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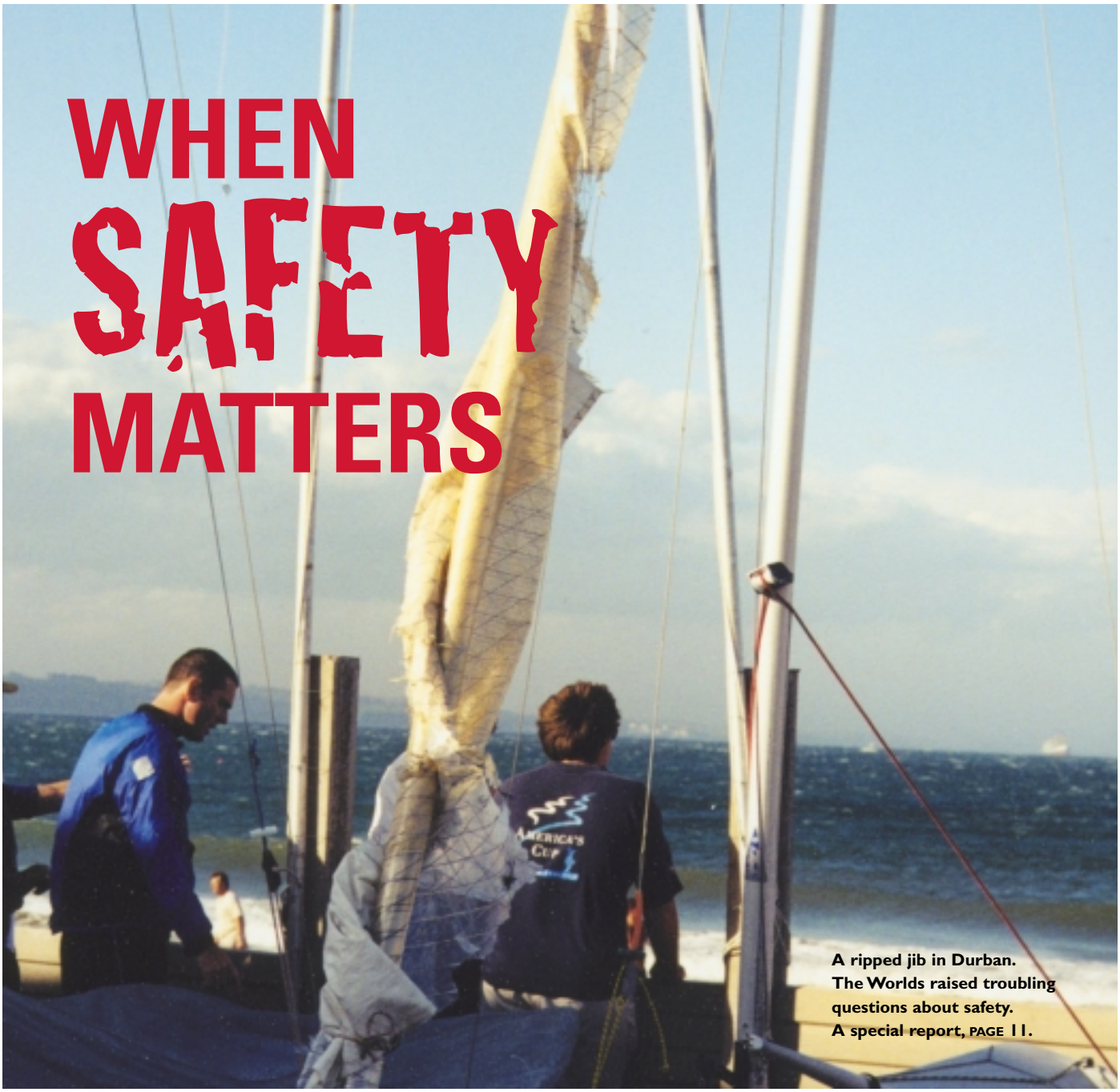
TANK TALK

THE MAGAZINE OF THE 505 CLASS, AMERICAN SECTION



WHEN SAFETY MATTERS

A ripped jib in Durban. The Worlds raised troubling questions about safety. A special report, PAGE 11.

TANK TALK

The Magazine of the 505 Class American Section

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Message from the President

I will always remember the 2000 505 sailing season as one of extremes. This is especially true for those of us on the East Coast where we always seemed to have lots of wind or none at all. This theme certainly persisted at the North Americans and at the worlds in Durban, where it blew gangbusters. When we did sail in Durban, it was magnificent, and I will never forget surfing down the face of some of those enormous mast-high waves. Likewise for the 4-mile beat back to shore after the pre-worlds race in over 40 knots of wind. My only regret was not packing my windsurfers into the container for the days when we were abandoned.

AMERICAN SECTION AGENDA NEWS

The American Section continues to move forward. Our stalwart Vice President, Ben Benjamin, is producing our class promotional video. Dave Stetson, our hard working Secretary/Treasurer, has sent out the dues notifications. *Have you sent yours in yet?*

In keeping with my "you will all pay if I'm elected" platform at the 2000 NAs, dues are going up in 2001. The level of programs and support offered by the American Section has started to take its toll and we have run an extreme budget deficit for two years. I don't relish this edict, but the time has come to raise dues, which have been stable for well over a decade. As of 2001, the new dues structure will be the following:

- Benefactor — $100 *(this includes family or full membership)*
- Family Membership — $60 *(up $10)*
- Full Membership, 30 years and over — $45 *(up $10)*
- Full Membership, under 30 — $35 *(unchanged)*
- Associate Membership — $25 *(up $5)*

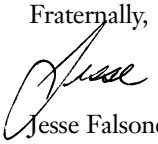
With the extra income (about $1700), we can continue with the same level of quality you have come to expect in *Tank Talk*. We will also be increasing our marketing efforts through the use of the class videos and publications that will be sent to select college sailing teams. If you have a preference to what colleges you would like these materials sent, please inform me. For those of you who bemoan the increase, consider that $10 barely buys a new ball bearing block, 20 feet of pre-stretch line, or a tiller universal joint.

A DYNAMIC CLASS

This is a time of change in our class. Initial results of the big spinnaker ballot are in (around 400 total votes), and it seems that internationally there was a 2:1 majority in favor of the change. The American Section had 39 total votes, with 34 in favor. So, now we begin a new era of development and I think it will be quite exciting! I hope you will embrace the change with an open mind. Additionally, research is now underway into the development of an affordable and compatible carbon spar, with technical representatives from the Flying Dutchman, Fireball, and 505 classes sharing information. A number of spar manufacturers now offer production carbon sections suitable for the 505. If a carbon spar can be made within 25% of the cost of an aluminum spar, and the bend characteristics are identical to the Proctor D (so you wouldn't have to replace sails), would you be in favor of a change? I'd like to know your opinion.

Here comes the spring! Get pumped!

Fraternally,



Jesse Falsone

SHORT TACKS

New Video on the Burner

IAN BUFORD

2000 Worlds in Durban, South Africa.

A new 505 promotional video is in the making. Over the last year, class VP Ben Benjamin has collected 505 footage from world championships all the way back to 1975. What to expect? Obviously a lot of great sailing clips put to some ripping tunes. We'll also see some explainer segments on rabbit starts and the dynamics of sailing a trapeze dinghy. Also up are some vintage interviews with Krister Bergstrom, Paul Elvstrom, Ian Barker, Howie Hamlin and many more! Ben hopes to target the video to an American audience. If you or anyone you know has exceptional 505 footage please let Ben, bengravy@aol.com, know ASAP . The video is scheduled to go to the studio this spring and released in summer. ≋≋

Wanted

BENEFACTORS

The American Section has created a new "Benefactor" membership category. This category is reserved for those members wishing to contribute extra funds to the American Section, with baseline membership starting at $100. All Benefactors will have their name prominently displayed in each issue of *Tank Talk* for that year, and will earn the adoration of the American Section.

NATIONAL MEASURERS

The American Section is seeking a replacement for Bruce Tilley as National Measurer. This is not a time consuming job, but it is very important. The ideal candidate will have some boat building knowledge and technical ability, and will live relatively close to one of the two official measurement jigs in either Santa Cruz, CA, or Bristol, RI. All inquiries should be directed to Jesse Falsone, american505@erols.com.

Are You Geared Up?

The Ronstan Skiff Suit made its big debut in the 505 class at the 2000 NAs. Warmth and comfort were a priority in the cold waters of Santa Cruz, and the Skiff Suit didn't disappoint. Also new from Ronstan "sticky race gloves," designed to add gripability for any line.

UPCOMING 505 EVENTS

The spring is here, so it's time to gear up for the season. Check out the **Hoover Regatta** in Columbus on May 12-13 and in the Seattle area it is well worth supporting **S.O.C.K.S.** at the Shilshole Marina, May 19-20. On the East Coast, the main event is the **East Coast Championship,** scheduled for May 26-28 in Hampton, Virginia. The same weekend the West Coasters will be testing their metal at the **Memorial Day Regatta** at Alamitos Bay Yacht Club in Long Beach. The New England fleet will play host for the **Falmouth Open,** June 9-10, at the Falmouth Yacht Club on Cape Cod. And although a few months off, the **North American Championship** is scheduled for August 8-12 in Kingston, Ontario.

For more information about these and other events go to: **www.int505.org/usa/events/regs.htm.** To get your events listed send them to **allanfreedman@hotmail.com.**

Go Sailing!

Cam Update

Some would call them insane, but Cam Lewis and Larry Rosenfeld sent us this picture to remind us they actually had fun sailing 'round-the-world on Team Adventure. They finished third in The Race.

E-Mail Sign Up

Over the coming months, there will be a great deal of crucial information that must be passed on to our membership. The nearly universal acceptance of e-mail makes this form of communication the most efficient. Please sign up for the 505 USA list by sending an email to: *Majordomo@skipper.biosci.ohiostate.edu* with "*subscribe 505 usa*" in the body of the message.

Dancing in Durban

Who said Durban wasn't all fun and games? During a break from sailing and race cancellations, world competitors were entertained by a local dance troupe.

JESSE FALSONE

Trailering Tips from the Mind of SPOT

By Barney Harris

In over 50,000 miles of traveling, Team Spot has never lost a boat. Last year alone Team Spot drove 12,000 miles with three or more boats in tow—and all without any damage. Here are some hard won trailering tips from the mind of Spot.

SMOOTH RIDE: Next to having it fall off while driving, trailering is the most destructive thing you can do to a boat. The loads on a boat sailing in the water pale by comparison, being smashed onto a rocky shore excepted. Spot recommends that you secure everything on the trailer and force it all to move as one. This maximizes the ratio of sprung to unsprung weight. The higher the ratio the more effectively the suspension filters out road bumps and the smoother the ride.

REDUNDANT TIE DOWNS: Ask yourself what would happen if the single piece of ratty 3/16ths line securing your boat's bow to the trailer failed for some reason. Spot always uses redundant means to secure boats. You secure your trailer to your car with both a hitch AND chains, why would you do any less for your boat? Rule of thumb: Keep adding tie downs until you can deliberately cut any one line and not have a catastrophic loss.

FOAM COMPRESSES: Closed cell foam of all types will compress as thin as a piece of cardboard when loaded over time. I prefer resilient material such as sliced up inner tubes wrapped in old sail bags.

KNOTS: Use knots that will not come undone. Good knots include bowline, trucker's hitch, and multiple half hitches. Bad knots include slip knots, midshipman stopper, clove hitch (unless used with half hitches) and anything resembling a shoe lace knot.

RIG PREPARATION: Pull all halyards to the top of their travel. Coil the ends at the base. Remove the shrouds and forestay, and coil them and stow them in the boat. Preparing the mast in this way will reduce damage from chafing to the anodized outer surface. Spot uses an old jib bag slipped over the mast base. It keeps the sun off the halyards, reduces road grime and chafing. No need to tie it on. Simply point the mast base end forward and it will stay on just fine, based on the last 50,000 miles of travel anyway.

SECURING MASTS: Loosely wrap line around the mast to the supporting structure, leaving an inch or so of slack. Then seize around the loops and lock the two together. This forms a rope insulator between the mast and trailer. There are no cut bits of carpet to come loose and no duct tape is required.

MARRYING MASTS: Tie one end of a length of line to one mast with a bowline. Then make several figure eights around both masts. Finish by seizing the lines between the masts. Finish with several half hitches. The masts are now locked together and isolated from each other.

Spot's triple trailer.

WARNING FLAG: Masts that extend behind a multi-boat trailer are vulnerable. Spot suspends a foam noodle wrapped in reflective tape from the mast tips. When driving down the road the reflective tape covered foam noodle floats several feet behind the trailer and alerts overtaking vehicles. When parked, the reflective noodle hangs from the mast at automobile driver eye level.

COVERS: Team spot uses a six-inch loop of 1/4 inch shock cord in series with each cover tie down. By preloading the shock cord, the cover is held taught despite changes in humidity and temperature, and thus will shed rain. The method also prevents flapping while on the road.

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Trailering CONTINUED

UPSIDE DOWN TRAILERING: Placing the bottom cover outside the top cover will prevent rain water from filling the top cover.

SPARES: I had a bearing problem towing someone's trailer, whose name shall remain anonymous but whose initials are ALI MELLER. No problem. Ali had a spare set of bearings. Unfortunately they were for a different trailer. Team Spot always travels with a spare hub and wheel with mounted tire. Spot also keeps a small scissor lift jack in the tool kit since the van's jack is not well suited for raising the trailer.

ELECTRICAL: Trailer manufacturers typically use wire nuts in exposed trailer electrical systems. Wire nuts are not sealed, rely on the strength of stripped copper strands to remain intact and are exposed to road salt. Spot recommends marine-rated crimp fittings with integral heat-shrink tubing and thermally-activated sealant. Send the wire nuts to the Snipe class.

STRAIN RELIEF AND CHAFING: Look in your car to see how wiring should be supported. Car manufacturers have learned that a wire bent around a sharp corner will eventually chafe through and go to ground with consequences that range from inconvenience to catastrophe. Trailer manufacturers are not as highly evolved; their products are rife with chafe points. Fix this by wrapping electrical tape at all potential chafe points.

BEARINGS: I heard a very telling comment by a naval ship deck machinery designer—"….winches are destroyed through neglect and improper maintenance long before they wear out." The same applies to trailer wheel bearings. Trailer wheel bearings are lightly loaded as bearings go. So why do they fail? Improper maintenance and abuse. Placing them under water is a prime culprit. Running the trailer till the seals are gone and all the grease is expelled is another. Check the inner seals for leaks—if you see grease flung all over the inboard side of the trailer wheel, get them repacked and the seals replaced. Keep an eye on them on a long trip. Touch them often. Ideally they should be only a little above ambient air temperature. ≋

Doing the Wild Thing
Maximizing Downwind Performance

By Mark Martin

When we talk boat speed we often focus on going fast upwind. But the biggest speed gains are made off the wind, particularly wire running. The technique was introduced to the 505 in 1992 when Chris and Darren Nicholson used it in 1992 to help them win the worlds. Howard Hamlin and I took note and have spent countless hours ever since working on our off-wind speed. We credit what we've learned in netting top-three finishes in the last five worlds.

WHEN TO GO WILD

When to sail on the wire and when to sail on the tank depends on wind and wave conditions. It can pay to keep off the wire when it is windy, but it never pays to wire run when it is too light. So the big question is when is it windy enough to go on the wire? This answer depends on variables such as crew weight. But as a general rule, once the boom is consistently eased off centerline, it is windy enough to go for it. In marginal conditions waves make a huge difference. In general the smaller the waves, the sooner you go to the wire. If the waves are steep and setup so that you can get long rides you may want to sit and ride them down. In short, make sure you maximize your time on the waves. That could mean tightening up and going for the wire or it could mean staying on the tank. Usually before the start we try both methods and see which provides the quickest ride.

SET UP

When wire running, you are looking for power. Ease the outhaul, let the cunningham off, pop off the vang and put the centerboard vertical. If you are carrying lots of rig tension, ease the shrouds. You just have to remember to put the load back on at the bottom mark.

The skipper should be sitting just in front of the rear thwart in moderate conditions. As the wind builds, he should move one foot behind the thwart and then move both feet behind it in big breeze. Ideally the skipper should sit on the tank but keep inside the rail. This allows the crew to move back and forth without fear of tripping over the skipper extended over the rail.

STEERING FOR SPEED

The wire-running goal: Be the fastest and lowest on the course. If you want to go low with speed, you have to do it with apparent wind. The key is to start off relatively high to get the boat up to speed. This means crew fully trapping and sails flowing (but not luffing). As the boat speeds up you will be able to head lower and lower. The most common mistake is sailing too low too early. Don't be suckered by other boats that look like they are working lower.

Neutral helm is everything! So in waves you have to think ahead and anticipate. Bear off at the top of the wave before you get weather helm. At the bottom of the wave, head up before you get lee helm.

CREWING TECHNIQUES

The crew has two jobs downwind, sail trim and steering the boat with his weight. Sail trim is simple. Trim the jib so it is flowing most of the time and cleat it. As the boat heads up and down through the waves it will sometimes stall. That's OK as long as it is flowing most of the time. The spinnaker is much more critical. The kite should be trimmed as far out as possible and the luff should be dancing all the time. As a puff hits, make sure the kite is eased for maximum acceleration.

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Wild Thing CONTINUED

Over trimming the kite is slow and will cause the rudder to stall, often resulting in a swim.

The crew has a big influence on steering the boat downwind. When driving over the top of a wave the crew can help the boat by extending out and back and pushing the bow down. When approaching the bottom of the wave the crew should lean in and bend knees to help the boat head up. Smooth motions in sync with the skipper's tiller motion is the goal. Like all sailing more time on the water is key.

JESSE FALSONE

Steve Bourdow and Mike Martin at Worlds 2000.

TACTICS AND STRATEGY

Another big benefit to wire running is that the runs are very tactical because of the 90 degree jibe angles. Shifts and puffs make a big difference. Jibe when you are about to sail out of a puff. Some courses are biased to one side because of better wind or current. The passing lane in this case is low. When you round the weather mark if you can work lower (with equal speed) on the pack in front of you, you can jibe inside and "roll em".

With the new big spinnaker on the way, wire running will start in less wind and lead to bigger gains and more exciting sailing. So hook up and blast off.

US SAILING®

Crossing to Safety:

Avoiding the Next Durban

By Barney Harris

I'm addicted to high-wind sailing. It's like climbing a mountain, diving on a wreck, driving on banked turns at 150 mph. There is the double-barreled challenge to beat other boats and conquer the elements. Big breeze is a big reason I love to race 505s. We court the high wind venues. I got stoked about attending the world's in Durban South Africa in November. Durban presented the rare combination of large ocean swell, high winds, and warm air and water temperatures.

So I was predictably disappointed that we spent much of the two weeks in Durban sitting on the beach, blown out by too much wind and no shortage of trepidation about taking on the elements.

In fact, I consider Durban a case study of how ineffective safety management can cripple a regatta and put in harms way lives and equipment. Safety concerns need to be balanced against the class' demand to compete in extreme conditions. The better the preparation the higher the confidence level when the wind and seas go nuclear.

Day one of the pre-worlds witnessed a virtual safety meltdown. The race committee's confidence to manage damaged boats and crews was clearly shattered after 40-plus knot winds wrought havoc on the fleet. The next day, the committee chose to abandon a race shortly after recorded sustained wind speeds reached the mid 20's, usually sailable for the 505. A string of early morning abandonments followed, some justified others not.

In thinking about Durban, I realized that we spend plenty of time as race organizers, whether at world class events or local regattas, worrying about a myriad of pre-regatta questions. Who will lead the race committee. How will boats get transported to the event site? Who will serve on the protest committee? But we often neglect the most important question of all: How will we stay safe? In reviewing my own sailing career, I realized that regatta planners too often spend more time on designing T-shirts and figuring out who will bring the beer than how to sail safely in the most challenging conditions.

Taken in this broader context, the safety meltdown in South Africa should not be seen as a one time event but as a much needed wake up call. More importantly,

JESSE FALSONE

Surveying the wreckage, Worlds 2000.

JESSE FALSONE

Safe at any speed?

Durban really drove home the need for class associations and race organizers to deal with safety well in advance of the event.

Disaster Averted?

The first and only race of the Durban pre-worlds started in over twenty knots and built to twenty-five by the top mark. At the finish, the wind blew thirty and was on its way higher. Our launch site was three miles to windward and high surf prevented landing anywhere but inside the shelter of the club breakwater. It was an extremely difficult sail with no good choices. You could head away from shore into more breeze and more difficult sea conditions or you could head towards the shore, the breaking surf and the sharks. The wind soon clocked in at 48 knots. Fourteen masts and booms broke and countless sails shredded. There were numerous injuries that required hospital visits. Three boats were lost completely after the crews were rescued. Two days later, remnants of the abandoned crafts washed up on the beach several miles downwind. The transom of one destroyed boat found its way to the club bar where we all took turns writing salutations in magic marker. We were lucky no one died.

505 Class Safety Guidelines

7.0 COMMITTEE, SAFETY AND OTHER BOATS

Committee Boat and Mark Boats

7.1 The Organizing Authority shall provide an adequate committee boat which can be suitably maneuvered and anchored. It should have radio communication with the shore and all mark boats, safety and support boats.

Safety Boats

7.2 There shall be at least one safety boat to every 10 boats competing and a proportion of these should have a low enough freeboard to allow maneuvering close to competitors without risk of damage.

To be sure, these were freak conditions and the wind built unexpectedly to levels seldom seen on our shores. But although the RC had a number of craft on the course, none were well suited to assist small lightweight dinghies. All were large and ponderous, some upwards of 30 feet in length and unable to effect a rescue without fear of damage or injury. As a class, we should demand that committees be equipped with smaller, more manageable crafts, such as rigid bottom inflatables. If race organizers do not have the resources to provide such crafts, the class should find a way to help find a remedy. If minimum standards cannot be met, a new venue should be considered. The Durban organizing committee was strapped for cash and personnel, so it might have been worthwhile for the class to investigate providing rescue crafts. There was room in the East Coast container for at least two rigid bottom inflatables.

Furthermore, some of the rescue craft were not equipped with the most basic safety equipment. Radios either didn't function adequately or could not be used. Many competitors drifted with broken boats for hours while in visual contact with race management. Communication is essential to good management when the breeze is on. This means not only functioning radios but a clearly understood hierarchy of what each crash and mark boat should be doing. Which boats should be assisted first? Should an RC boat move a mark or assist a downed boat?

Doing it Right

Knowing when to call it quits and when the day can be salvaged requires the ability to calmly assess the conditions and weather predictions, the state of the fleet, and the number of rescue boats available. The RC must keep composure and not get spooked by the wind and a few capsized boats—and keep their eye on what they, and the sailors, are trying to accomplish.

The 505 should be raced in conditions that would keep most one designs on the beach. The 1999 Hampton Trapeze regatta for 505s, Hamptons, and Mobjacks was conducted in conjunction with the Fireball Nationals and is an excellent example of a well run high wind event. The first day saw steady breeze over 30. The Hampton and Mobjack classes didn't even show up. The RC polled competitors and, based on the response, sent out the 505s and a small fraction of the Fireballs.

The Hampton event demonstrated that each venue is different and requires a good understanding on the part of the race committee of the risks of their sailing area and the assets to manage it. At Hampton, the wind strength was relatively high but the sheltered bay prevented the sea state from getting out of hand. In addition, the relatively small fleet allowed for a high crash boat to competitor ratio. Before the first race, one 505 broke a mast, requiring a rescue and tow. But the RC was still able to shoot off a race in epic conditions.

The Santa Cruz Yacht Club demonstrated another approach at the 2000 505 North Americans. Santa Cruz is a windy venue sailed in the cold water and rollers of the Pacific Ocean. So the RC explained during the skippers meeting that competitors having difficulty would be removed from their boats and taken to safety. Their boats would be left to drift and picked up later after the wind and sea died down, as it always does near sunset. This approach allowed the organizers to deploy fewer rescue craft, keep the racing going and reduce the threat of hypothermia for sailors stuck in swamped or crippled craft. It should be noted that Santa Cruz is a deep water venue so there was no threat of broken masts.

Crash Boat Operators

Even the most challenging conditions can be managed effectively. Waves are fun and big waves are even more fun. But waves can make already tough conditions more difficult.

Nothing will bring out deficiencies in crash boat suitability and operator preparation more than big sea conditions. In fact, difficult sea conditions can render a crash boat piloted by a poorly skilled operator more of a hazard than an aid.

The most common scenario is anyone who is willing to spend the weekend on the water is unceremoniously deputized as a crash boat operator. A prime trait of an inexperienced crash boat crew is the desire to come into physical contact with the stricken craft—to place their hands on the boat to be rescued. It is imperative to keep the crash boat away from the stricken craft. The crash boat must retain its ability to maneuver using their engines—and it cannot do this if it is next to another boat with people in the water.

In Durban the crash boats were manned by inexperienced rescue crews and mark boats often did double duty as rescue crafts—a potential recipe for disaster in any context. I recall a 1997 event conducted in Nantucket Sound off Cape Cod in which five boats broke masts—of which we were one. We had cleaned up the boat and were ready to accept a tow as a crash boat arrived nearby. In spite of the steep breaking three-foot chop and 20 plus knot winds, the crash boat pulled right alongside. We pleaded with the crew to stand off to no avail. We ended up with a huge hole in our bow and the crash boat crew nearly lost a few fingers—all of which could have been avoided with a little training.

Damage in Durban.

A safer alternative to coming along side is to equip and train rescue crews to pass a line to the stricken craft by dragging a 30-or-so foot polypropylene line behind the crash boat with an empty Clorox bottle secured to its end. The crash boat should position itself to windward of the stricken craft; the line will be blown down onto the boat where it can be easily retrieved. Advanced training is really not required for this maneuver, but communication is. Make sure the race committee walks the rescue boat personnel through the proper drills. And make sure they understand that the construction of a 505 makes it all too easy to put a hole through the side.

The rescue assets of a high wind event must be well coordinated to ensure that all those really in trouble are taken care of while never turning one's back on the big picture—keeping one's head out of the boat—sound familiar? It is therefore obvious that rescue assets must not become mired with any one competitor.

I have often witnessed a stricken crew attempt to right a capsized boat time and time again, the effects of fatigue becoming more and more obvious even from a

Rantings on Crash Boats…

An ideal rescue craft is small, light, maneuverable, soft, has no propellers, and is as unsinkable as can be—a jet propelled RIB (rigid bottom inflatable) checks just about all the boxes. Each rescue craft should be equipped with the following: Several 40 or so foot polypropylene tow lines with small floats, several anchors with rode adequate for the water depth and moderately sized hippity-hop floats, waterproof radio with spare battery, extra bailers or buckets, basic navigation capability such as a hand held GPS, and a compass for fog. It should be crewed by two able-bodied persons, one of whom is equipped to enter the water.

half a mile away. Throughout this ordeal a rescue craft will stand off, unable to assist, and totally occupied with this one team's futile efforts to get themselves up and sailing.

An alternative to this scenario is for the rescue craft to carry several sets of mooring tackle consisting of an anchor, anchor line and a large highly visible float. When fatigue sets in, simply anchor the downed boat and remove the people. With the crew safe, the rescue boat is free to assist others. The anchored boat can be dealt with later on, even the next day. Several boats were completely lost in Durban due to the rescue boats not having this most basic gear.

Crew of "Carbonara" remove broken boom.

The Final Answer

While most sailors know their own limits, and will refrain from sailing when they are not comfortable, being surrounded by other boats and good rescue equipment is arguably the safest way to get the stick time to become proficient at high wind sailing.

Everyone wants a regatta to work out; the RC wants to do a good job—and no one wants to take an undue risk. People are ready to sail and, having often traveled long distances, it's always a let down when racing is cancelled for the day. Durban was a great experience—but it could have been better if we had actually gone sailing. To be fair, one or two days really were too windy—but the rest were entirely sailable. We spent a year anticipating the big breeze and huge swells—truly epic conditions—only to sit on shore for most of the time we were there. Let's not wait for a major disaster before we take more serious steps to ensure safety on the race course.

"We were lucky no one died!"

The Current Warning

Current can increase the severity of wind driven chop and can make capsizing in shallow water treacherous. Most of the lakes and bays where we race in North America have no current—at least in comparison to the UK where velocities of several knots are a daily occurrence. Race organizers at some UK venues must time the departure and return around the tides or arrange towing. Current is an issue if it can carry a stricken boat away from shore and into further danger; the water fall downstream of the Nepean Sailing Club in Ottawa is an excellent example. The RC must advise out of town competitors of current issues.

Shallow water, current, and the resulting steep chop will tend to drive a capsized yacht's mast deep into the bottom and can bend or break it like a toothpick in a block of cheese, ruining your day in the process. Worse yet, if the mast fails below the jib halyard, the rig will no longer be sprung into the hull by shroud tension, the mast may come unstepped. Now it is a battering ram constrained at the partners and free to punch holes through the hull which could ruin your week—and make self rescue impossible. From the planning standpoint, the RC should try to set the jibe mark in deep water when possible and advise competitors as to any water depth issues.

Notes from a GYM RAT

BY JESSE FALSONE

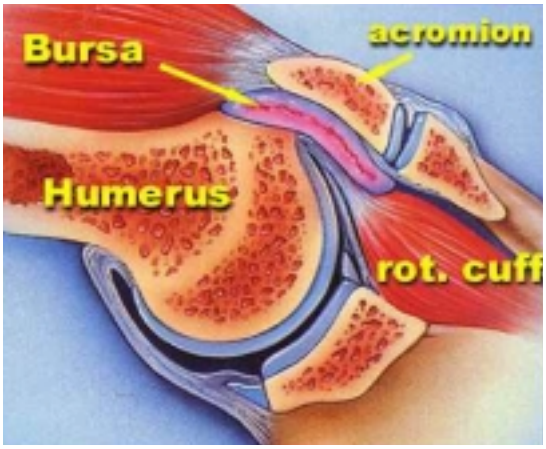
Much has been written about the positive effects of physical fitness on sailing performance. It's well known that a good physical training regimen will increase your strength and endurance and will allow you to better focus on the mental aspects of sailing fast and smart. Less has been written on specific sailing-related injuries and new techniques for rehabilitation. This first installment of a two-part article will address shoulder injuries common to 505 sailors, and will prescribe specific exercises targeted at rehabilitation and strengthening. In the next issue of *Tank Talk*, Sailing Fitness Part II, I will address back injuries.

As we age, fitness becomes a larger issue. With our membership having an average age of over 40 years, it's important that people understand that most common injuries can be rehabilitated quickly in the course of the off-season, and in some cases, between regattas. It's also important to understand that many re-occurring injuries can be neutralized completely, and those body parts made stronger than they once were with less effort than you might imagine. If elite professional athletes in sports like skiing, football and hockey can come back from seemingly debilitating and sometimes crippling injuries, sailors can too.

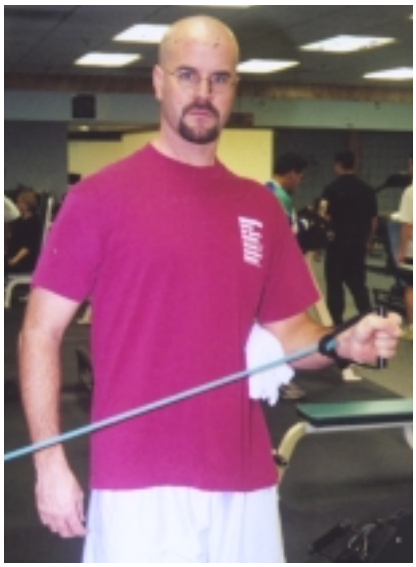
While I consider myself an avid sailor and fitness aficionado, I lack the professional training necessary in the area of physical therapy. Therefore, I enlisted the help of a licensed physical therapist, Brad Segree, to assist me in formulating exercise routines that target specific muscle groups, and aid in rehabilitation and conditioning. Brad suggests that you consult a physician before attempting strenuous exercise if you are not accustomed to physical exertion. Furthermore, if you feel pain or discomfort while performing any of these exercises, it's important that you stop. Do not try to "work through the pain."

The Dreaded "Rotator Cuff" Injury

Shoulder injuries can occur from rapid, strenuous movements like pumping the spinnaker sheet or mainsheet on a windy reach. Violent and erratic movements like these can impinge tendons in your shoulder, and render that arm useless. The vast majority of these are "rotator cuff" injuries. The rotator cuff is simply a group of four muscles in the shoulder that helps lift your arm *(see Figure 1)*. The most common and least severe rotator cuff injury is "rotator cuff tendonitis" (also known as "bursitus" or "impingement syndrome"). Rotator cuff tendonitis is an irritation of the cuff and is characterized by pain and weakness on the top or front of your shoulder. Discomfort is predominantly experienced while attempting overhead activity. If rotator cuff tendonitis becomes



▲ *Figure 1: Locating the rotator cuff.*



▲ *Figure 2: External Rotation Exercise using elastic tubing.*

▼ *Figure 3: External Rotation Exercise using weights.*

chronic, this may lead to the more severe "rotator cuff tear," where a hole actually forms in the rotator cuff tendon.

The good news is that although rotator cuff tendonitis is somewhat debilitating, it can be cured. The first step after injury is to rest the shoulder. The rest cycle may take a few weeks, and you should definitely ice the area as much as possible. Anti-inflammatory drugs like ibuprofen will help shrink swelling (consult your physician and drink LOTS of water while taking this medication). Mild stretching and slow movements are part of the rehabilitation process but don't rush it! Listening to your body is key since you are the only one that knows the "good pain" from the bad.

When the shoulder can again be moved without pain, you then need to strengthen it to help avoid re-injury. The fact is that damage to the rotator cuff can become a vicious cycle if you don't exercise, even with adequate rest. The reason for this phenomenon is that the acromion bone, the top bone in your shoulder, reacts to inflammation-induced pressure by making new bone—otherwise known as a "bone spur". That bone spur causes further pressure on the rotator cuff, and the cuff gets more irritated. Strengthening the rotator cuff is a scientifically proven way to break this vicious cycle. If you feel that your rotator cuff injury is more than just mild impingement, Brad suggests seeing a physician for an examination that possibly includes an MRI and a referral to a physical therapist.

Basic Strength Training Principles

Among the many benefits of strength training, increased performance and resistance to injury are paramount. Often times though, the quest for increased performance can cause injuries, so I constantly remind myself that I'm at the gym to enhance my sailing potential and not detract from it by doing something stupid. Lifting too much weight or lifting without proper form is a sure way to keep you off the water. My training credo is "don't be stupid." Consult a fitness professional if you need guidance with your workout.

Perhaps the most common injury-causing mistake is an insufficient warm-up. Like an engine, your muscles need to be warm to operate at peak safety and efficiency. I advocate that anyone attempting a strenuous workout warm up sufficiently before lifting by raising your heart rate and working up an initial sweat. Five minutes at a comfortable pace on a bike, stair-climber, or rowing machine will do the trick. Follow this with some light stretching, and be sure to stretch between exercises and after working out. These same warm-up principles also apply to sailing. Too few sailors take the time to warm up and stretch before heading out on the water. Most physical education professionals agree that cold, tight muscles are the main reason for muscle and ligament tears. If you are just doing some light training in your office or at

home, start slowly with resistance training and build up as your body gets warm.

Sailing-Specific Shoulder Exercises

The following exercises will help you strengthen the muscles that form your rotator cuff, and possibly avoid injuring them while sailing. These exercises are designed to replicate common upper-body movements while sailing the 505, except that the movements of the exercises are performed in a steady and controlled motion rather than jerky and erratic.

1. External Rotation Exercises

According to Brad, shoulder rotations are the best thing you can do to strengthen your rotator cuff. Rotations of this type are good for general conditioning or rehabilitation—just vary the resistance and repetition accordingly. The posterior or external rotation (rotating away from your chest) are the most important since these muscles are usually under-developed and heavily stressed while sailing because of the overhead pulling motions involved. Anterior or internal rotations (rotating toward your chest) are not as important since these muscles tend to be worked frequently while performing more traditional exercises like bench press, push-ups, or dips. Anterior muscles are also larger and stronger, and not easily injured. *Figure 2* illustrates the external shoulder rotation using elastic tubing.

➤ Anchor one end of the tubing to a fixed point at about waist level

➤ Stand with the tubing at your side and your hand furthest away from the anchor point gripping the handle. There should be slight tension in the tubing.

➤ Place a towel between your elbow and waist on the side for the shoulder you are exercising. This will force you to keep your elbow in and isolate the rotation.

➤ Rotate your arm in the horizontal plane moving through the full range of motion in a controlled, steady movement for 15-20 repetitions minimum.

➤ Switch arms and repeat for 3 or 4 sets.

The nice thing about these exercises is that you can do them just about anywhere with elastic tubing. For those desk jockeys in our ranks, 5 minutes each day during lunch might mean the difference between sailing comfortably all season, sailing in pain, or not sailing at all. Similarly, the same muscle groups can be worked with weights by laying on your side as in *Figure 3*.

2. One-armed Cable Laterals

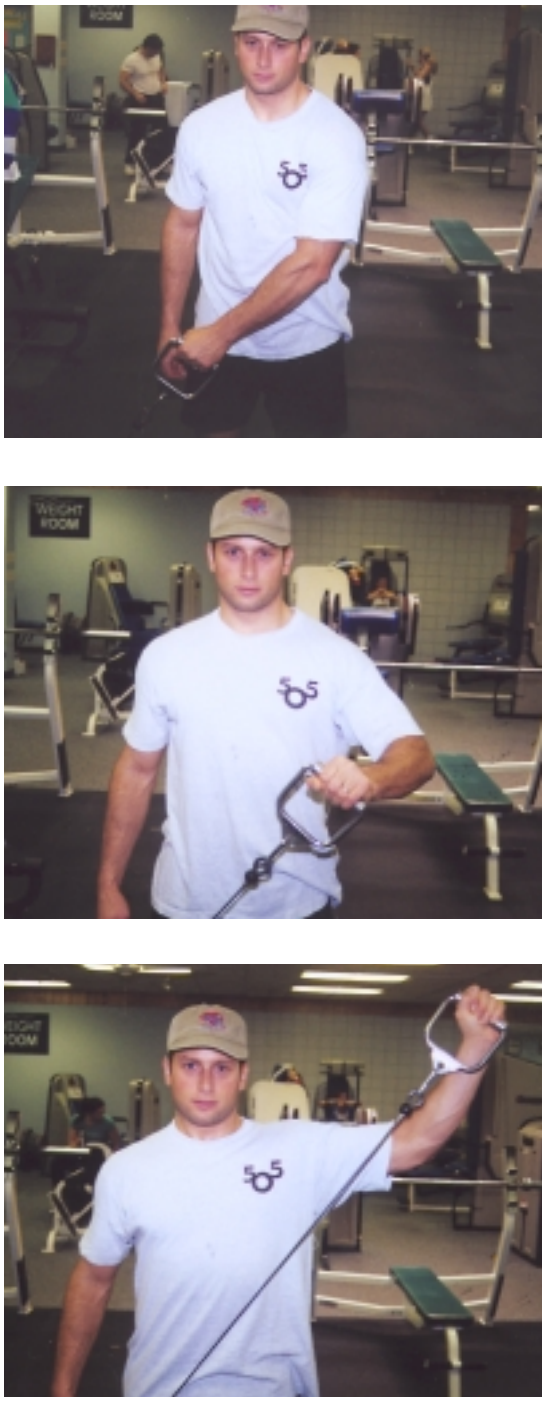
The one-armed cable lateral *(Figure 4)* primarily works your deltoids. I like this exercise because it does a good job of replicating a sail pumping movement while minimizing the chance of injury caused by large levers. Large lever arms are created when your arm is extended all the way in front or to the side of your body (as with traditional shoulder raises). The larger the lever, the more stress on your rotator cuff. With the cable lateral, your elbow is always bent slightly and your hand is never far outboard from your body effectively reducing the lever.

➤ Attach a handle to the lower cable and grasp with hand furthest away as with the shoulder rotation.

➤ Slowly raise the weight across the width of your torso so it arcs across your chest. The motion should stop when your arm is extended to your side at head level.

➤ Squeeze your deltoid muscle for a moment or two before slowly releasing your hand down to the opposite hip.

➤ Use a resistance that will allow you to do 15-20 repetitions for 3 to 4 sets with each arm.



▲ *Figure 4: One-armed cable lateral exercise. First, second and third position.*

▲ *Figure 5: Shoulder Exercise, Tricep Stretch*

▲ *Figure 6: Shoulder Exercise, Overhead Tricep Stretch*

▲ *Figure 7: Shoulder Exercise, Pectoral/Deltoid Stretch*

As with the external rotations, you should concentrate on correct form and steady motion with this exercise. You can also do this exercise with elastic tubing by tying one end to the leg of a desk or some other fixed object.

3. Shoulder Stretches

There are numerous shoulder stretches that physical therapists recommend for their patients. I think the three following stretches are sufficient. The Tricep Stretch *(Figure 5)* stretches your exterior shoulder muscles. Simply cross your arm over your chest, and gently pull on your tricep with the opposite hand. The Overhead Tricep Stretch *(Figure 6)* works much the same way, except your arm is placed behind your head. The Pectoral/Deltoid Stretch *(Figure 7)* stretches your anterior muscles. All stretches should only be performed after warming up to avoid the risk of pulling a muscle. Be careful not to pull too hard, and don't use rapid, snapping or jerking motions.

It's important to note that over-stretching the shoulder muscles can have a negative effect since the shoulder is inherently unstable due to it's extreme range of motion. The argument is a simple one; if you regularly over-stretch the structures of the joint which help provide anterior stability, the joint can become even more unstable. This increased instability then leads to potentially greater joint movement and increased injury risk. In extreme cases, this results in "instability impingement" which is common to baseball pitchers and swimmers.

Exercises to Avoid

A number of old school exercises are now deemed to be potentially hazardous to the shoulder joint. These include anything with an excessively wide grip or movement behind the head and neck. Such exercises include the military press, wide-grip lateral pull-downs, wide-grip chin-ups, flys, and wide-grip bench press. These exercises put the shoulder at a mechanical disadvantage by placing it under extreme external rotation, stressing the shoulder capsule and ligaments. This contributes to rotator cuff injury or anterior shoulder instability. From personal experience, I have injured my shoulders doing each of these exercises in the past because I wanted to look cool doing the muscle head routine. Being older and wiser now, I choose to use machines that do not require a wide grip or force an unnatural range of motion. For some of you, this may have to be a lesson you learn on your own.

Listen to your Body

Always remember that the purpose of exercise is to avoid injury and enhance performance. Your sailing performance will never be enhanced if you constantly hurt yourself in the gym. Listen to your body, especially when it comes to the shoulders. If you feel a pain that isn't normal muscle fatigue, stop what you're doing. Don't try to power through the pain. The "no pain, no gain" credo probably did more to kill personal fitness programs than 10 cent beer at fraternity parties. If the pain persists, remember the acronym RICE—Rest, Ice, Compress, and Elevate.

Final Thoughts

The Internet has a tremendous amount of information regarding shoulder injury. Some of this information is a true resource, and some are merely advertisements for wiz-bang shoulder therapy kits or drugs. Ultimately, no single therapy, drug, or exercise will help you with rehabilitation and strengthening. You must combine all the elements to be successful.

Look for sailing-specific back exercises in the next issue of *Tank Talk!* ≋

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Putting the Craft in WitchCraft

By Geoff Hurwitch

The challenge to start WitchCraft Boats began when my brother, Tom Hurwitch, got involved with a lengthy search for the "ideal" used 505. Tom's perfect boat was a fully competitive craft at a reasonable price.

He scoured the New England countryside to find the right candidate. During his search, somebody put a bug in his ear about building his own boat. This might be easier than finding a good used one. At the time, the success of the 1998 Hyannis Worlds contributed to an increased demand for used boats and the ensuing price hikes. Tom found his ideal boat, an 18-year-old Hamlin, as he began talks with Buzz Ballenger about the molds Buzz was looking to unload.

While Tom occupied himself with retrieving his Hamlin from the West Coast, I found myself knee deep in discussions with Buzz. (And I can tell you now without hesitation that finding a good used boat is far easier than building your own.) Buzz wanted the Ballenger molds to go to a good home, ideally in the U.S. where a new company would utilize them to make affordable 505s. I devised a business plan and sent it to Buzz for approval. The plan was acceptable to Buzz and he agreed to give us his tooling. WitchCraft Boats was born on paper, but a geography lesson would ensue before our tooling would reach New England.

Road Trip

From our small-world New England perspective, neither Tom nor I imagined that Santa Cruz was a far drive from San Diego. The source of the rental truck that would transport the molds across the country was in San Diego and the tooling was in Santa Cruz. I paid for our poor knowledge of California geography by spending the first day navigating Route 5 North for some 500 miles. After spending the night in the cab of the truck, I was ready to start loading the molds when Buzz arrived early in the morning. We began the process of loading one mold on top of the other, and then loading both into the back of the truck. In about three hours I was ready to start the long trek back to the East Coast.

Loading the molds.

Playing yo-yo with the big trucks.

Luckily, the weather was perfect for nearly the entire drive across country. Initially, I was a little concerned shortly after heading out from Santa Cruz as I drove up through Donner Pass. I passed numerous signs stating that I should put on tire chains, and then the dreaded, "Last stop to put tire chains on." After consulting the truck manual it became apparent that I would have to purchase chains if I wanted them. I decided I needed to save the money and trust my years of driving in the snow of Vermont, so I forged ahead without the chains.

The risk paid off with a clear road.

I wish that this was the point where I could tell you some amazing story about the trials and tribulations of my trip, but I can't because it was uneventful. I spent each day driving with the same truckers all the way across country except for a brief stop at my sister's house in Aurora, Colorado. It was a game I could play all day with these truckers. I could out climb them with my light load, but when we got to the crest of the hill the governor on my truck would limit me to 65 mph, and the trucks would come roaring past. I played yo-yo with them all day, every day. On the Witch Craft website (http://www.witchcraftboats.com) you can see a few pictures of the truck at rest.

The first WitchCraft under construction.

While in Aurora I made some phone calls and eventually got in touch with a Ballenger enthusiast, Bill Green. Bill was unable to show me his boat but he mentioned another Ballenger owner, Mike Goldstein, who was more than willing. Mike was in a graduate school program at Indiana University. He took me through the boat and allowed me to photograph it from stem to stern. My intention was to see what a WitchCraft 505 would look like if we were to produce one from the molds without any modifications. It also served as a good reference point when construction of the first boat finally began. The time spent in Indiana was invaluable.

Perfecting the Design

The next stage in the creation of WitchCraft Boats was a slow one. I was still living in Vermont at the time and was in the process of finding a job. The boat building finally took shape when I found employment and moved to Rhode Island. I immediately met up with Greg Ormond while he was working at Falmouth Yacht Club repairing 420s and Optimists. Greg had good qualifications as a builder with years of experience at Vanguard Racing Sailboats and Jibe Tech. Lars Guck and Peter Alarie had also worked with Greg, and they recommended I talk to him.

Shortly thereafter, Greg and I began a series of mold changes. Greg was more than up for the challenge, which was good because we had plenty of challenges ahead. The goal of the mold work was to modernize the look and functionality of the boat. Some of the changes made over the following months included modifications to allow easier vacuum bagging, adding a whole new transom in the enclosed style, moving the forward thwart vertically up and forward, lengthening the mast gate, and creating a new one-piece mast-step and centerboard cap part. The most significant change was to the rails. Feedback from Ballenger owners described a problem with delamination. After diagnosing the problem, Greg and I changed the bonding style of the deck to hull joint so that delamination would be eliminated. These initial changes were brought about thanks to all of the input from countless 505 sailors who shared with us the "best and worst" of what they had seen in other boats and other classes. Ali Meller was especially helpful with his vast knowledge of boat styles and function. It should be noted that WitchCraft probably maintains the second largest photo library of hull and deck layout pictures in the 505 world. Many images were imported from the various websites to discuss ideas.

After making these changes to the molds, we were ready to produce our first 505. The actual lay-up was quick and in two weeks we produced the deck and the hull as well as all of the small pieces, such as the bulkhead and spinnaker tube. Greg created the lay-up schedule using his experience building the International 470 and Finn for Vanguard. The real challenge was putting the boat together.

Trial and Error

Without any assembly guidelines, Greg and I would sit for hours pondering how we would piece everything together. Sometimes trial and error is the only answer. Luckily, it became obvious where

everything went and the assembly took about two weeks. We took our time in order to make sure everything went together smoothly. One of the most helpful additions that this boat has is the use of Plexus. This adhesive is easy to use, but the bonds are permanent, so we were careful not to make any mistakes. Another benefit of Plexus over conventional bonding materials is its ability to withstand extreme elongation without failure.

Tom, Greg and I like to talk about the construction of the boat because we spent so much time trying to make the ideal boat. The goal of the company is to make a long-lasting yet inexpensive 505 that would allow more sailors access to the class. It seems like an oxymoron to have a long lasting and inexpensive boat, however we think we have accomplished our goal. While the deck was off the mold but not on the hull yet, Greg challenged me to flex the shear. It was impossible! There was no motion from the edge in either torsion or compression. I was impressed. That, coupled with Plexus, makes the boat bombproof! I suppose the ultimate test will be to replicate the Howard Hamlin "65 mph highway launch scenario." To date, the owner of the first WitchCraft 505 (USA 8737), has been unwilling to allow his boat take part in such an experiment.

Giving Birth

During the mold reworking and just prior to the 505 MidWinters in 2000, I sold Tom's Hamlin (that's what brothers are for). Tom became the owner of the first boat out of the mold and now has his sights set on another Kevlar version in the near future. The first WitchCraft 505 has been a success and we have not had one structural issue with the boat. The only post-production hurdles we faced were learning the nuances of rigging a boat without any reference material. New boats will already benefit from some of the changes. These new changes include a fully integrated centerboard cap, forward and aft thwart and mast-step. The mast-step is also evolving. It will come off of the floor of the boat and will be integrated into the forward bulkhead. This change will simplify the forestay adjustment system.

As Tom, Greg and I begin the process of building another boat for a customer, we look forward to continuing the relationship with the class as boat builders and sailors. Tom sailed 8737 at the 2001 MidWinters with the owner of our new production boat, Darryl Dietz. Tom will also be at numerous events this spring and summer on the East Coast, and will host the Falmouth Open in June. The complete build process will be available for viewing on our web site, or you can email us at witchcraftboats@yahoo.com with any questions that you may have regarding WitchCraft 505s.

We are really looking forward to becoming more involved with the American Section and working with others here in the U.S. to improve upon design and functionality. We grow more excited about this class with every passing day and we hope others will grow more excited about our efforts to build competitive, inexpensive and durable 505s for many years to come. ≋≋

The goal of the mold work was to modernize the look and functionality of the boat.

The Art of Ram

By Rick H. Blase

Installing a mast ram is surely one of the most challenging 505 rigging assignments. But there's no need to recreate the wheel. So start out by studying other boats. Note manufacturers and individual tastes. Take lots of pictures and ask lots of questions. When you've picked out the mast ram for you, the first step is to assemble the necessary components. This usually includes a ram track, a car, a tube, and a deck fitting. You can fashion a ram from just about any appropriate collection of parts. But if freelancing is not your thing, mast ram kits are the path of least resistance. The kit was certainly my preferred form of rigging torture. Z-Spar, for example, makes a kit that has just about everything you'll need and will make your life about as easy as it is ever going to get. The following steps describe the process I went through adding a mast ram to my boat, a classic Ballenger US 5816 named 'The Wild Ride".

Photo 1: Additional Mast Ram Parts

STEP 1 – Gather the Material

First, you need to obtain the right components. In addition to the Z-Spar kit, you will need the necessary rigging to control your mast ram. I chose Technora for the connection to the mast ram and primary blocks and Samson Ultra Lite for the control lines. Not wanting to run through all the engineering calisthenics, I figured that there was as much tension on the ram as there is on the forestay, a range of 200-800 lbs. So size your line accordingly. Remember that you don't want much stretch in this line. I also selected the blocks, eyestraps, and stainless steel bolts for all the rigging and connections that would be necessary. In fact, since I have to mail order parts, I ordered a few extras because I still wasn't sure how everything was going to go together.

STEP 2 – Engineering Some Solutions Anyway

It was apparent from the mast ram kit that I was going to need some additional items to attach the ram to the boat. It was also immediately apparent that 200-800 lbs. of load would call for some pretty robust connections. After many e-mails and discussions with some fellow 505ers, I came up with the additional items shown in *Photo 1*. The top piece with the three screws in it is a piece of stainless steel with tabs welded on for thickness and tapped for #10 stainless steel screws. This piece is the backing plate I used for mounting the ram track to my mast. You could also use a thicker piece of stainless steel or aluminum and tap it directly rather than the tab welds. Remember to match up the

holes in the backing plate with the holes that are already drilled in the mast ram track. Also be sure to size your screw heads to fit in the pre-drilled holes. Pictured in the center is a rectangle cut out of 1/8" aluminum, which would be the base plate for the deck fitting. The two right angle looking pieces are 1/8" aluminum for mounting on either side of the forward bulkhead and bolt to the aluminum backing plate on the foredeck. *Photo 2* shows how these would go together. The mast ram bracket and backing plate go on top of the foredeck and the right angle aluminum brackets fit underneath the foredeck on either side of the bulkhead.

STEP 3 – Where Does It Go?

Next place the mast ram track on your mast and determine where exactly it will go. I took measurements from my sister boat 5818 courtesy of Stephen Long in Chicago. A rule of thumb is center it over the boom band, but this may vary from boat to boat. On my boat this worked out to be 48.5" from the mast step as you can see from *Photo 3*. Notice that I zip tied the track to the mast to allow me to drill the holes in the mast without movement. This is important as the tolerances are quite close and you don't want to have to force it when it comes time to mount the mast ram track

STEP 4 – Mounting the Track

Once you have the mast drilled for the mast ram track, the next step is to remove the mast heel plug so that you can slide the backing plate up the mast for mounting. This was for me the most traumatic part, but it wasn't as bad as I thought it would be. I drilled out all the stainless steel rivets that held the mast heel on and it just simply slid out of the mast as you can see in *Photo 4*. Removing my heel plug meant also removing the tang for the boom vang. It is a good idea to note how things look before you dismantle it because you have to get it back together afterwards. A sketch or a picture will work.

Once the heel plug is off, I dropped two pieces of waxed line down the top and bottom holes that were drilled for the mast ram track. Again I was worried that this would be an impossible task, but it was actually not that bad. I tied a small washer on the end of the line and dropped it through the hole to give it some weight. You will probably have to stand the mast up and maybe jiggle the halyards around some to get the line to drop through, but patience will prevail.

With the two, waxed lines that were dropped through the mast, I then threaded through the top and bottom holes of the backing plate as shown in *Photo 4*. I attached a small washer to each of the lines. I pulled each line evenly until the backing plate was inside the mast. Then we stood the mast up. I then proceeded to carefully pull both strings through the holes moving the backing plate into place. Once the backing plate was in place, I carefully lined the holes up and threaded the middle screw coated with locktite into the backing plate with the mast ram in position. Using locktite is pretty important, as you don't want these screws coming back out or getting loose on you. I didn't tighten this screw at first but did put enough pressure on it to hold the backing plate. I then pulled on the bottom string enough to break the knot and allowing the washer to fall out the bottom of the mast. Then I threaded the bottom screw with locktite into the bottom hole and tightened. I repeated this same step with the top screw. Once all screws were in place and everything was lined up, I tightened them down pretty good. Make sure that the two washers have fallen out the bottom of the mast. Then replace the heel plug and tang by refastening them with stainless steel rivets.

STEP 5 – Prepare the Bulkhead Brackets

You need to drill the bulkhead brackets before mounting. I did this by clamping the two brackets together and drilling

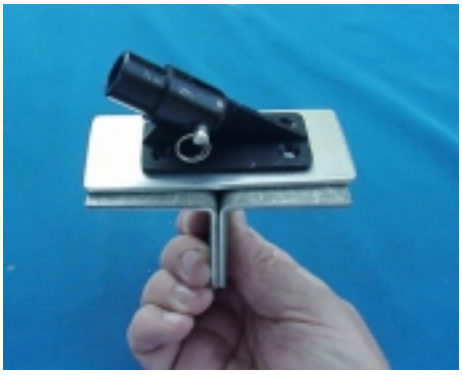

Photo 2: Foredeck Connection

Photo 3: Track Placement

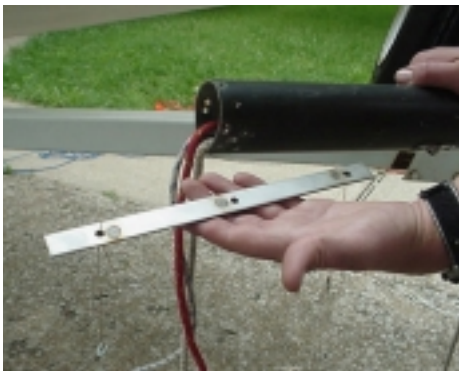

Photo 4: Removed Mast Heel

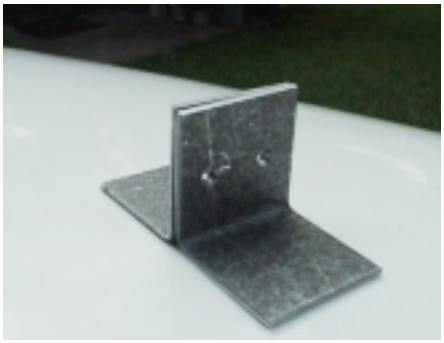

Photo 5: Bulkhead Brackets

Photo 6: Mast Ram Mounted

Photo 7: Ram Car Splices

them for the bolts. Then I took one of the brackets and centered it on my forward bulkhead, holding it to the bottom of the foredeck. In this position, I then drilled through the holes in the bracket through the bulkhead. By mounting the brackets on either side of the bulkhead, I would be distributing the horizontal load of the mast ram across the bulkhead. I bolted these brackets in place with stainless steel bolts through the bulkhead and with the other flat side fitting up against the bottom of the foredeck. These brackets are shown drilled in *Photo 5*.

STEP 6 – Mounting the Foredeck Bracket

Next I sort of positioned things together just to get an idea of where things were going to go. What I did was carefully measure the location of the backing plate underneath the foredeck and mark that on the top of the foredeck. Then I placed the flat aluminum backing plate over that position along with the foredeck fitting of the mast ram. I had to use 4.5" stainless steel bolts, as there was an approximate 2" fiberglass rib down the center underneath the foredeck for reinforcement. I drilled down through the mounting holes of the bracket, through the flat aluminum backing plate on top, through the fiberglass reinforcement underneath and finally through the right angle backing plate I had just mounted on either side of the forward bulkhead. The way this worked out there were two bolts through the forward bulkhead holding the two right angle backing plates together underneath and two bolts through each right angle backing plate down through the top on either side of the forward bulkhead. It is important to drill straight as I had some difficulty in making sure that my alignment was correct. Fortunately for me it worked out, but take extra care when you drill these holes.

STEP 7 – Sizing and Mounting the Tubing

Probably what turned out to be the most difficult for me was sizing the tube. You need to position your mast properly with the proper tension and measurements according to your appropriate tuning guide. I neglected to check all these factors and ended up cutting the tube length too short. I was able to obtain a new aluminum tube and re-cut it to the proper length. Once you have the tube to the proper length, you can carefully drill a hole through the tube and the fitting. I used 1/4" clovis pins with rings to mount the tube to the fittings. This way you can remove the tube easily for travel. The properly sized tube, track, and ram car are shown in *Photo 6*. Now that the tube was mounted, it was time to rig it.

STEP 8 – Rigging Your Mast Ram

I started by splicing Technora 12 on each of the stainless steel loops on the mast ram car. The ram down lead as shown on the bottom of the car was the easiest. The ram up control lead, which goes over the built-in block in the track and down through the inside of the track, was a little more difficult. I threaded a small wire through the track and then attached a piece of string to the wire. I pulled the string through and then did the same thing with the Technora. Again a little patience goes a long way on this operation. While you're doing this don't worry about the mast car position, because it's not important yet. *See Photo 7.*

Once you have the mast ram mounted to the mast and the foredeck the next issue is rigging. There are of course many solutions to this problem. After researching them all, I elected to put the ram up control on the right side of the centerboard case. The ram down control is led to both tanks. Both ram up and down triple blocks are deadended on the mast step. Each

triple block on top is connected to the Technora leads from the ram car with a capture-pin shackle. Again this facilitates removing the rigging for travel. The ram up control goes through the mast step and is turned aft with a cheek block. There is a cam cleat with eyestrap mounted on the side of the centerboard case where the ram up is terminated. The ram down control tail line ends in a single block. A line runs through this block down to blocks mounted on either side of the mast where the small piece of wood support is shown. The line is then turned out to blocks on the diagonal bulkhead and then turned aft to cheek blocks. You can see the termination of these lines in *Photo 8*.

While my side tank rigging is not the best, it has to do for now. The ram down controls runs aft through the thwart, is turned upward by a cheek block and terminates in a cam cleat and eyestrap on each side tank.

It is important to remember a couple of things when you are rigging. Make sure you leave enough tail in each line for the maximum ram up and ram down positions. Like all other tank-to-tank controls, be sure to center them up prior to racing so that they are even.

You can't have enough diagrams, tools, pictures, blocks, wire, line, advice, props, alcohol, and other assorted items that go with this project. I hope this article helps all of you who undertake such a project. Please feel free to email me with any questions at grate1@ webciti.net. If you contact me in person or by phone, please do not ask how much this cost in front of my family. ≋

Photo 8: Ram Control Lines

A FEW POINTERS

➤ Make sure you use stainless steel or aluminum for all your materials including screws and bolts.

➤ Make sure that you position everything out so that you can reassure yourself that it will fit.

➤ Make sure your rigging is setup and tuned for your normal sailing range. Be sure that the ram has enough travel to fit this range.

➤ Where possible, be sure to bolt through material with adequate backing, as the forces on the ram are substantial.

➤ Some people like more mechanical advantage on the ram up and down controls. But I have no difficulty with my setup. Just remember to uncleat the ram up control when you want to adjust the ram down or vice versa.

➤ I had originally planned to run the corner swivel blocks in the diagonal bulkhead directly to the block on the ram down control. However this put a lot of stress on the diagonal bulkhead, so I added the two swivel blocks in closer and it works a lot better. So remember that if you want to lead these lines out to the tanks, you should have the initial down blocks pretty close to the mast step for better leverage.

➤ Some people like to use wire for the ram car leads, however the Technora works well for me. It splices easily and its only fault is chaffing. I plan on checking that out as time goes on.

➤ All the blocks and line I used are rated for a minimum of 500 lbs or more. You probably don't want to drop below that.

You can't have enough diagrams, tools, pictures, blocks, wire, line, advice, props, alcohol, and other assorted items that go with this project.

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Dreaming California

By Dennis Surtees

Skippers don't have a crew; they have a partner. Of all my terrific partners, I ought to mention Pip Pearson first. Yes, that's right, your venerable former president was once young and dumb enough to like sailing with me. We first met in Australia at the 1966 worlds. While I was struggling to a great 27th place, Pip sailed with Paul Elvstrom to a second, a second which, under most scoring systems would have been a first. That next summer, Pip came via California to visit Paul in Denmark. He asked to visit us for two days and stayed for two years. He became a de facto member of our family. At weekends we sailed, on the way to a couple of North American Championships among other things; during the week he painted our house, then all my colleagues' homes, repaired all the leaky pipes in our old house, tore out an old kitchen and built a new redwood deck. All that was before 2 p.m. because at that time he took the 5-oh down to Palo Alto Y.C. so that it would be ready for us to start sailing when I finished in the operating room at three.

That was the time at PAYC when the wind really blew and we would sail until the boat or we broke or the gear was so messed up that we had to quit. We then packed up the boat, took it home and spent the evening getting her ready for the next day. I put this in the past tense because PAYC got closed down by environmentalists who thought that all these yachties were frightening away the yellow tailed marsh warbler (or something like that).

That pattern of training was one which Jay Kuncl, Steve Owen, Bertrand and Cayard and everyone else who sailed with me came to recognize. Come to think of it, quite a number of my crews finished up living with us for the summer. Surely that was because they were sailing with me and had nothing to do with our five teenage daughters. Right after the 1966 NAs at PAYC, the Canadians persuaded us to drive up to Vancouver Island for the Canadian Championship. Jenny, Pip and I piled into a car, abandoned our kids to a baby sitter and drove the 1000 miles to get there just in time to race. We had a really good shot of winning but I had to get back to work the following Monday so

Pip and friend at Worlds 2000.

we didn't even sail the last race. We just made the last ferry, then drove back through the night. You should understand that Pip has had ongoing eye problems. I didn't really understand until later that at night he could only see great star bursts instead of headlights; he had driven half the distance!

Pip and I went to France (La Baule) for the 1967 Worlds. He managed to stay alive while driving round Europe with Ian Gray in a clapped out old car, crashing through railroad gates when they were inconveniently closed and generally acting the way young Aussies tend to do when "doing" Europe. He picked up our first Parker in England and we drifted through a no-wind regatta coming to a not very respectable 35th out of 135. The sailing became irrelevant to the serious on-shore activities. It was where we saw our class President, Fred Garner hoisted 15 feet into the air on stacked tables and chairs while he waved a champagne bottle at the admiring crowd. I think that he was about 75 years of age at the time! It was followed by the Swedes carrying in a beach surf boat out of which popped an extremely scantily dressed female (also waving a champagne bottle). That, too, was the regatta where Bob Miller (late to become Ben Lexen) and Craig Whitworth brought the first entirely fiberglass Binks 505. Except it wasn't! The French measurer insisted that they did some very radical things to the hull, none of which helped its speed. It didn't matter to them because they had just come from their successful attempt to make Bob's boat, the Contender, an Olympic class.

We were able to drive up and down California quite quickly because whenever we were stopped by the CHP, Pip would produce his Aussie passport, adopt an outrageous down under accent and claim that he was on the way back to Oz within the next two days. Every patrolman just gave up. In the end, the going back in the next few days came true. Pip had been a "wetback" for two years when finally the immigration people caught up with him. A rather ominous phone call came in one day asking if we knew where he was. Of course, we told them that he had already gone back. That was to become true within a couple of weeks.

He came back a couple of years later and we sailed together again in 1970 and 1971. He took the boat to Narragansett Bay where we won the NAs. We also tried to start a sailing business. We actually were the first U.S representatives of Musto and Hyde! What a great might have been. Family matters took him back to Adelaide but we have no greater friend anywhere in the world than Pip today.

USSF Grant Money

The 2001 North Americans will be in Kingston, and organization for this championship is well underway. For those of you competing for the United States Sailing Foundation (USSF) grants, funding will be determined solely on the outcome of the North Americans rather than using the complicated ranking system. The top two US teams at the North Americans who are attending the Portugal Worlds will receive the funding.

Congratulations Team USA!

Congratulations go out to the American Section's top performers at the 2000 Worlds. Team USA took 4 of the top 10 spots, and 8 in the top 20. This stakes our claim as a legitimate powerhouse nation for windy 505 regattas. Mike Martin and Steve Bourdow dedicated their second place to the "Crew's Union". Howie Hamlin and Peter Alarie praised "Team Tuesday" for their 3rd place. The "Young Bucks", Andy Beeckman and Ben Benjamin, finished 6th and the stalwart team of Bruce Edwards and Dave Shelton finished 7th. ***Nice going guys!***

Course Correction

By Howard Hamlin

It's time for a course correction. At Durban last year, world champion Krister Bergstrom discussed the need to change courses and race schedules at world events. The goal is to make racing more fun and appealing to a wider cross section of sailors. I agreed. So I started an e-mail discussion with 505 sailors across the globe and found virtually unanimous support, including amens from Chris Nicholson, Ian Barker, Ian Pinnell, Ebbe Rosen, Holger Jess, Paul Young, Peter Alarie and many more.

Here's what we advocate. Start with a New Course: Windward, leeward, triangle, windward, leeward, finish on the run. Use an offset mark for the runs at each weather mark to avoid congestion and a gate at the leeward mark to prevent parades. Other proposed choices:

- New Worlds Format: Two races per day. One on the last day. Seven day series with 13 races total.
- Drops: One drop after 4 races (as now) and 2 drops after 9 races.
- Scoring: Low point score, instead of Olympic.

We travel too far and spend too much money to sail only one race a day.

We should put the new format in place at the upcoming Portugal worlds. These changes are not unique, virtually all international and Olympic classes have adopted similar formats. The existing world's course has too many upwind legs, which puts too much of a premium on upwind performance. This requires big crews, years of experience and hours of two-boat tuning. It also reduces the number of potential crews and discourages newcomers. Peter Alarie, my crew in Durban, was too small at 5'10" and 205 lbs! There are simply too few sailors who are big enough to sail competitively on a 505. The problem got even worse when water bottles were made illegal. For the good of the class and growth, we need to make the changes to allow lighter crews to remain competitive.

A downwind finish makes it easier for the race committee. They do not have to move after the finish and the next race can start more quickly. To us, the fun downwind starts at 12 knots when the pole is on the headstay and the crew is on the wire. Wire running is more of a gas for the crew than reaching, more tactical, less of a parade, has more lanes and often is faster than a main flogging on a tight reach.

Having two races a day is also a better way to go. It gives you more races to figure out the conditions and get in stride. We travel too far and spend too much money to sail only one race a day. Having more races puts less importance on sailing the pre-world's, and maximizes time sailing at the worlds. There is no reason to use Olympic scoring. It is difficult for everyone and makes little or no difference in the end. They don't even use it at the Olympics anymore.

As Chris Nicholson says, "There is no question these changes are absolutely necessary, let's not draw out the debate, make these changes now. It will only make what already is a great class, even better." Our current world's format is only a guideline. The class officers can enact these changes for the next world's. So let's encourage them to do so. There is no downside to trying this out. After Portugal, we can debate and make changes based on class preference. E-mail the class officers and encourage them to make the change.

BackTime

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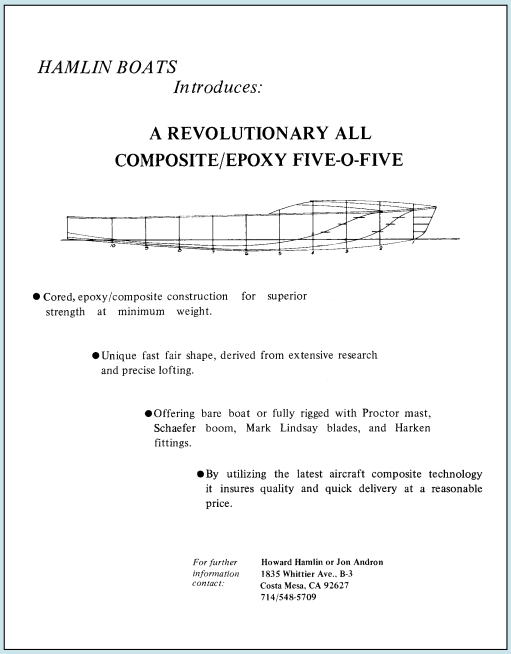

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The Magazine of the 505 Class American Section

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