have learned to respect cold water. But in areas where the water is normally warm from late spring to mid fall, boaters may be less wary of the danger that lurks only a few feet away.

For the human body, 55-degree water is much more of a threat than air of the same temperature because cold water removes heat from your body 25-30 times faster. A core temperature of 95°F is considered to be mildly hypothermic, and your ability to grasp things and control your breathing begins to be impaired. Long before your core temperature drops to dangerous levels, your hands will be numb and you will not be able to climb a ladder or haul yourself into a boat.

Prevention is always better than cure. In spring, you should:

1. Stay on board. While that's always good advice, cold water is dangerous in and of itself. In cold water, survival rates drop with every minute of immersion.

2. Wear your life jacket. Also good advice all year, but in cold water it could mean surviving a dunking that would only be embarrassing in warm water. A life jacket may keep your head out of the water, especially if you go in feet first, and that could prevent the inhalation of water as you gasp.

3. Keep spare clothing in a dry bag. Fleece, Polartec or wool, with a windproof outer layer.

4. Avoid taking extra risks. Don't overload the dinghy or paddle way offshore in the family canoe.

5. Don't let anyone aboard drink alcohol. Not only are drinkers more likely to fall overboard, they are also more susceptible to the effects of hypothermia and will be more difficult to bring back aboard.

Most of the above advice isn't unique to cold water boating. What is unique is that the stakes are far, far greater.

What if you do fall overboard? Much of the deadly nature of an unexpected dunking is the result of the shock to your system. That's why the Polar Bear Club members survive their New Year's Day dip every year; they're mentally prepared. The immediate dangers of cold shock can be reduced somewhat if you can keep your wits about you in the brief moment between knowing you're going over and actually hitting the water.

If you are close to shore, you may consider swimming to be a self-rescue option. Early sailors, those in the “wooden ships and iron men” era, didn't bother learning how to swim, figuring it would only prolong the agony if they went over the side. Swimming in very cold water will increase your heat loss by more than a third, compared with curling up with your arms pressed against your chest and your legs together (the Heat Escape Lessening Position). In cold water, swimming is the rescue option of last resort. If there are two or more of you, stay huddled together with your arms around each other.
A Few Words About Drowning

A sailmaker—healthy, athletic, a good swimmer in his early 60s—was removing the sails on his own boat late this past fall when he stumbled, fell overboard and drowned. The boat was tied to a pier and he should have been able to swim ashore easily as no injuries were evident when his body was found. What happened?

One possible explanation involves the so-called “gasp reflex,” which can cause water to be aspirated, even if the head is not submerged. The gasp reflex can occur in water below 70°F. A wave or splash produced by falling in cold water can be enough. A person can drown the instant they hit the water, and indeed, there are accident reports that tell of people hitting the water and never surfacing.

With some people, the muscles in the throat can go into spasms as the cold water hits the back of the throat, whether via the nose or the mouth. This spasm can close the throat, preventing the water from entering the lungs but also preventing air from entering, even if the hapless victim can get back to the surface. This can result in what is termed “dry drowning,” in which the victim had no water in the lungs but still came to a bad end in the water. Some 15 - 20% of all drownings are dry drownings.

It’s the suddenness of the immersion that does it, the shock to the system from being surrounded by water 30 or more degrees colder than the victim’s body temperature. The likelihood of sudden drowning due to cold water increases as water temperature decreases.

The cold-water shock can produce a heart attack, the result of the rapid increase in your pulse and a spike in blood pressure. Assuming your throat muscles have not gone into spasm, you will begin to breathe very rapidly, and this can cause dizziness, even loss of consciousness, as a result of changes in the blood’s oxygen/carbon dioxide ratio.

Surviving the initial shock of entering the water doesn’t mean your troubles are over, it only means you now have to deal with hypothermia (which can result in drowning). Your body’s temperature must remain within a very limited range. A drop of 1.5 °F from the normal core temperature of 98.6°F will affect muscle tone. That’s the tension you feel in your back and neck when you get chilled. You begin to shiver at roughly 97°F and the shivering increases in intensity until you get so cold you can no longer shiver. That happens when your core temperature drops to 88° - 90°F. Think of shivering as exercise, which produces heat—stop producing heat and your body will cool even more rapidly. At 86°F the heartbeat becomes irregular and stops at 77°F.
Severe hypothermia, with no shivering, partial or complete loss of consciousness, incoherent speech, a slow pulse and shallow breathing, is a serious and life-threatening condition. Get victims out of their wet clothing and keep them horizontal. Do not rub their limbs or apply external heat. Handle them carefully and get them to a hospital as soon as possible. With proper care, people with severe hypothermia who appear dead or nearly so have been resuscitated, but it’s a slow, painstaking process.

To sum up for the rescuer, the colder the victim, the more severe the hypothermia, the less you can do in the field. If you’re the victim, your self-rescue begins the instant you know you’re about to go over the side. Take a deep breath and cover your nose and mouth. Try to keep your head from submerging. Get out of the water as quickly as possible, whether that means boarding another boat or climbing onto wreckage. The first few minutes in the water are the most important in terms of your survival. You can avoid the whole affair by following the first, and most important, rule of boating: Stay on the boat!  

**A Marine Surveyor’s Findings**

Jack Mackinnon, a long-time marine surveyor from California who has seen the effects of carbon monoxide firsthand, has example after example of non-working CO alarms found in the line of duty. This sampling is typical he says, and illustrates a potentially deadly trend.

“On a Cal 34 survey, I noticed the CO alarm did not work. I was told ‘The noise is too loud, it goes off whenever my wife lights the oven.’ Upon inspection I found that the oven burner flame was bright orange, indicating it was producing prodigious amounts of CO.”

“The owner of a Carver 390 related that every time he came down the Oakland-Alameda Tidal Canal, the CO alarm sounded, so they removed the fuse. Turns out that the area is a no wake zone and the wind is often from astern, just the right circumstances to fill the boat with CO. The alarm was just doing its job as exhaust gases were being drawn in to the boat.”

“When on one boat I surveyed in 2002, I recommended a CO alarm. I resurveyed the boat this year and when I asked about the CO alarm, the owner said, ‘Oh, I have it right here.’ He then pulled out a bag with the new CO detector still in the box—and a receipt from 2002.

In order for a CO alarm to save your life, it needs to be installed (the where is not nearly so as important as the how) and tested monthly.
Do you enjoy reading your BoatU.S. insurance policy? Does its entertainment value rank right up there with daytime television or visiting your dentist? In the off chance you’re one of the few who don’t like reading insurance policies, here are some of the recent changes. Except where noted, all will take effect when your policy is renewed:

- At renewal, policies provide a NEW supplemental Family Member Medical Coverage of $25,000 for each family member. This helps to pay any medical expenses that aren’t covered by a family member’s HMO when an injury occurs on your boat. Note that the $25,000 coverage will be in addition to whatever medical payment limits you’ve selected. (Other legal liabilities for injuries or property damage caused by you to family members is not covered.)
- A “dinghy” can now be up to 15’ long and have up to a 25 hp engine. Question: Why should you care? Answer: Because a dinghy is included under your boat’s Yacht Policy (if it’s used solely as a tender) and doesn’t have to be insured separately. Larger boats, greater than 15’ and/or 25hp, require their own policy even if they are used as a tender.
- On your BoatU.S. Yacht policy at renewal, if you insure a brand new boat and it’s wrecked completely (a total loss) within the first 30 months, the policy pays to replace the boat with the same model. In essence, you get a brand new boat. For boats aged past 30 months, a total loss gets you the Agreed Value determined at the time you took out the policy. In either case, there is never a deductible or depreciation in the event of a total loss
- Effective on all BoatU.S. policies as of April 1, a boat has up to $250 per incident in towing coverage with an annual cap of $500. This amount is in addition to any towing service provided with your BoatU.S. Membership. Even better—in the event you need to use it, no claim is charged against you.
- Also, a clarification on all Yacht Policies: If a hurricane warning has been posted for your area, BoatU.S. pays half the cost to lash your boat to the ground. This clarifies the old policy language that said a policy covers hurricane prep expenses “mutually agreed to” (between you and us). The policy already covered half the cost (up to $1,000) to haul and block your boat ashore prior to a hurricane or have it moved to a hurricane hole.

In the spring of 2001, Seaworthy ran a summary of ways to save money on fuel, which was then selling for almost $2 a gallon. A favorite quote from that issue: "The cost of operating a boat this summer can take your breath away!" Two dollars? Since the cost of fuel at some marinas is liable to be double that amount this summer, it seems appropriate to update our fuel saving advice to give your boating budget a little breathing room.

1. Don’t lug around more weight than you have to. Naval architects typically take great pains to design a boat that will move through the water easily, including reducing weight wherever possible. Unused equipment that has been collecting mildew in the bottom of lockers for years should be taken home. Another suggestion: Water weighs 8.33 pounds per gallon, so why keep the water tank topped off if you’re only going out for the afternoon? On day trips, take only a safe supply for drinking.

2. Keep the engine tuned. An engine with fouled plugs, dirty air filter, erratic timing, a sputtering carburetor, weak compression, etc., performs dismally and soaks up fuel. With outboards, Bill McEathron at Mercury Marine says the three systems that should be looked at are the fuel system (proper fuel delivery), the electrical system (ignition timing) and the cylinder block/piston assembly (overall condition). This applies to any outboard, whether it’s a two-stroke, a direct-injected two-stroke or a four-stroke. The bottom line with any engine, outboard or inboard: A tune-up is an excellent investment.

3. Have your propeller tuned. Another good investment. Dick Snyder, formerly at Mercury Marine, says you can lose up to five mph of boat speed with a poorly tuned prop. If your boat goes 50 mph with a like-new prop and only 45 mph with a prop that’s dinged and out of pitch, you’ve lost 10% of your speed but are still using the same amount of fuel. That converts to a 10% loss in fuel economy.

4. Clean the boat’s bottom. A fouled bottom is like a dull knife; it takes a lot more effort—in this case fuel—to push it through the water. Barnacles and slime slow the boat dramatically and increase fuel consumption.

5. Keep the boat in trim. Either by using trim tabs or with weight distribution, a boat that is trimmed correctly will move through the water with less effort—and less fuel.

The Seaworthy photo evaluation committee has decided the photo above is the winner of this issue’s “Oops Award.” John Farrell, the marine surveyor who investigated the claim (the boat wasn’t insured by BoatU.S.) wasn’t sure whether the travelift operator actually said oops or maybe something else. The photo gets the award anyway.

John said a large crane happened to be in the area and the job of putting things right was done fairly quickly the following morning. Best of all, there was very little dam-

6. Install a fuel flow meter. A fuel flow meter is like a heart monitor; when consumption starts to rise, it’s an early warning that something is amiss. A fuel flow meter also allows you to select a comfortable cruising speed that optimizes the amount of fuel being consumed. If you don’t want to spring for a fuel flow meter (about $350 - $400), you can calculate your fuel mileage by dividing distance traveled by gallons at fill-up. Using your logbook, you can then approximate fuel flow using average speeds and time underway.

Go with the flow. Consult tide tables and travel with the tide whenever possible.

Get a discount. Many of the 875 BoatU.S. Cooperating Marinas around the country offer up to 10 cents off a gallon of gas. To get the discount all you have to do is to show your BoatU.S. membership card. Cooperating Marina locations can be found at BoatUS.com.

Note that if you own a sailboat, all of the above also apply, but the real savings begin when the engine is shut off and the sails are raised.
age to the boat or travelift—a few minor scrapes and a broken hydraulic hose.

And the runner-up is this photo of a boat in Port Isabel, Texas that lost its electronics one night: Its skipper then tried to follow a shrimp boat into the harbor. According to Nick Avery at TowBoatU.S. Port Isabel, the small boat’s skipper never looked at a chart and didn’t realize the course toward the shrimp boat took him directly over the jetty.

TowBoatU.S. Port Isabel refloated the boat soon after the picture was taken.

Of 28 claims selected randomly involving “break-ins” on members’ boats, a total of 10—36%—involved raccoons. With all of the publicity given to fighting crime in the United States, why hasn’t anyone mentioned raccoons? These furry little vandals shred upholstery, chew PFDs, rip canvas covers, make nests, scratch veneers and even gnaw through wires. And raccoons, ahem, aren’t potty trained.

According to Kim Gilbert, a licensed Virginia State Rehabilitator, raccoons are typically attracted to the boat by the smell of food. Even a few stale crackers down below smell like fresh pizza to a raccoon. And once it has seen the plush interior of your boat’s covered cockpit, it’s likely to say good-bye to its grimy little hovel in the woods and move aboard.

The easiest way to prevent damage to your boat is to make it less inviting. That’s not easy. Raccoons are bright and notoriously persistent when they’re hungry, which is all of the time. Note that damage to boats by animals is not covered by BoatU.S. insurance.

Three suggestions:

• First and foremost, never, ever leave food aboard a boat that is being stored ashore. Other seductive smells, like fish boxes, should be scrubbed with ammonia.

• Cushions and life vests (great stuff for making nests), should be stored below.

• If you’re dealing with an especially persistent critter, almost any wild animal can be deterred by the smell of a natural predator. Fox urine, which, when it’s uncorked, gives a raccoon the uneasy feeling that it is about to be pounced on and eaten, is available from several online suppliers. There are other stinky products, such as Ro-Pell, which do a good job of staving off gnawing animals like squirrels but are less effective at deterring raccoons.

• Another effective remedy would be to use an alarm, which has the added advantage of discouraging two-legged intruders as well. Depending on how much you’re willing to spend, there are alarms that can sense heat, weight or motion and then respond by creating loud noises, light or both. Some of the alarms talk or bark like a crazed German shepherd. That should work.

If the boat is stored ashore, Ed Gould, a former curator at the National Zoo, said there are raccoons that will eventually wise up to the alarm. Gould said the best way to keep a persistent raccoon away from the zoo’s rare ducks was with a low-voltage electric pet fence. When all else fails, good fences make good neighbors.

After a storm with hurricane-force winds came blasting through last December, the Port of Astoria, a public marina in Oregon, required all of the boat owners at the facility to replace their docklines. Sound unreasonable? It’s not. According to a report in the December 2007 issue of Practical Sailor, nylon line that has been heavily stressed—as it would be in a storm—doesn’t return to its original length and is therefore much more prone to failure: “Each nylon line tested proved that once its elasticity had been exceeded, and the material’s yield point met, a spectacular ending was imminent.” The article describes the editors putting their hands over their ears in preparation for the “gunshot-like report” that inevitably followed whenever a line had been severely stretched.

Several years ago, Dan Arsenault wrote a Personal Account in Seaworthy about a particularly violent thunderstorm he was caught in early one spring on Michigan’s Saginaw Bay. It’s a good example of a real-life test of nylon line. When he had problems with his rudder, Arsenault decided to anchor in open water rather than risk entering his marina with marginal steering. The wind was blowing 45—50 knots (down from 75) and seas were huge. The bow was repeatedly being thrown high in the air when Dan heard a loud “explosion,” which, like Practical Sailor’s gunshot-report, turned out to be the boat’s ½-inch nylon anchor line.

It’s interesting to note that Practical Sailor tested older dock lines that had been exposed to several seasons of UV deterioration, dirt and salt. The study found that the various lines had lost between 49% and 75% of their original strength! A key factor to the rope’s deterioration was the loss of the factory-coated polymers that lubricate each fiber.

While a good deal has been written about the need for chafe protection in storms, not much has been written about the lines themselves. That’s too bad, because the Practical Sailor study indicates that whenever a storm is predicted, it would be prudent to have a second set of “storm dock lines” (sort of like a storm anchor) at the ready. The lines should be unused and as large as could be accommodated by the boat’s cleats. If the storm does come ashore, and the lines are stressed by high winds, waves and surge, they should be retired as permanent lines and used only as spares.

Barbara Thompson, a member from Chapel Hill, North Carolina called Seaworthy wondering why her local hardware store suddenly was refusing to refill her propane tank; she’d never had trouble before. The aluminum tank came with her 1982 sailboat and appeared to be in pristine condition. It was marked as having been recertified in 2002. What did she need to do?

The short answer is that she needed to have it recertified. Propane tanks—steel and aluminum—must be recertified after 12 years of use and every five years thereafter. The tank was past due for its next certification and the hardware store was correct in refusing to fill it. And it should be noted that even if her tank had a current certification, the hardware store would have refused to fill it if were rusted, dented or otherwise appeared to have been damaged.

How does Barbara or anyone else get a tank recertified? Most propane retailers or service companies can perform a recertification (a relatively simple and quick procedure). Propane retailers or service companies can also dispose of a rusted, beat-up tank that is past its lifespan. Something else you should know: Since April 1, 2002, all portable propane tanks have to be equipped with overfill protection devices (OPD). If yours doesn’t have one, it’s not legal to have it filled. You can tell if a tank has one by looking at the shut off valve—OPD-equipped tanks usually have triangular handles with “OPD” stamped on them.
Several years ago, a man in Hawaii needed to get his 36’ sailboat back to the mainland, a distance of some 2,400 miles of occasionally inhospitable ocean. He hired a “friend” who promptly loaded the boat (and himself) with beer and ran it onto a reef. Less than 40 minutes after leaving the dock, the boat and the friendship were in pieces.

There are times when the word “professional” can have an especially nice ring to it. This past January, BoatU.S. launched the Captains Locator Service, a national network of professionals, all of whom have passed the Coast Guard’s rigorous testing requirements to obtain a captains license. Before someone can even sit for the OUPV exam, to earn the Coast Guard’s most basic license, he or she has to have spent 360 days on the water in the past three years.

**Why Hire a Captain?**

All of the captains listed with the Locator Service have experience doing deliveries. But deliveries are only one reason you may want to hire a professional captain; honing your boating skills is another. This is especially true of first-time boat buyers, but just about anyone with a boat could use a little coaching. Sail trim? Docking? Piloting? (Thought: Wouldn’t it be helpful if everyone who was new to boating spent time on the water with a professional?)

A third reason to hire a professional involves hurricanes. One of the best ways to protect a boat in a hurricane is to move it out of harm’s way. That’s not always easy, especially if you’re in New York and your boat is in Fort Lauderdale. The BoatU.S. policy, incidentally, will pay half the cost, up to $1,000, to move your boat to a hurricane hole when a hurricane warning has been posted.

There is another reason—a fourth reason—you may want to hire a professional captain and it doesn’t involve your boat, boat handling skills, or hurricanes. It involves fish. Many of the professional captains are also fishermen and know where to find game fish in their local waters. So if you’re planning to take your boat to the Outer Banks of North Carolina, for example, and you could use some help finding fish (and getting your boat through the dreaded Oregon Inlet), you can get that help at the Captains Locator Service.

**Finding the Right Captain**

Before a candidate is accepted to be listed on the Network, he or she must provide a boating resume as well as a list of professional and personal references, all of whom are contacted by a committee member. The final decision to list someone is made by committee at BoatU.S.

Before hiring a captain, however, you should make sure he or she is qualified to skipper your boat in whatever waters it will be operating. To see the list of captains, go to BoatU.S.com/procaptains.