HURRICANE
PREPAREDNESS for your BOAT

The following information is presented as a public service by the Manatee Sail & Power Squadron, Inc., a unit of the United States Power Squadrons, Inc.®, in the hope that it will help you better prepare your boat in the event a major storm or hurricane approaches.

This presentation was developed to address the need for information lacking in the public media related to preparing boats for hurricanes and tropical storms. Members of the Manatee Sail & Power Squadron have presented seminars on this topic to various waterfront communities, local marinas, and other local boating related organizations.

The information provided is based on existing materials from various sources, such as BoatU.S. Boat Owners Association literature, numerous other pamphlets and articles, and our own members' personal experience preparing their own boats for hurricanes and tropical storms. The Manatee Sail & Power Squadron and the United States Power Squadrons, Inc. do not accept any responsibility or liability for any error, omissions, or consequences ensuing from the use of, or reliance upon, the information as presented in this article.

Why should you prepare your boat for a hurricane?

Anyone near coastal waters needs to know how to prepare a boat for a hurricane or major storm for a number of reasons.

- Obviously, the primary reason is to prevent damage to your boat. While there is never any guarantee the boat will be spared and escape damage, there are many things you can do to be reasonably sure the boat will be protected.

- The second reason is to avoid having your boat cause damage to other boats or property. A review and analysis of past storm experiences indicate that most boats are not prepared or just minimally prepared for such storms. This may be due to ignorance, not knowing what to do, or the attitude, "I have insurance so what do I care?" Either way, the result is boats breaking loose and causing damage to other boats and nearby property. We've all seen pictures in the media of scores of boats jammed up in marinas and canals caused by a chain reaction when one or more of the boats break loose.
- Another important reason is the potential legal liability for damages caused by your boat. People who fail to properly prepare their boat when a major storm approaches may be found legally liable for the damage their boat causes! Yes, you can be sued for your negligence. Furthermore, if your insurance company determines you were negligent, they may reject your claim. You might not receive any insurance money for your loss and be facing a lawsuit to boot!

What can we expect from a hurricane?

In addition to all the information provided by the news media during Florida's hurricane season, beginning in June and continuing through November, a quick review of this presentation will be helpful in determining how to react to a major storm approaching the immediate Tampa Bay area.

The National Weather Service has provided us with some interesting statistics listing the yearly probability of experiencing hurricane force winds in several Florida cities.

Miami	1 in 6
Palm Beach	1 in 7
Key West	1 in 8
Pensacola	1 in 8
Apalachicola	1 in 17
Melbourne	1 in 17
Bradenton	1 in 25
Tampa	1 in 25
St. Petersburg	1 in 25
Daytona Beach	1 in 50
Jacksonville	1 in 100

As you can see, we appear to be relatively safe in Bradenton and the Tampa Bay area in comparison to other Florida cities. Once in 25 years is pretty good odds. But when you consider the last major hurricane to make landfall in this area was in 1921 when a category 3 storm came ashore just north of Bradenton, it appears we are overdue. The 1921 hurricane destroyed Passage Key and inundated Anna Maria Island with a storm surge in excess of 10 feet.

The point then is not whether a storm will hit us, but when, and how bad will it be? And, it will be bad!

We are in a low probability, but high consequence, scenario because of our geography. The west central part of Florida is particularly vulnerable because of the shape of the gulf floor off our coast and the shape of Tampa Bay. These geographical factors combine to create extremely high storm surges and massive flooding.

For example, a major hurricane hitting Palm Beach on Florida's east coast might produce a 15 ft storm surge. That identical storm approaching Tampa Bay from the west could produce a 25 ft storm surge.

The most dangerous location in the United States with the highest risk of a severe storm surge is New Orleans. Southwest Florida and especially the local Tampa Bay area is rated second in the nation.

We also have to consider the effects of extreme tidal action and wind driven waves adding to the force of a storm surge.

Hurricane Season Forecasts

Each year, as the hurricane season approaches, we look at the forecasts from the tropical storm experts. The hurricane official season begins in June and continues through the end of November.

Our state got a huge wake-up call from the 2004 and 2005 hurricane seasons after 5 major hurricanes hit us! A new sense of awareness and urgency is apparent as to what can and will happen.

Looking ahead, the coming years provide us with a nasty picture. Hurricanes are and will continue to be bigger, meaner and more numerous. We are in the busy part of a heightened activity cycle, and virtually all forecasters predict increased hurricane activity in the Atlantic for the next 10 years or so. Therefore, 2006 and beyond could easily mirror the last several years.

Where these monster storms will go depends on large steering currents; therefore how many will hit our area is up to nature.

Storm Surge and Flooding

Storm surge and flooding are the most destructive aspects of a hurricane on coastal property. A storm surge, which is a huge dome of water, could easily be 50 miles wide with intensive wave and tidal action. Surges causes 90% of all fatalities associated with hurricanes

Hurricane Ivan had an 18 ft surge when it hit the Florida panhandle. Waterfront communities located on inland rivers and canals will not be spared when this occurs. Weather experts hypothesize that a storm the size of Donna, a category 5 hurricane making landfall in 1960, hitting Tampa Bay would pull the water out of the bay as the center of the storm approached, then drive the water back into the bay as the hurricane's eye passed over the opening to Tampa Bay. The water levels would rise by more than 19 ft in just 30 minutes!

Due to the geography of the Tampa Bay area, almost all boating locations along our gulf coast are considered to be Category "A" for flooding.

Violent Winds

Storms become designated hurricanes when winds reach 75 mph. Category 5 hurricanes can have winds exceeding 155 mph! The strongest hurricane in history is believed to be Hurricane Gilbert, making landfall in Mexico with 218 mph winds.

We all have seen the pictures in the media about wind damage in Florida locations. But, consider that we have yet to really experience hurricane force winds in this area. We should understand the change that takes place as the wind speed increases. There is a big difference between wind speed and wind force. When the wind speed increases, doubling from 20 to 40 mph, the wind force on your boat and equipment increases exponentially. It quadruples in this example. Imagine a wind speed of 150 mph and the amount of force it would produce! Consider the impact of accompanying wind gusts that can exceed sustained wind speed by up to 50%.

Heavy Rains

While the average rainfall attending these storms could be 6 to 12 or more inches, there have been instances of over 24 inches falling.

As seen with Hurricane Frances, a slow moving hurricane or tropical storm can produce severe rainfall and flooding. In canals and rivers, heavy rain and runoff can create swirling currents which can have destructive power if boats are not secured properly.

Tornadoes

While we can all expect to deal with tornadoes when we are faced with hurricanes, our area deals us another nasty weather surprise compared with other locations. 70% of the hurricanes coming out of the Gulf of Mexico making landfall here produce tornadoes. This is a much higher percentage than those making landfall in other locations of the United States, including the Florida's east coast. While few achieve the wind speeds of 300 mph that could result, these phenomena could deal the final blow in a survival situation.

What equipment is needed?

The most important item needed is a detailed, written hurricane plan. BoatUS has a boat preparation brochure that includes an excellent planning sheet that can be downloaded from their website. List all the items you plan to use in the preparation plan so you won't have to scratch your head and try to remember what, where and how you will proceed when the "big one" comes along.

You will need lots of duct tape (they even make a removable version now) or painters blue masking tape. Tape is used to seal and secure:

- cabinets and drawers
- vents for fuel and water tanks
- engine room vents
- instrument gauges
- switches
- windows
- hatches
- seams in windows & doors

Wind driven rain will find a way into every crack and crevice in your boat unless you prevent it from happening. It will rock your boat with violent motion and cause everything to shake, rattle, and roll. Flying objects can break glass and damage fiberglass and plastic.

If you have through hull openings not fitted with sea cocks, you can seal them with wooden plugs available in varying sizes at marine stores. Engine exhausts on larger boats should be plugged by whatever you can find. Try using golf balls or tennis balls. Use a towel or rag around the item to allow you to pull them out again after the storm passes.

The minimum size of line is ½" and should be larger for boats over 25 ft in length. Use old lines as backup and emergency gear. Anywhere lines touch anything they must be protected… on your boat, on shore, or where they cross each other.

Chafing gear is essential wherever your boat will be kept. This is protection for your lines and boat. This includes extra long and sturdy gear available from retail stores or items that you may have on hand such as neoprene garden hose, old firehose, heavy canvas, chain, automobile tires, boat fenders, and fender boards. Your lines must be protected from the violent, rapid, repeated, and jerking movements that can cut, wear, and overheat them. Your lines can easily and quickly be destroyed by friction.

A popular choice for chafing gear is two layers of plastic garden hose over the line, the second layer being a size larger. Some experienced boaters slide extra lengths and pieces of hose onto their lines for use if chafing gear fails, so they can then slide these "standby" pieces into place as needed.

Chain is terrific for securing around trees, pilings, over seawalls and other objects but must be used in conjunction with nylon line. Where your boat may come in contact with anything, tires and fenders are required.

Use anchors that are much larger than what you would normally use. You should have at least two storm anchors with extra long rodes composed of chain and nylon line.

The cleats on your boat are probably too small for use in a violent storm. Consider adding larger ones with 4 holes instead of 2. When installing new cleats, be sure to back them with aluminum, stainless steel, or marine plywood plates. There will be several larger-than-normal lines tied to your cleats, so plan accordingly.

Consider adding an extra battery if your boat has a bilge pump. Batteries should be fully charged before a storm and the bilges cleaned and cleared of debris.

Make sure your permanent fuel tanks are filled to prevent liquid movement, and expected violent sloshing during a storm. It can lead to leaks and fuel system damage.

Things to Do

- ☐ Batteries……. Charge them
- ☐ Bilge……. Clean & Clear Holes
- ☐ Pumps…… ….Test them
- ☐ Switches ……..Test them
- ☐ Cleats ……..Big enough & backed?
- ☐ Cockpit Drains ……Clear them
- ☐ Fuel Tanks……Fill them

What should I remove from my Boat?

Topside Remove anything topside that isn't permanently fastened to the boat. Wind force is the culprit here so everything must be removed; extra fenders and anchors, extra lines, sails, booms, life rings, bimini tops, dodgers, solar panels, radar antennas and domes, outboard motors, fuel cans, cowl ventilators, boat poles, cushions and coolers. Run all sailboat halyards up to the top of the mast on a single line.

Inside Anything that can move inside the boat should be removed. Water intrusion and violent motion can cause any loose object to produce damage. Remove electronics and navigation equipment, tools, mattresses, supplies, food, clothing, foul weather gear, personal effects, ships papers, manuals and books. It may be possible to place light and bulky soft objects into a sealed garbage bag and leave it in the boat, but you don't want anything that will hamper salvage efforts after the storm.

Lockers Remove all portable fuel tanks, solvents, oil, and anything not in permanent tanks. Also remove buckets, cleaning supplies and equipment, portable pumps, mops and rags. Lockers should be empty and secured.

Dock Boxes & Dockside Storage If you have items in a dock box or dock side storage, empty it out and store the contents elsewhere. If possible remove the dock box from the dock altogether. Docks frequently break apart and disappear in a severe hurricane.

When to Start

A Hurricane Warning is usually posted 24 hours before high winds are expected. This is definitely too late to begin preparations. Prior to the arrival of high winds,you will need time to:

▪ Prepare the boat	4 hrs
▪ Move it to a hurricane hole	2 hrs
▪ Travel to and from ramp	5 hrs
▪ Prepare home	8 hrs
▪ Collect supplies & food	4 hrs
▪ Evacuate inland	8 hrs
▪ Allow for the unexpected	8 hrs
	39 hrs

Keep in mind, these are daylight hours. In the example above, you would need at least 2 full days to prepare. That's what it takes to be safe!

Consider each of the activities listed and others that apply to your particular situation. Make a list of your own. This will give you an idea when you need to actively begin following the steps in your Hurricane Preparation Plan.

Here are some additional considerations:

If you have a marina haul your boat, be sure they expect you and will schedule a time to have your boat available.

If moving your boat, be sure to go before bridges are locked down.

If moving your boat, find out if your chosen hurricane hole will be accessible and available.

You do not want to be stranded in your car in a hurricane. Set a deadline for when you will evacuate. If you are running out of time, stop preparing, put your family and pets in the car and get out!

Keep your insurance paid up.

Securing Your Boat

When you plan how you will secure your boat, you must take into consideration where you will be securing it, what the size of the boat is, its weight, what other boats and property is nearby, and the space around the boat. If your boat will be placed in the water, draw a diagram showing the location and postion of your boat with accompanying lines and attachment points. You should make a well-organized written plan that contains a detailed list of the actions you will take before and after a storm. The quality of your plan will be reflected in the quality of your preparations and the success you achieve.

Not only must your Hurricane Preparation Plan be carefully prepared, but you should also rehearse it. A walk-through of the plan using all the supplies and equipment helps fine-tune the plan and identifies potential problems and delays. It will help you learn the time it takes to do certain tasks.

Lines, chain, anchors, and chafing gear should be laid out and marked by location according to the diagram in your plan. All the gear identified in your plan should be stored separately and readily available.

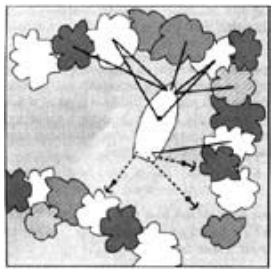
On Land The safest place for most boats is on land if possible. Be sure to consider possible effects of storm surge. If you have a garage and the boat is small enough, consider putting your boat there. Do you like your boat or your car best?

If your boat can be placed on a trailer, the best plan is to move it inland to a safe location. Then, secure it inside a building. If outside, tie the boat to the trailer and tie the trailer to fixed objects such as trees, buildings, or ground anchors. Orient the boat into the expected wind, but anticipate wind direction changes. Block the trailer frame with wood between the frame members and axles to carry the expected additional weight of rain water filling the boat. Mitigate the effect of high winds by lowering the height as much as possible by reducing the tire pressure and locating it in a low ground area and removing all items that adversely affect a streamlined profile.

You might consider filling the boat with some water to add weight and resistance. If the boat is small enough, take it off the trailer and place it on the ground and fill it with water. Some boat owners successfully protected their boats by placing tires in a hole in the ground, then placing their boat on top of the tires and filling the boat with water. Others took off outboard motors and gear and sunk their boats at a dock or anchor.

In a Hurricane Hole This is a place where your boat won't be subjected to breaking waves and the worst of the winds. Hurricane Holes can be small rivers, streams, bayous, canals, or protected harbors. If you plan to move your boat to a hurricane hole, remember to check ahead of time to be sure it will be available. Look at the tide chart. Bayous and streams may be too shallow. Canals might be full of local boats. Harbors may be too crowded. Public waterways may have too much traffic to allow you to get through them in time to make preparations.

Securing your boat will involve tying numerous lines from your boat to the mangroves and using anchors so that your boat will look like it's caught in a spider's web.



Don't forget to plan when and how you will get ashore.Start early and go ashore before conditions become too dangerous. You don't want to ride out a hurricane in your boat anchored in a hurricane hole!

At Anchor If you plan to anchor out, which is always questionable, do so only if you are sure that the location is relatively safe from the storm surge and violent wind over a large stretch of open water. Consider the size of open water area, water depth, the holding ground, other hazards nearby such as trees, boats, seawalls, docks and power lines.

Your ground tackle must be first rate. Use multiple and oversized anchors, chain, and sentinels (heavy weights positioned on the anchor rode where the chain meets the nylon line). The sentinel permits a better cantenary, or curved shape on the rode and a more horizontal pull on the anchor. Be sure you use proper sized line and scope length. While facing toward the oncoming storm, you must also be prepared for 360 degree violent wind shifts and utilize sufficient anchors. lines, and chafing gear accordingly

It's not recommended that you remain on board, so plan how you are going ashore and when.

On Davits If you are considering leaving your boat on davits, don't! There is no way it will survive the surge, flooding, and high winds in a severe storm. Remove it from the davits and place it on the ground with low supports and secure it in all directions with the usual chafing gear and doubled lines. Tie the davit cables back to prevent them from swinging wildly in the wind.

On Lifts Lifts are not a good place for boats either. They may be okay for smaller storms, but a severe tropical storm or a hurricane with a storm surge can lift them off of the cradles. If this happens, the boat may be driven into the lift machinery or pilings and suffer severe damage.

However, if you really feel your boat can remain on the lift and not be adversely affected by a storm surge, flooding and

high winds, then proceed to secure it there. Do so by first placing tires or fenders between the lift and the boat, then raising the lift high and tying the boat to the lift. Tie the lift to pilings and tie the boat to anchor points ashore and even offshore.

The idea is for the lift and the boat to be as rock solid as possible, or at least to stay in the general vicinity if all is destroyed. Such actions probably would be sufficient in a tropical storm, but not in a hurricane. All we can say is, "Good Luck!"

Keep in mind the need for chafing gear in all these situations. Anywhere lines touch each other or any fixed object or where rough spots or edges exist. Chafing gear is a must. Repeated, severe elongation, jerking, sawing motions and the resulting heating of the lines lead to quick and premature line failure. Chain is a great chafing preventer in many cases as long as it is used in conjunction with the right type of line.

Always shut off the electric power to docks, davits and lifts, and be sure cockpit drains are open and clear.

In a Canal In west central Florida, there are seemingly endless coastal and waterfront communities with canals. In many cases, these may be your best choice for your boat in a hurricane.

One problem with a majority of these is that they are oriented east and west. This is great for departing from your dock to open water, but spells disaster when a hurricane approaches across the gulf heading east toward the Florida coast. If one boat breaks loose, a domino effect can occur and all the boats downstream will pile up at the end of the canal or narrow waterway.

Thus, it's imperative that all the boats in a canal be properly secured and that neighbors coordinate their planning and preparations.

In your plan, you should center your boat in the canal or waterway facing the oncoming storm. Place lines from the bow and stern of your boat to distant points ashore at roughly a 45 degree angle. The lines should be longer, newer, larger, and better protected than normal. Chain or other chafing gear is a must. Tie to large trees, davit foundations, strong pilings or other permanently fixed objects.

Lines around pilings or trees should be tied using at least two round turns and then a couple half hitches - no bowlines or clove hitches. The round turns hold due to friction and do all the work and the half hitches simply secure the assembly and keep the lines in place. Tie high on pilings and low on trees.

Plan for plenty of stretch and movement, visualizing your vessel moving up and down 10 feet or more with violent horizontal movement as well.

Lines should be doubled preferably to different attachment points and hopefully, not more than two lines to a cleat.

Use old lines only as backups. They are questionable due to UV and fungus degradation and may not last through the storm.

If you arrange to tie across a canal, it's a good idea to use temporary, extra long, lines that enable you to hold the boat to one side of the canal allowing boat traffic to pass through the canal, then, just before evacuation, you pull in your temporary lines from shore, moving your boat to the center and securing it. The idea is to know exactly when and where you will place your boat, the lines and attachment points are predetermined and your neighbors' permission is granted. Everything is coordinated well in advance of the storm's approach.

If restrictions in room or proximity to other boats doesn't permit you to place your boat in the center of the canal or waterway, it is still possible to have reasonable protection near shore. The goal is to position the boat as far away as possible from the shore, dock, or seawall. Securing your boat at this location is the same except you will need to use offshore anchors and more extensive chafing gear. You will need to use extra long spring lines. Your storm anchors should have 50% chain to line ratios, long scope and use sentinels. You will still need to communicate and coordinate with your neighbors and plan ahead for boat traffic.

At Your Dock This is a convenient location, but is it the safest? Be sure to use multiple lines and fenders and chafing gear. The goal is to prevent the boat from hitting or rubbing anything that might damage it.

Avoid using cleats on docks. Your boat's upward rocking motion will cause one of two things to occur; the dock cleat will give way and pull out of the dock and bang against the side of your boat, or the cleat will hold fast and it will pull out a section of dock leaving the loose section tied and banging against the side of your boat.

At Your Marina If you plan to locate your boat in a marina or shore location, some additional strategies come into play. Your main concern is the violent and jerky movement of your boat, both vertically and horizontally, in a very restrictive space.

Does your marina have a storm plan? Where will your boat be located during the storm? What are the physical features of the marina? Are docks wooden or concrete, configured in slips, separated by pilings? Are docks and pilings in good condition? How are the cleats anchored?

Pilings should be at least 6 feet above the highest point on your boat's gunwale and well-secured in the sea bottom. The slip's

width should be at least 140% of your boat's beam and ideally facing into the oncoming storm. Low dock pilings and narrow slips are the biggest destroyers of boats during storms!

Assume your boat will rise roughly 10 feet above the present level and then consider the pilings and lines you will need.

Many tires, fender boards and fenders will be required on the sides and doubled, longer lines should lead across adjacent slips to distant attachment points, pilings and trees. Your plan should include the understanding and agreement with your neighbors. You will also need longer spring lines and offshore anchors if space allows. Extensive chafing gear is critical and some boat owners use chain around fixed objects or where lines come into contact with a fixed object. However keep in mind that there has to be great elasticity, which shock absorbing nylon lines can provide, in conjunction with any chain utilized.

It has been estimated by insurance sources that at least half of hurricane boat damage could have been avoided by proper use of lines that were larger, longer, protected and properly placed.

Outside Dry Stack Storage Many marinas have increased their boat storage capacity by utilizing multiple level storage racks. These racks are virtually hopeless in a hurricane. Under no circumstances should you leave your boat stored in one. You have only to look at the pictures of Pine Island and Punta Gorda storage facilities to see how inappropriate they are. They are likely to fold up and damage or destroy every boat stored in them.

Snowbirds and Neighbors

If your hurricane plan involves keeping your vessel in the water in a canal or a marina, you will need to coordinate with and solicit the cooperation of your neighbors. You will need their permission to tie up to attachment points on their land or dock pilings or across their slip. You will need their cooperation in not blocking access into and out of your canal or marina too early. There should be a group of neighbors with a plan to assist others who are unable to secure their own boats due to physical limitations or absence.

Our best advice is to talk with your boating neighbors and develop your own "Neighborhood Hurricane Plan" using the planning sheets. Be sure to discuss and resolve issues of intentions, preferences, timing, access, and permission, as well as location of lines and gear.

We recommend you prepare and share a local waterway list of boats and owner contact information. Prepare a worksheet for each boat and identify where lines and gear are stored. Identify a primary and backup person responsible for each boat. For absent or uncooperative owners, we suggest you include their boats in your plan and that you share a draft copy of the plan for their boats. Let them know the planning is for their benefit.

After the Storm

When you return after the storm, you will be busy with many things, but it is usually considered prudent to get to your vessel quickly so that you can take action to prevent further damage. Your insurance carrier will expect you to take all reasonable precautions to prevent further loss. If circumstances prevent you from taking such action, advise your insurer of this when you report your loss.

Keep in mind that you may not be allowed into some storm damaged areas

immediately following the storm. When you do return, you should take with you proof of ownership, insurance papers, and a camera for documenting the nature and circumstances of the damage for insurance purposes.

Also remember that your access to your vessel may be restricted due to flooding or storm damage and that you will be placing yourself at risk of drowning, electrocution, fires and infections.

If you can safely board your vessel, immediately check for water intrusion, verifying the boat is still safely moored, photograph damage and list items found to be missing. Remove any remaining valuable property. You will need to do this because post-storm looting is a common occurence.

Be mindful of the safety risks in the aftermath of a major storm. Take care around moving water or submerged structures and never enter the water near any electrical equipment unless you are absolutely positive that electrical power to the area is disconnected. We strongly advise you not to turn electrical power back on to your dock or lift until a qualified electrician has inspected the electrical systems.

Never touch any downed power line. It might be live or become live from someone starting up a nearby generator. Never use a standby generator without verifying that the generator and the equipment you are powering are both disconnected from the main power line. Our best safety advice is that you limit your use of small emergency generators to powering only equipment that can be plugged directly into the generator.

If your boat was damaged, remember that boat salvage is a dangerous job best left to trained professionals. If your boat was sunk, your insurer will likely declare it a "total loss" because the restoration costs almost always exceed the value of the boat. If your boat was only partially submerged, it is usually considered repairable and immediate salvage action can significantly reduce the magnitude of your loss.

Inboard engines can usually be restored by removing the internal water, changing the lubricating fluids, and then getting the engine running as soon as possible. It is critical to get the internal surfaces of the engine coated with lubricating fluid to prevent internal rust. Aluminum outboard engines that have been submerged for more than a few days cannot be repaired. Engine fuel injection systems and boat electrical equipment, in general, are not repairable after submersion in salt water.

Even if your boat appears relatively undamaged, you should take care to inspect your engine and electrical systems for evidence of water damage or intrusion before running the boat. Water forced up the exhaust can fill engine cylinders and the engine can be damaged if started before the water is removed. The best way to inspect for this in gasoline engines is to disable the ignition and then attempt to turn the engine over.

If the engine cannot be turned over, it is possible the engine is water-logged. In diesel engines, the best method is to partially disassemble the exhaust near the turbocharger inlet and look for rust or other evidence of recent water intrusion. If evidence of water ingestion is found do not attempt to crank the engine until the water has been removed.

If salt residue is found on the interior of the boat, it will be necessary to thoroughly clean all interior surfaces as well as all interior fabrics, carpets, and upholstery. Not removing the salt residue will lead to a recurring mold and mildew problem inside your boat.

Other Sources of Information

There are numerous websites that provide valuable information to help track and prepare for Tropical Storms and Hurricanes. Some we recommend viewing are:

nhc.noaa.gov
crownweather.com/tropical/html
weatherunderground.com/tropical
hurricanecity.com
boatus.com/seaworthy/hurricane
hurricanewarning.net
yachtsurvey.com/hurricane.htm
bootkeyharbor.com/hurricanes.htm
www.cyclonejim.com

The MSPS "Hurricane Team"

Early in the 2004 hurricane season, a member of the Manatee Sail & Power Squadron became aware that a number of homeowners along the canal where he lived had no particular plan for securing their boats in the event of a hurricane.

After discussing his concerns with other members of the squadron, a team was formed to research and develop a program to help educate the public and fellow squadron members on the proper equipment and techniques for preparing boats for tropical storms and hurricanes.

MSPS Hurricane Team Members

P/C Bob Jorgensen SN
Lt/C Richy Evers P
Lt Bill Spencer P
Alan Devernoe P
Bert Spagnola (not pictured)

For more information about the Manatee Sail & Power Squadron, please visit our website:

manatee-squadron.org