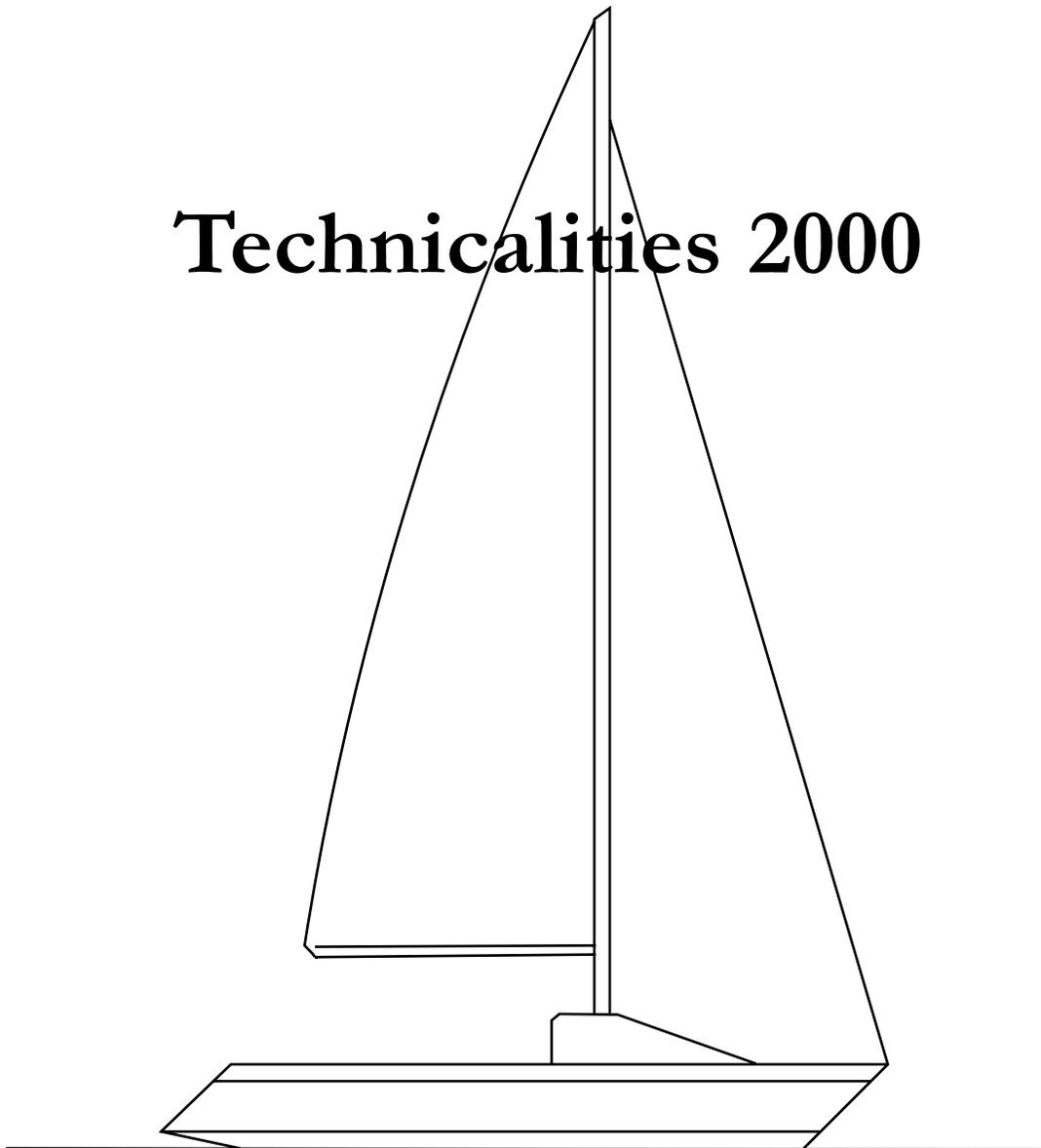


Technicalities 2000



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Table of Contents

Getting Started

Hoist and Ramp Launching & Retrieving	Ralph Taylor	1
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Regatta Preparation

5 Tricks to Pull Out of Your Sailbag This Season	Chic Parsons & Dale Waagmeester	3
Santana 20 Training	Chic Parsons & Dale Waagmeester	5
Practice Makes Perfect: Growing the Team	Andrew Kerr	5
Regatta Preparation	Andrew Kerr	8
Tuning by Feel and Sight	Lance Purdy	9

Deck Layout Tips

If Light is Fast, Lighter is Faster	Phillip Infelise	12
Santana 20 Console Setup	Ralph Taylor	15

Santana 20 Sailing Techniques

Smile, the Wind is Howling	Bob Pattison	18
Bill Does Steering	Bill Jenkins	20
More Breeze, More Bumps	Phillip Infelise	22
Spinnaker Trim.....	Dale Waagmeester	25
Downwind Sailing: Heavy Air	Lance Purdy	28
Downwind Sailing: Running In Moderate Air	Lance Purdy	31
Downwind Sailing: Running at Smaller Than Optimum Angles	Lance Purdy	32
Foredeck Crew Tips	Adam Kline	33

Racing Strategy

Pre-Start Strategy: Keep Your Head Out of the Boat	Andrew Kerr	37
Rounding Offset Marks	Andrew Kerr	39
Choose Your Leeward Mark	Andrew Kerr	41
Lake Sailing: Expect the Unexpected.....	Andrew Kerr	43

Hoist and Ramp Launching & Retrieving

Ralph Taylor

Some Santana 20 sailors are "hoisters." They like the convenience of a hoist to put their boats in the water and back to the trailer. Others believe that "God didn't intend that boats fly," and prefer ramp launches.

I've done a fair amount of each, and have come to the conclusion that which method to use depends upon what you have available.

Hoisting

Two essentials for an air launch are a good hoist and a sturdy boat bridle. The hoist should be rated at 1 ton or more and either pivot or travel out over the water. The water at the launch point should, of course, be at least five feet deep. The hook on the hoist chain should have a positive lock to prevent the hoisted boat from slipping off. You also need sufficient room to maneuver the trailer into position under the lifting point.



Be sure to stand clear of the hoisted boat.

The bridle for your boat should be strong enough to support your boat. It must be secured to the keel bolts, and equipped with a ring to attach the bridle to the hoist hook. Your bridle should be long enough so that the ring reaches the

level of your companionway top, or slightly higher. The bridle should have lines attached to the ring to keep the ring from moving fore-and-aft and port-and-starboard. The ring must stay in position to stabilize the boat while it's in the air. Here are the hoisting steps:

Step 1: Carefully inspect the hoist and hoisting area. Figure out where everything goes and plan your launch. Where should the center of the trailer go? Is there a placement mark for the trailer's wheels or keel?

Step 2: Return to your boat and set it up for hoisting. Use port and starboard lines to secure the bridle ring in the center top of the companionway opening. Run aft lines to each corner of the stern and tension them to keep ring from moving forward. Pull adjustable aft lowers on tight. Then, and only then, disconnect the backstay. (Or, you can wait a little, but you should disconnect the backstay before backing under the hoist.) Set up bow and stern lines that are long enough to allow you to stand away from the boat and control it while it's in the air. Be sure to have fenders available for protection.

Step 3: Back the boat under the hoist. If it's a pivoting boom type, be sure that the boom is behind the mast. Have a person stand behind the boat to signal you regarding trailer positioning.

Step 4: Climb up on the boat. Check the aft lowers. Disconnect the backstay if you haven't already done so and secure it where it won't foul on any part of the hoist. (Be wary of your rig if the hoist motor or winch protrudes from the hoist arm.) Connect the hoist hook to the ring. Throw down the bow and stern lines. Climb down from the boat, making sure that all of your tie-downs are disconnected as you go. **DO NOT** under any circumstances ride the boat while it's in the air!

Step 5: Carefully lift the boat off the trailer. Lift slowly at first to check the boat's fore/aft attitude. It should come off about 15 degrees bow down - this keeps the mast away from the hoist arm. Use the bow and stern lines to prevent any swinging until the keel has cleared the trailer. Lift

the boat completely free of the trailer and high enough to clear any obstacles. DO NOT allow anyone under the boat while it's in the air!

Step 6: When using a pivoting arm hoist, swing the boat over the water. You will need to swing the boat with the bow and stern lines at the same time. With a sliding-type hoist, you only need to prevent swinging. Keep the boat perpendicular to the boom or traveling arm.

Step 7: Lower the boat into the water. Climb on the floating boat and release the hoist hook. Move the boat and the trailer out of the way for the next sailor.

Step 8: To put the boat back on the trailer, reverse the process. Send someone for the trailer and join the hoist-out line. Set up your hoist bridle. Pull on the aft lowers and disconnect the backstay. Make sure that your long bow and stern lines are attached.

Step 9: When your trailer is positioned correctly under the hoist, hook up and start lifting. As you lift, remember to keep the bow about 15 degrees down.

Step 10: Position the boat over the trailer and start lowering. The keel is your key! As you lower, watch the keel. If the keel goes into the right place, everything else will line up. Don't let the boat cant to one side or the keel won't go into its guide. (In a pinch, have someone push on the keel to keep it in side-to-side alignment.) If the keel is too far forward or aft, the boat won't be balanced on the trailer and you'll have an unpleasant time on the highway. (For fore-and-aft placement, someone can lift or pull down on the bow while the boat is just off the trailer.)

Ramping

The main requirement for a ramp launch is a good ramp. Ramps should be free from holes that may swallow up a trailer wheel and should deliver the boat into five to five-and-one-half feet of water within a reasonable distance. Neither should

ramps be so steep that your launch vehicle can't pull the trailer out.

You need a long launch line to connect to the trailer to your vehicle so your vehicle doesn't drown and a "guide wheel" to guide the trailer down the ramp in a straight line. This wheel should be located toward the hitch end of the trailer, aligned with the center of the trailer and NOT swivel - or the trailer can get out of control. A guide wheel should be adjustable up and down, so that it can be retracted for road travel. A nylon rope makes a good launch line because of its stretch. Plan on a working load of two tons to have a safety margin. Sixty feet of line should be more than adequate.

There are two basic kinds of ramp launching: "dock" and "drive off." If you select the "drive off" method, you'll need to have your outboard engine ready to go. If the wind is right, you might be able to sail off. Here are the ramp launching steps:

Step 1: Rig the boat for launching and get in the ramp line. You'll want bow and stern lines to control the boat while it's in the water and fenders to prevent damage from the dock. You can disconnect trailer lights and safety chains while waiting. Don't disconnect the bow/trailer connection yet.

Step 2: Back the boat into position at the top of the ramp. Chock the trailer wheels and place the guide wheel on the ground. (It may be necessary to unhitch the trailer from the vehicle now to accomplish this.) Secure your launch line to the vehicle and the trailer. Check that the trailer will go straight into the water. Disconnect the bow/trailer connection and any other lines securing the boat to the trailer. Check that your bow and stern lines will be easily reachable.

Step 3: Pull the vehicle forward to tension the launch line and move the trailer forward an inch or two. Un-chock the wheels.

Step 4: Back the vehicle SLOWLY down the ramp. If the trailer departs from its direct line

down the ramp, stop and straighten it out. Back down until the boat is just floating.

Step 4: Float the boat off the trailer. Pull the boat aft until the bow clears the trailer, then pull the boat to the dock and secure it.

Step 5: Pull the unloaded trailer and vehicle forward until the trailer wheels clear the water. Then, chock the trailer wheels and back your vehicle up to the trailer as someone reels in your launch line.

Step 6: Disconnect the launch line from the vehicle and secure it. Retract the trailer guide wheel and hitch the trailer to the vehicle.

Step 7: Pull the trailer away from the launch area and park it. Return to your boat and enjoy the day.

Step 8: To put the boat back on the trailer, reverse the launch process. Back the trailer onto the ramp, chock the trailer wheels, unhitch and set your guide wheel. Pull out a couple of feet or so of slack in the bow/trailer attachment line. Attach the launch line between the trailer and launch vehicle, and pull forward so that your trailer chocks can be released. Then back down slowly until the trailer is in position to receive the boat.

Step 9: The boat can either be floated onto the trailer using the bow and stern lines or driven on with a sail or outboard. In either case, someone will need to be on the boat to connect the bow/trailer attachment line or to winch the boat forward on the trailer. Feet may get wet doing this chore, since there must be little or no extra weight on the bow.

Step 10: Drive the vehicle slowly up the ramp, adjusting the trailer so that it's rolling straight, if necessary, until the trailer wheels are clear of the water. Chock the wheels and back down to the trailer. Disconnect the launch line between the trailer and the vehicle, and re-hitch the two together. Retract the guide wheel and drive the loaded trailer to the derigging area.

Courtesy is a Class tradition. Santana 20 sailors have a well-deserved reputation for courtesy and

helpfulness at hoists and launch ramps. Because ramps and hoists are often crowded, we do no more in this critical area than what needs to be done to safely launch and recover the boat and secure it to the trailer. We help others to speed the launch and recovery tasks for the whole group.

Still have questions? Talk to a Class member. We'll be glad to give you helpful advice.

Five Tricks to Pull out of Your Bag

This Racing Season

Chic Parsons
Dale Waagmeester

First: Reduce the tiller length to the minimum which will permit the skipper to sit on the high side of the boat, in front of the traveler, and steer comfortably while sailing to windward. It may be necessary to extend your hiking stick. A shorter tiller will allow a skipper of any size to pass easily between the traveler and tiller when tacking. Shortening the tiller will allow the skipper to tack the Santana 20 much like steering a Laser.

Second: If you are the victim of a vicious lee bow maneuver, you have a tool to fight off this attack besides tacking or being sucked to the back of the pack. Simply loosen your outhaul or backstay. This will increase the draft in your mainsail and allow the boat to point 3-5 degrees higher into clear air. Once you are in the clear pull the outhaul or backstay back on and keep sailing. If you practice this tactic, you will find that you will sacrifice some speed, but you will be able to maintain your course and be in a position to control the outside boat.

Third: Use your most experienced crew as your foredeck. The Santana 20 foredeck has the best visibility on the boat because there is a window in the genoa through which the foredeck can see what is happening on the racecourse. If

you use your foredeck as the eyes in the boat, the skipper will have more time to concentrate on steering. With a little practice, the foredeck will be able to give a play-by-play commentary on what is happening on the racecourse. The first three phrases you need teach your foredeck are:

- a. Conflict in 10 boat lengths.
- b. Conflict in 5 boat lengths.
- c. Damn, we're fast!

Fourth: On your final approach to the start line in windy conditions, **always** use the winch handle to sheet the genoa in to close-hauled. This simple maneuver will give you an instant 1-2 boat length advantage over any competitor using the bowstring method of tightening the genoa sheet. When you use the winch handle method all crew weight remains on the high side of the boat where it is needed. An added advantage is that it will be difficult for your crew to sheet the genoa in too quickly using the winch handle. The result is that the boat remains very flat and accelerates off the line very quickly - when speed is most critical.

If you bowstring the genoa into position, a person must come down off the high side, pull the genoa in very quickly and then jump back. This encourages the boat to heel to leeward and sideslip down the line. This problem is compounded if the genoa is strapped in all at once, causing the boat to stall and heel even more. This type of start is very inefficient and very slow. It is, however, great for the local economy because it helps generate beer and tequila sales after the race.

Instead, practice bringing the boat up to speed by using the winch handle and keeping the crew on the high side. By doing this you will find that your starts improve, you will have more off-the-line speed and that there is less commotion in the boat at the most critical point of the race. Finally, if you are fortunate and the boat to weather used the bowstring method, it will heel and slide into your lee, leaving you a clear path up the course.

Fifth: Most skippers have good concentration skills on the boat. If you watch any good sailor

you will notice a high degree of concentration on the luff of the genoa while sailing upwind. It is equally important to concentrate just as hard on the run, but few people know what to look for. The next time you sail downwind, concentrate on the spinnaker pole. Yes, stare at the spinnaker pole, just as you would stare at the luff of the genoa driving upwind. What you look for is a spinnaker that is flying directly from the pole. When this happens, the maximum draft will be in the center of the chute and you will have the most power possible pushing the boat directly in line with the keel, which is dead downwind.

You will also notice that by concentrating on the pole you can use it as a visual straight edge that will likewise help you to spot the spinnaker draft. If the draft is located in the left of the chute, gradually steer towards it and maintain a course to keep the draft in one exact point. The goal is to concentrate on steering a course that will keep the chute directly in front of the boat and in the groove. You can get so good at this that you will become just as sensitive to looking at the chute downwind as you are looking at the genoa luff upwind.

One simple method that encourages this type of sailing is to give your Windex or Spar Fly to your closest rival. Now, instead of looking into the ozone to see if you're going downwind or are sailing by the lee, you can concentrate on your boat position relative to others and keeping the boat sailing fast. If a competitor has your Windex, it will make you feel warm inside to know that now s/he is staring up into space. If that competitor gets close to you, you can simply use your former Windex to tell you when you're blanketing their wind. Start paying attention to the very competitive dinghy and Olympic classes and you will find that few people rely on masthead wind indicators.

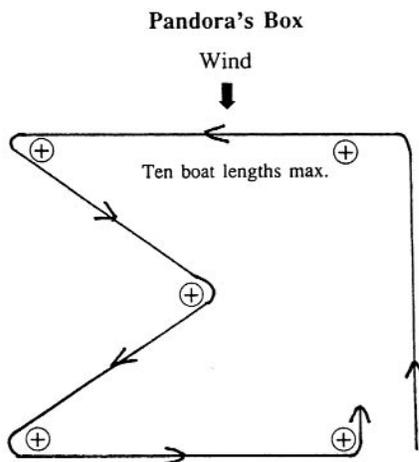
Santana 20 Training Exercises

Chic Parsons
Dale Waagmeester

Here are a couple of training suggestions which should help you handle your boat better and improve your racing performance.

Spinnaker Launch/Douse: The next time you train your crew to launch and douse the spinnaker, do it at the dock first. At the dock you can launch and douse a chute over 100 times with very little wear and tear on either the skipper or crew. You will find that your crew will have a good feel for exactly how far the spinnaker pole should be set off the forestay to get the chute to fill most quickly. Before my crew at the Santana 20 Nationals ever flew the spinnaker, he was able to launch the chute and have it filled in seconds. He was also able to practice packing the chute, and keeping it from going over the bow. When practicing at the dock without the interference of the genoa or mainsail the crew will become very proficient with the spinnaker in just one afternoon.

Pandora's Box: Pandora's box is a training tool used by the U.S. Sailing Team to accomplish two goals: 1) Promote boat handling skills, and 2) To subject the skipper to every rule infraction possible. Use the diagram below to set up Pandora's Box.



Set the bouys as close together as possible to allow tactical roundings and room to luff. You simply start sailing around the course trying to avoid being passed, while at the same time passing every boat possible. In a short amount of time you will find that your boat handling skills and rules knowledge improve dramatically. Pandora's Box works great practicing alone, but is more fun with a minimum of five boats.

Practice Makes Perfect: Growing the Team

Andrew Kerr

A friend and I were recently discussing how many racing sailors practice before competing in an event. I wonder how many serve and volleys Grand Slam tennis champion Andre Agassi takes before a match. 500? Or how many practice swings eight time batting champion Tony Gwynn takes before an at bat. At least one hundred, I suggest. I am sure that each would credit their consistently excellent performance to practice, focus and preparation. I have been lucky enough to race with a number of excellent sailors who are not only good to begin with, but who each have the same ethic of practice, practice, and practice.

The first important practice schedule ingredient is targeting a particular event to aim for - say your club championship - followed by encouraging your crew to commit to an evening per week or a weekend for practice sessions. Weekday beer can races can be a good time to increase your crew roster and introduce new people to the boat and team. An east coast J120 on which I sail does this very well. They also rotate positions so that each member of the team gets a view from the

perspective of other crew members and more of the big picture. Come game time the team has a much sharper appreciation of everything that needs to be done.

Scheduling practice weekends can be tough, but early planning can facilitate practices. Perhaps incorporate a social event, such as a crew dinner, to make the practice time more attractive and fun for everyone involved. A good early look at the schedule will help practice planning and facilitate the team's goal setting for the year. Goals may range from gaining a number of places in the fleet, to simply sailing better, to winning a championship.

Next step is to purchase (or borrow) three inflatable marks equipped with mushroom anchors (which are the easiest to handle) for setting windward/leeward courses and also for starting practice. An east coast Flying Scot team that I sail with takes marks to the mid-winter championship and we tow them to the racing area prior to the event and set up our own practice race course. Not only does the team get to practice in the event location, but also has an opportunity to note wind directions, currents, topographical influences and a whole host of other good course-related information.

For your first session, set the marks about a quarter mile apart. When going upwind pay particular attention to sail trim and crew weight placement. Have the skipper concentrate on driving for speed. When tacking note the speed going into the tack and then how much loss of speed there is at the conclusion.

Common errors in tacking include oversteering, tacking in a light spot, tacking in a wave set, not opening the mainsail leech to build speed out of the tack, the crew being too anxious to leave the rail, thereby overheeling the boat, and over trimming of the Genoa once the tack has been completed.

Corrections for these problems include having the bow person identify a flat spot in which to tack, having the skipper give a countdown of

"3,2,1 tacking" so that the crew knows when to come off the rail, having the mainsail trimmer ease the mainsheet out a little out of each tack and then squeeze it in as the boat builds speed, and having the trimmer call out "Speed Build" so that the helm knows how long to keep the bow down to build speed and the Genoa trimmer can gauge how fast the sail is trimmed in. The skipper can critique each tack by watching the passage of the headsail through the foretriangle. If it is passing through quickly slow the turn down. If hanging up on the shrouds, increase the turn speed. The skipper can also critique the boat's wake. Keep an eye on the speed loss out of the tack and the heel angle. If there is a lot of heel, oversteering is usually the culprit.

This is also an excellent time to start building individual team roles. Team role building is especially important with new crew on the boat and not a lot of sailing time together as a team. Practice provides a terrific opportunity to integrate new crew and to utilize their talents so they can contribute and feel comfortable.

I sail with a variety of teams in a variety of classes and one of the first things I ask each group with which I sail is what method of communication they prefer. One needs to be specific when communicating, because terminology such as "pressure on the bow" may mean different things to different teams. Successful teams use concise terminology on which all agree so that all team members are on the same page.

If sailing conditions are light, practice roll tacking. If sailing on a larger boat it is a good idea is to appoint a "roll tack leader" who can direct the group to roll the boat at the same time. It is not uncommon, especially during the early stages of roll tacking practice, for the team to be moving its weight at the wrong time or not as a unit. The roll tack leader can help alleviate this problem by providing a countdown of "3, 2, 1, roll!"

Once around the windward mark, and with the spinnaker set (or jib whisker-poled out), it's time

for the spinnaker trimmer to start communicating pressure on the sheet and the tactician looking for wind and monitoring the compass. Practice steering the boat with your weight. Heeling to windward is very fast in a number of classes. Do as many jibes as possible, followed by a takedown and rounding.

Common downwind errors include oversteering through the jibes, late takedowns and taking the leeward mark too tight on the approach. These errors can be rectified through much repetition and some additional practice techniques that we will discuss later. After about five or six laps it's time to go in and document the session. Talk over what each team member thinks needs to be improved on. De-brief as a team and e-mail each team member the resulting notes. Set goals for your next practice and try to let those who didn't attend know how valuable the session was and how important it is to have them participate in future practices.

It is a good idea after each practice session to organize a team social to get together with all of the husbands, wives, girlfriends and boyfriends invited, so no one feels left out. This helps build camaraderie and spirit in the group and makes the whole practicing process a pleasant experience.

Your next practice should be on a shorter course and more challenging. Chris Winnard, a friend of mine, and I have been sailing together for 11 years on a Santana 20 that we co-own. One of our favorite practice sessions is to push ourselves to the absolute limit on a very short windward/leeward course. We practice many, many bear away spinnaker sets, jibe sets, windward, leeward and jibe takedowns in rapid succession. To add to the intensity, the crew never knows where the leeward mark is since we give ourselves the possibility of using 3 possible marks! This often entails a very quick spinnaker takedown and mark rounding. The use of multiple leeward marks really encourages anticipation and is also good practice for when gate marks are used at a regatta. I strongly recommend using your old sails

for all of these sessions, and indeed for all of your practice sessions except for tuning sessions.

It is excellent to practice starts as a part of your session. This is best done with another boat that is comparable to yours, or at least within the same rating band. Set a short line and practice slowing down, accelerating, judging layline approaches, holding position and timing. I have found that the best way to improve your starting is to make more starts. The J World Sailing Schools agree. They devote a whole day to starts during their racing courses.

One of the benefits of a practice session is that you are able to experiment and make a multitude of mistakes without the real or imagined pressure of a race. Practicing many starts is a marvelous way of learning how your boat behaves when handled in a variety of ways. One of the key things to practice is steering your boat when it is almost completely stopped and your rudder is providing just a little steerage - one of the hardest skills to master. This is particularly helpful to teams that race in large and aggressive fleets, on fairly short starting lines where there is a lot of competition for space! Keep a clock running for your starts and once you have started go back for another approach.

Make sure that everyone on board knows how to determine the favored end of the start line and also try obtaining and using line sights. This is also a good time to discuss the most efficient way of pre-start communication and the tactician's role in helping to formulate the gameplan. We also take time, especially in the debriefing, to talk about the applicable racing rules and to make sure that as a team we are all on the same page.

Additional practice time should be used to perform windward and leeward mark roundings - over and over again - because this is where critical time and positioning can be lost or gained. As with start practice, you can do this even if only half of your team is available. Another technique that helps the team grow is for everyone on the team to rotate positions on the boat. As I

previously observed, this helps each team member to better understand the big picture. As full time coach for 15 years, I have noticed that without fail the skipper becomes more attentive at steering after a stint jibing the spinnaker pole. What an amazing coincidence!

Finally, log everything that you learned during practice and keep setting performance goals. One of the most valuable things I have done is to log into a notebook all the information we observed during an event: wind direction, port and starboard tack headings, current, favored side of the course, what we did well and what we need to work on. The logged information makes informed reading when sailing in the same location at a later date. Practicing on a regular basis and getting the team involved are key aspects to growing the team, and it is terrific to see the rewards in improved sailing.

Regatta Preparation

Andrew Kerr

Much has been written about regatta prep: The need for a good crew, good sails, a well-tuned mast and smooth and fast appendages to name but a few. I would like to share with you the preparation approach that we follow on *Disaster Area* when attending an out of town event in what may be an unfamiliar and distant location.

We reach the regatta site early, on average about 1-1/2 days before the event starts. We try to arrive at least 3 days before the start of a Santana 20 Class Championship. This gives us time to get two good nights sleep, shop for groceries, prep the boat, get oriented and adjust to any time or climactic changes.

We orchestrate two practices the day prior to the event. In the morning we sail in the race area to get oriented. We note where fixed marks are located, sail around the expected racing area, noting applicable topography and take port,

starboard and head-to-wind readings. If the area is influenced by tide, we sail to navigation aids and note the speed and direction of the current across the racecourse. We then compare current observations with the tide tables and evaluate. We also spend time watching the water and how and where the wind gusts are forming. I jot all this into our boat notebook, which, over the years, has provided much valuable info!

We then do 1 to 2 hours of boat handling practice, concentrating on the "nuts and bolts" by repeated spinnaker sets, jibes and takedowns between two marks. We also perform many tacks and mark roundings. This provides a great warm up and gets the blood flowing!

On our lunch sail-in we discuss what we need to improve on and I enter that into our notebook. After lunch we sail out again, this time for more refined sailing - long upwind legs, fine tuning of the sails and rig, speed testing with other boats and monitoring the compass and the water to detect shifts and any topographical influences. During our second sail-in I document the second session in the notebook and "interview" Chris and our middle crew on what we can improve on. We also update our ever-present maintenance list

I have found that our approach to regatta prep has enabled our changing mid-deck crew to get into our program quickly and effectively. Of course it also helps that all of these gentlemen are very talented sailors and in the "Super Crew" category! Once we get to the dock we like to pull the boat, clean the bottom and attack the maintenance list.

That evening we have a crew dinner. We read and discuss the sailing instructions and of course, have fun! On the morning of the regatta we like to go out for one more sail before the race starts. We use this session as a warm up, with some boat handling practice and monitoring and noting of compass headings.

It is important on the morning of the regatta to be rested and relaxed, to know that no one has done more research or practice than you, and that

as a team you are all on the same page. All of this enables your team to go out and focus on the race at hand, concentrating on sailing a good, solid series. The importance of proper hydration - drinking gallons of water and reapplying lots of sunscreen - helps fight off racing fatigue, especially during a long, hot, 3-race day. Drinking water cannot be over emphasized. It helps us to keep our heads on straight as the day wears on!

Our style may not be the best for your team, but it's important that you develop a preparation system that best fits you and your team's needs. Best of luck to you at your next regatta, and may the preparation force be with you!

Tuning by Feel and Sight

Lance Purdy

Many *20/20 News* boat-tuning articles have been written over the years. Numerous tuning guides published by sail makers provide similar information. The differing rig-setting numbers used by these sources can be contradictory and confusing.

I recently bent *Sea Bear's* mast and had to rig a new one. It was immediately obvious after the new mast had been installed that *Sea Bear* had a case of the slows. I then had an opportunity to spend some time with Andrew Kerr during a disappointing regatta in Eugene, Oregon. He mentioned that he and Chris Winnard had been forced to make some adjustments to their tuning when they installed a new mast on *Disaster Area* because the new mast was much stiffer. Andrew then gave me some tips on how our rig should look and feel, and how I might proceed to optimize *Sea Bear's* tune.

It was not until weeks later that I realized that Andrew had not used one number while talking about tuning. It also dawned on me that each boat should probably be set up differently depending

upon the stiffness of the mast, the weight of the crew, its sailing style, changing water and weather conditions, etc. With this revelation, I let go of the numbers and began to tune by sight and feel. In no time *Sea Bear* was back up to speed.

I will describe in this article the visual cues that I now use to tune the rig. Whenever possible, I will tie these cues to the nebulous concept of "feel." At no point will I use a number, although I retain the right to talk in terms of "tighter" and "looser."

Centering the Mast

No matter how you measure the top of the mast in relationship to points on the boat deck, the measurements are inherently inaccurate. Every deck sits slightly differently over the center of boat balance. To illustrate, take a look at a row of Santana 20s on their trailers. On most boats, you will find that the keel and the deck are not perpendicular. Some boats are off by as much as 5 degrees. Ideally, in order to balance the righting effect of the keel with that of the hull, you must float the boat and set the mast perpendicular to the water. Unfortunately, this is nearly impossible. (If you don't believe me, give it a try.) I compromise by centering my mast so that it bisects the error angle between the keel and the deck while the boat is still on the trailer. Trust your eyes. You really can see differences as small as 1/4 or 1/2 of a degree.

Mast Rake

Rake, above all other tuning issues, is all about feel. The idea is to move the center of sail plan effort forward or backward so that the boat can be sailed with just a touch of weather helm. Increasing rake increases weather helm. Try different settings until you can get the boat to "feel" right in different conditions. To help get the "feel," use the main leech as a visual cue. In light air, and sometimes in extremely heavy air, the leech of the main is twisted off. In these situations, increased rake may be necessary to

compensate for the loss of weather helm caused by the loose leech. In medium air, you may want to take some rake out, because the main leech is usually quite tight with the top telltale stalled.

The boat's tendency to heel may also affect your rake. The more heel, the more weather helm. Heavy crews can generally run more rake, primarily because heeling *acceleration* is decreased by the crew's weight on the rail ($F = ma$). This means that heavy crews have more time to react to puffs before excessive heel leads to extreme weather helm. In puffy conditions, light crews will often heel well past optimum before easing the sheets or tightening the backstay. During these brief periods of excessive heel, less rake may keep the weather helm minimized. If you have a light crew, try getting the "feel" for decreased rake in moderate but puffy winds. You may find that more control and smoother acceleration in the puffs may outweigh the difficulty of fighting to point high with a neutral helm during the lulls.

Rake might also need to be changed for flat water versus chop. In flat water, feathering in puffs is usually faster than footing. In this situation, more rake might be desired to help the boat steer higher. In chop, footing becomes important. In this case you might want to decrease rake to help keep the bow down.

Three final notes on rake: One, if unsure about rake, more is probably better than less. Two, the rig must have some rake or it will not bend properly when using the backstay. Three, in order to properly adjust rake, the mast must be able to rock backward at the base. If you have a fairly new mast, or a mast with a compression plug, check to assure that there is some room for play. If there is no play, you may have to file off a small amount of the mast butt behind the bolt. (Special thanks here to Chris and Andrew for this idea).

Upper and Forward Lower Shroud Tension

Upper and forward lower shrouds cannot be treated separately. In order to understand one it

must be discussed in context with the other. The visual key to tuning uppers and forward lowers is lateral mast bend above the point where the forward lowers are attached.

In light to medium air you do not want the sail plan to de-power in the puffs. This means that the mast should stay virtually straight when a puff hits. Because the lowers are shorter than the uppers they have less total stretch for the same amount of load. Given this, you must compensate by running less tension on the lowers than the uppers. I know this sounds wrong, but it is sooo right.

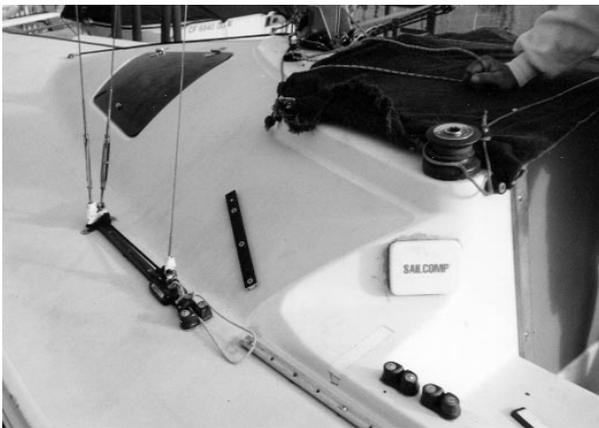
Again, to get the "feel," play around in different conditions. When you're just beginning, I recommend that you set the uppers at a conservative setting and then try a variety of settings on the lowers. It is easy to see lateral mast bend from the helm, and after a while you can learn to "feel" the changes in power. Be careful, however, that you do not let your lowers to get too loose in comparison to the uppers. When this happens, a puff can push the center of the mast laterally, leaving a locked-in bow that may persist even if you tack.

In heavy air, you want the sail plan to de-power in the puffs by allowing the top of the mast to deflect to leeward. This requires setting the lowers as tight or tighter than the uppers. Allowing the mast to deflect at the top has a variety of effects but, most importantly with a fractional rig, it allows the upper leech of the main to twist without much loss in headstay tension and without having to drastically ease the main sheet. The result is a decrease in heeling force with only minimal impact on your ability to point.

How easily you want the mast to deflect to leeward depends on the severity of the conditions, your crew weight, and your ability to play the sheets and backstay. On flat water, when correct rake is coupled with sufficient lateral mast bend, the boat will almost feather itself in a puff. As with light air, I recommend that you set the uppers at a conservative setting and play around

with the lowers. However, if you really want to bend off the top, you will have to ease the uppers beyond the generally accepted comfort zone. It's your decision as to how far you want to go down that avenue. Breaking the mast at spreaders will definitely de-power the rig, but perhaps it's a bit of overkill. In extremely windy or choppy conditions, it is probably advisable to protect your rig by keeping it conservatively tight, forget about pointing, and crack off the sheets and foot.

I want to hit this last point again: In most conditions, a looser rig, especially the lowers, is a faster rig. However, speed may come at a price that you are not prepared to pay. For example, I more and more hear top Santana 20 sailors saying things like "I really never set my forward lowers too tight anymore because, if the wind comes up, my aft-lowers takeover and do the job." While I don't disagree that this may be appropriate in changeable conditions when it is not clear whether the wind is going to build or die, loose lowers are a ticket to higher insurance rates when it really blows. Since I bent my last mast, I have done a considerable amount of mast pump observation in heavy wind and chop. The only way, in my opinion, to effectively stabilize the mast in extreme conditions is to run **both** sets of lowers very tight.



Note that the jib track is angled so that the slot opens as the lead is moved aft.

Aft Lower Shrouds

Aft lower shrouds can be an extremely critical part of rig tuning. On the other hand, until you

are overpowered, they are essentially useless. In other words, do not use them at all until everyone is on the rail and you are still heeling too much. There are two exceptions to this rule: One, boats with a permanent bend in their mast may have to run some aft-lower tension to keep the right shape in the main. Unfortunately this may lead to an undesirable increase in forestay tension. Two, while sailing in chop, it may be beneficial to pull on just the slightest bit of aft-lowers, just to keep the rig stabilized.

Even when you do start to get overpowered, play the backstay before you touch the aft-lowers. The backstay simultaneously flattens the main and tightens the forestay. Although the aft-lowers tighten the forestay they actually deepen the main. This can put the sails out of balance by making the genoa too flat while the main is too full. The result of this mismatch is an impossibly thin groove where the skipper must follow a very fine steering line between feathering too much and getting knocked over

Now I am not saying that you should use no aft-lowers until it is blowing 25 knots. What I am saying is that you should use your backstay to make your main flat as a board first. This is especially important for light crews, because the main, due to its sheeting angle, is a tremendous source of heel. If you're still overpowered when the main is flat, then begin to tighten the forestay with the aft-lowers. Remember that each time you pull on more lowers you must crank on more backstay to keep the main flat.

The ultimate goal is to smoothly de-power with both sails balanced. You'll know you have it right when, even at 17 or 18 knots, the helm is light, at least 1/2 of the main is working and there is no more than a slight bubble in the front of the genoa. Signs that you have it wrong are a terrible difficulty steering, a large bubble in the genoa, or a completely dumped main.

I suggest that you set up your aft-lowers for maximum wind conditions. It is always easy to back off the cars as the wind lightens.

Alternatively, it really sucks if you wish the aft-lowers were tighter and the cars are already maxed out.

How to do this? On the trailer, first loosen the aft-lowers at the turnbuckles and then pull the cars back to about 80% of maximum. Now systematically tighten the aft-lowers at the turnbuckles and the backstay. Tighten them as much as you dare (that noise is your boat bending), so long as you keep a fair curve in the mast. What I mean by a fair curve is a smooth and slowly increasing bend from bottom to top. If the lowers are too tight, the middle part of the mast will be too straight or may actually bow backwards. The goal is to maximize forestay tension while still keeping the main board flat. If you are having trouble with the curve, double check the base of the mast to make sure that it can rock backwards. If you're still having trouble, you may want to try increasing your rake. As I said previously, desirable or not, it takes a certain amount of rake to make the mast bend correctly.

This trailer setting should be fine. However, if you get conditions breezy enough to check the aft-lowers on the water, you should do it. The power of the sails usually tends to help bend the mast and maintain the fair curve. If this is the case, you may be able to tighten your aft-lower turnbuckles just a bit more. When you're done with everything, you should have aft lowers that are plenty tight at 80% back and still completely slack when the cars are released.

I hope that this article will help you let go of the "numbers" and begin to develop confidence in your own "feel" for rig tuning. However, please believe that it is impossible to perfectly match all conditions at all times. To try to do so will drive you as crazy as trying to make sense of all the tuning guides. Conditions are just too changeable and there are too many factors involved. If you're not sure how to set up the rig for any given race, go conservative, or go with settings you know are fairly fast in most conditions. The fractional loss in boat speed attributable to slightly improper rig tensions won't cost you the regatta. Tactics and

playing the sheets and backstay are much more important. The goal of this article is simply to show the dedicated skipper and crew a number-free way to incremental improvement, not to actually promise perfection.

If Light is Fast, Lighter is Faster

Phillip Infelise

OK. I admit it. I am a light freak. Nothing is allowed aboard boats on which I sail (even if someone else owns them) if it isn't essential to making the boat or the crew go faster. Between races the boat is stripped bare, above and below decks, lest anything absorb a few extra ounces of water. I am not a naturally gifted sailor, so I take every advantage I can legitimately get. Achieving minimum weight takes no talent at all, but adds considerably to your speed potential.

Not that I am a total ULDB fanatic (I was forever cured of my Bill Lee/Santa Cruz heritage in Key West when our ULDB delaminated before our eyes the minute it had to go upwind in a 30 knot blow.) It's just that I believe that every boat should be sailed at its bare minimum weight so that crew leverage can be maximized.

In mid '91, *Sailing World* ran a technical article that described precisely how weight below and aloft translated to speed losses and how every pound of weight on the rail as a ratio of all-up weight is a critical speed gain. The example used in the article was a wide-body 30' Pearson Flyer that had been stripped-out and carried 13 crew to a win in its class at the '91 Key West Race Week. After a lot of mathematical gyrations, the article reached a simple conclusion: 160 pounds out of the boat and on the rail translated to a 6-18 seconds per mile speed advantage, depending upon wind strength.

I was hooked, and became a devout light is fast fanatic. Preparing our own Flyer for the next

KWRW, we simply stripped her bare and started from scratch. We weighed out more than 500 pounds of crap from down below and then started with our above-deck lightening program. We carefully rationed what we brought on board for races, limited drinks to water (no ice) and decided as a group if the weather looked bad enough to bring foulies aboard. (Double their weight when wet.)

When all was said and done, we had lightened our boat's sailing weight by 12%, added a heavy 240-pounder on the rail and won our class by so much that our class brethren thought we had modified the hull and blades and ordered an official inspection. It was just the weight thing, folks.

As a Santana 20 newcomer, I have done more than my fair share of dockside comparison shopping. I have been struck by the oversized rigging and set-ups that are more akin to an offshore racer/cruiser than to a just-past-a-dingy fun boat. I see four winches on the console with 2" water-soaked teak pads under them and the oversized jam cleats they lead to. Halyards and sheets 4 times heavier than the maximum load they will encounter. Extra teak toe rails that add to (my opinion) extraneous bow weight, and even stern pulpits, with double lifelines. Normal 2" & 3" Harkens for control lines everywhere. 2" spin poles with offshore cast end fittings. 6' of genoa track port & starboard with only 4 holes ever used. Heavy metal winch handles, double compasses, speedometers, even wind instruments, running lights, batteries, electric panels. On and on.

Basically, many boats I saw were probably carrying an excess of more than 10% of the boat's all-up weight in excess. None were focusing on lighter is faster. Consequently, when I had the opportunity to put a new deck on my hull and start from scratch, I had but a single objective - minimum weight on everything - within legal boundaries.

Many of you have by now seen the deck layout of *Altitude Sickness* in the Spring, 2000 edition of *20/20 News*. What you should notice is the clean layout, the radical downsizing of all blocks and the smallest control lines available. Everything is right at the reasonable expected breaking point. Some features are:

- All control lines are handled by Harken Micro Air Blocks (16mm). Multiply that weight savings by 10 and it's significant. Harken carbon blocks for the spin sheets are ultra light.
- Use of 1/8" uncovered Vectran wherever possible and where chafe will not be a big issue (jib cunningham, aft lower adjuster, parts of the vang & backstay, internal parts of the outhaul, halyards, etc.).
- Aft lower wire replaced with Vectran.
- A single adjuster for both aft lowers (fewer cleats, less weight, easier adjustment).
- Laminated bulkheads that will never absorb water or humidity below.
- Tapered halyards and spin sheets are a must. (And so are the gloves that will prevent them from slicing through yours hands.) An option would be to put heavier covers on the line parts that you hold. But, come on, that adds weight!
- No shackles. Just tie on your halyards and spin sheets. The knots will never fail and you will save another few ounces.
- Spin Pole. A tapered 505 section from Proctor for winds of up to 8 knots. Our over-8 knot pole is a heavier, but is still a tapered section, stowed below where its heft is not swinging back and forth on the boom.
- Jib and genoa tracks measured in inches, not feet. Probably half of what most boats are carrying (and these are heavy pieces of gear). No end stops anywhere (can't even count a few ounces there) so that all gear

can be stripped of after every race. (I know that we will pay eventually with a slide coming off the track during a race.)

- Start from scratch with the rig and change out every one of the old halyard exit blocks. Put in the very inexpensive and light Harken exit blocks and save a lot of weight where it matters most, aloft.
- No bottom paint. No fillers. Just a near perfect West Epoxy bottom (thanks to former owner John Rue). Nothing that adds extra weight, even for looks.

I know what you're thinking. A lot of this stuff is more expensive than you would like, but that's why we are happy with such a pocket rocket. Further, do you think that a 16mm Air Block costs more than the 2" one it's replacing? Of course not! Sure, Vectran is pricey, but hey, you can always substitute a few strands of dental floss if you must. When you translate it all to a small premium over what you might normally pay when changing out gear and then think of the pounds saved, it pencils out just fine.

Don't underestimate these newer blocks, just because they are light and look like half the strength of the older equipment. Look carefully at the rated loads versus the weight of the block and you will be pleasantly surprised. You are not giving up strength to achieve weight savings.

Compliments must go to Jim Keesling and Tyler at Rocky Mountain Boatworks in Denver who took that "light beyond reason" goal and executed it to perfection.

What if you're not able to start from scratch? The cheapest way to gain speed is to lighten the boat (any boat). This no-cost speed upgrade has more impact per penny than the latest sails. Simply take everything away that is unnecessary, too heavy, or too oversized. It adds up to a lot of stuff.

On Deck. Pulpits, lifelines, running lights. All of it goes. If you think your forward crew needs the safety of the gear, learn how to do all

that work from the confines of the companionway. That stuff weighs a ton. This thing is barely more than a dingy, after all. Rid yourself of all the teak. It is heavy and hard to maintain and doesn't contribute to speed.

Aloft. Next time you change out any halyard, go super light. A few ounces saved up there is a big deal at deck level. Don't replace the shackles. Dump them altogether and tie knots.

Console. Start with those winches (and the teak pads under them). Anything more than the two sheet winches are unnecessary. Do you think my jib cunningham line weighs even one-tenth the weight of the jib halyard winch, which it eliminates? The main and spin halyards certainly don't need winches.

Below. Very simple. Empty it and keep it empty. Nothing should be there... rien, nicht, nada ... during races or between them. Carrying an outboard below (plus gas) is a cardinal sin. A Santana 20 will rock at 3 knots, so you should never need an engine during a race. All the rest of that stuff is excess.

The Little Things. Aside from basic boat stuff, look for weight savings everywhere. A tool box down below? Take only a few items that you could actually use between races. Real cooler? -Think plain foam without a shell or a collapsible. Leave the ice for the post race; use frozen bottles of water. Take minimum foul weather gear, leave other clothing on the dock. One sunscreen for the crew, not one apiece. Etc. Etc.

The only thing that you will find below on *Altitude Sickness* is the spare spinnaker pole (if you have gone as light as ours, you will need it eventually.... But the weight below is much less of a speed robber than having the extra pounds of heavy pole hanging and bobbing off the boom). A few bottles of water, maybe a little food. Whatever headsail you are not using. That's it.

Actually being light is one thing, and more than a state of mind. (When you think you are light

and have as smooth a bottom as possible, you know you have eliminated many of the variables and you will sail faster both intellectually and in terms of speed over the bottom.) Sailing light is where you make big gains.

Put the weight where it belongs. Keep the ends light. The boat will just act livelier with the kinetic weight moving tightly bunched in the middle of the boat, where it is most appropriate. To the extent possible, the three crew members should move as a unit between the traveler bar and the shrouds.

Keep crew movement to a minimum, except where it is used to keep the boat flat, promote weather or leeward heel, or induce surfing or planing. Move like a cat. Never go forward of the mast.

Keep weight very low in the boat and minimize the pendulum effects of any weight high in the boat. . If we dislike "permanently" attached weight, just think of our reaction to pendulum weight. Sit in when light. Err on moving further forward than further back. Don't stand to trim the chute.

If you must store anything below during a race, make sure that it is low, centered and secure, to eliminate any excess movement or weight in the wrong places.

Try to hand-hold all sheets and guys whenever possible so that you have a more direct connection to the speed producers. Take a wrap around the winch to act as a shock absorber, but don't cleat the line.

Learn to power up and de-power quickly and efficiently, adapting your techniques to the weight and capability of your crew.

Bottom line, if you want to go faster, one of the best ways to do so is to go lighter. Embrace some or all of these approaches and techniques and your speed potential will climb quickly, putting you in parts of the big fleets where you may have never been before. If light is fast, and lighter is faster, and if faster means more winning,

and if winning is more fun, then lighter is more fun.

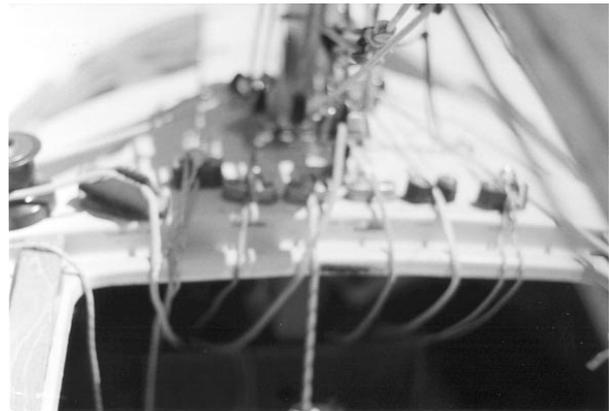
Santana 20 Consoles

By Ralph Taylor

I got interested in redoing my control console after installing a new mast and finding that the lines couldn't lead to where they had always been before. The console is the deck over the companionway, just aft of the mast. It is often used for cleating control lines. I'm extending the definition to include cleats on the mast, which would otherwise be on deck. So I did a survey of 9 Colorado S-20 consoles at Cherry Creek on June 3, 2000.

Typical controls found here include halyard cleats (Main, Jib & Spinnaker) plus Spinnaker pole topping lift & foreguy and Mainsail controls (Cunningham, Outhaul and Boom Vang.) If a jib cunningham is rigged, it will also probably be nearby.

Here are my results and photos. Controls are listed from port to starboard. The survey found as few as two cleats on the deck and as many as nine, showing the variety that owners have brought to this part of the boats.



Junebug, R. Taylor, before planned remodel

Jib halyard (winch & clam cleat), Jib Downhaul, (Note: Jib downhaul avoids going forward to

lower jib, which has shown a tendency to stick.)
Topping Lift, Outhaul, Vang, Spinnaker halyard,
Foreguy, Main Halyard clutch on mast. Outboard:
Double-ended jib cunningham.



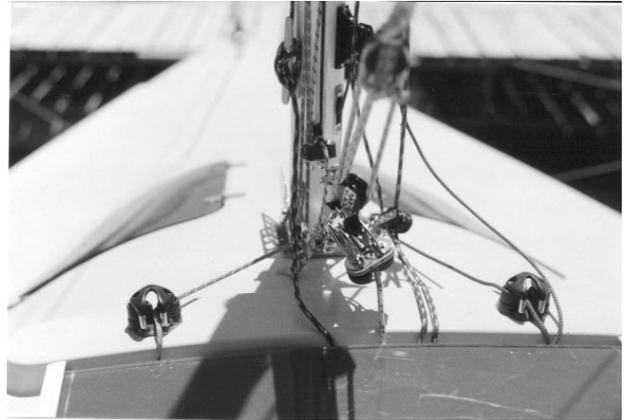
Wet Kiss, Bob Biron

Jib halyard cleat aft of winch, Two Pole Car
Height controls, Cunningham, Spinnaker halyard,
Vang (center), Main Halyard, Topping Lift,
Foreguy, (Line on far right pulls mast forward for
downwind work.)



Psycho Duck, Dan Heisman

Cunningham, Outhaul, Vang, Topping Lift, Job
Hal, Spin Hal, Vang, Main, Outhaul, Cunningham
(Note Cunningham, Vang & Outhaul double-
ended.)



Jude, Jim Bishop (rigged by Jim Keesling)

Cunningham, Main Halyard (on mast), Outhaul
(on mast), Topping Lift (low on mast), Foreguy
(Note: genoa winches have been mounted far aft
and outboard of usual positions, just outside of
Figure 4's border.) This is the least cluttered deck,
since so many controls are moved to the mast.



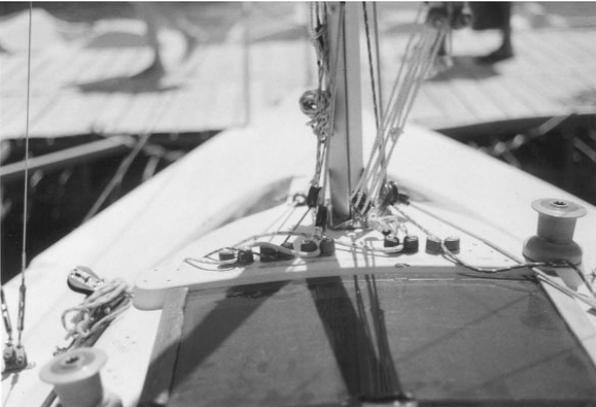
Emesis, Will Cook

Jib halyard, Vang, Outhaul, Topping Lift, Main
Halyard, and something disconnected



Folie á Deux, Joe Bierl

Jib halyard, Topping Lift, Vang, Cunningham, Outhaul, Spinnaker halyard, Foreguy, Main Halyard (Outboard: 2 ended Jib Cunningham)



Arriba, Fred Wolf

Foreguy, Topping Lift, Outhaul, Vang, Cunningham, Jib Halyard, Spinnaker halyard (Unsure of order of last two)



Kool, Pat Koentges

Jib halyard (Note 2 cleats; owner reports slippage on one.) Topping lift, Cunningham, Vang, Downhaul (Foreguy), Main Halyard, Spin halyard on mast.



PJ, Vern Bybee

Jib halyard, Cunningham, Vang, Cunningham, Spinnaker halyard on mast, Topping Lift? (Note: Where are the Main halyard and Outhaul? Under the nest of spaghetti?)

In Conclusion:

Now that you've seen how some others have done it, you're ready for planning your own.

The first goal is for fair leads, so that lines don't cross over each other and cause fraying. Neglecting this will lead to early replacement of expensive line. Using different colors of line provides visual separation. And, on the subject of lines, choose a strength that's appropriate for the job. Avoid ropes so strong that the boat will break before the line. And, try to minimize the probability of kinks and accidental knots.

Next, decide what needs to be double-ended, so it can be adjusted from either rail. (Some say, everything but that gets confusing.) Good candidates are outhaul, vang, and cunningshams (main and jib).

Smile, The Wind is Howling

Bob Pattison

When the wind hits 20 knots, most of us have a panic attack and seriously consider heading for the barn. If your boat is well equipped and your crew well trained, heavy air sailing can be spectacular. We love it!

Regarding equipment: Now this is serious! You're going to need this stuff to get the most out of your boat in hooting air. Get out your wallet and buy these items:

At least a 12:1 backstay. Preferably one that is adjustable by the middle crew. This is needed for max headstay tension and to get your main flat - BOARD FLAT.

Adjustable aft lowers. These can increase headstay tension by as much as 23% in heavy air by keeping the mast in column. They also keep the main from turning inside out down low and allow you to keep some power in the sail.

A spreader window in the main. This small and inexpensive feature allows you to trim the genoa or jib from the weather side of the boat. And, this IS where you will be sitting!

A vang that **swivels in line** with the boom. The last thing you need is a main leech that gets tighter when you ease the sheet.

Harken ratchet blocks on the genoa sheets. These really assist quick, smooth tacks.

Tweakers. Again, a relatively inexpensive setup that will help keep the chute under control in heavy weather.

Now that you have run your charge card credit limit to the ranch and back, lets put all of these items to work and imagine a typical heavy air day. A few basic rules of thumb would be appropriate: TAKE YOUR TIME. Try not to rush boat maneuvers or tactical decisions. Sailing smoothly

will give you time to consider tactical decisions and the race in progress. WEAR LIFE JACKETS! Most Santana 20s are being sailed without lifelines, and it can be really easy to lose a crew or two.

Sailing a Santana 20 in 20 knots or more requires a few different boat handling techniques and some obvious rig adjustments. The rig, as mentioned earlier, should be sailed tight. This is going to require max backstay and max aft lowers. How does one know if the backstay is tight enough? In over 24 knots apparent, the top draft stripe in the main should be as close to flat as one can imagine. At this point you have at least as much tension as the main can take and shouldn't apply any more until you get the aft lowers on all the way. This will fill up the main some and allow you to tighten the backstay even more.

Is that top draft stripe flat? Good! OK. Now how about the jib? The amount of wind and power needed are going to dictate your lead position. If you are sailing in choppy, confused seas and the boat does not seem to be accelerating well, move the lead forward and power up. Conversely, if power is not your problem and pointing is, move the lead back and flatten out the jib a little. The lead position affects the relative fullness/flatness of your jib. Sheet tension should then be used to control the amount of twist. The amount of twist will depend on the relative stiffness of the boat. If you are punching through the waves OK, but feel like you're heeling too much, ease the sheet a tad and twist the top off. Of course, just the opposite is also true.

Sailing upwind in a blow requires the crew to sit facing inboard so they can play the backstay, jibsheet and read the compass. The middle crew should have one hand on the backstay and the other on the jibsheet tail. The forward crew should have one or both hands on the winch handle and be reading the compass for shifts. When sailing in heavy air, it's real common to get big shifts with velocity changes. Know which way the wind moves with puffs and lulls and watch for any predominate shoreline effects, all of which are prevalent in heavy air. In the big puffs, a Santana

20 will heel over and go sideways. This is true even with the main all the way out and flogging.

When the boat heels over to some magical number, the water decides that the keel is not a wing any longer and you no longer get any lift from it. Goodbye V.M.G. Hello back of the pack. In order to keep this from happening you've got to dump the main, feather up and, if all else fails, start easing the jib. A flat boat is fast.

Next is the backstay. Big puff? Backstay more, ease the main and then the jib. CONSTANTLY!! This is where your new 12:1 backstay comes in handy. Even though the main is going to be flogging a great deal of the time, it is important to keep it trimmed for pointing ability and power when you need it. The traveler should be set at centerline or above, and the vang should be tight at the point of the most sheet tension. The driver should then just play the mainsheet. Constantly!! In this much wind the leech of the main is as responsible for steering the boat as is the rudder. So work the tiller and main simultaneously, easing the mainsheet as you bear away for chop, etc., and strapping it back in as you punch the bow up over waves. By having the vang tight at max sheet tension, you can effectively reduce heeling moment but retain forward drive when the main is dumped. This is true if the vang is in line with boom.

So we've reached the weather mark. To set or not to set? A good question. Do you have a comfortable lead? Is there someone in front of you that you have to beat? Are the boats in front successfully flying chutes? Is your crew tired and ready to go home? Go for it! Again, I can't emphasize enough: Take your time. If it's really windy you'll be moving toward the next mark at a pretty good clip anyway, so sort out the boats around you. Be sure the tweaker is down on the guy and partially down on the sheet, that the pole is up and secure, and that everyone knows what he/she is going to do. Keep the pole forward and bear away on the set. The idea here is to keep the chute hiding behind the main until we can slowly

bring it out in front of the boat and get on course,

Keep the jib up on reaches. In this much wind you won't notice any loss in speed. On runs, keep it up if it's really windy. The jib is small enough so that jibing is not too difficult. If the genoa is up, however, it will have to come down. If you do decide to take the jib/genoa down, wait until everything is squared away and you feel confident enough to send someone forward. When the crew does go forward to get the jib down, they should not venture any further forward than absolutely necessary. The skipper and middleman should be way in the back in the boat. I usually sit on or behind the traveler during jib takedowns and jibes.

The bow can be a very scary place to be if you round up or down which, incidentally, will happen real fast if the bow digs in. If you do round up or down the first and foremost rule is DO NOT RELEASE THE GUY. If this happens you could go down for the count. Having rounded both up and down, including some wild back and forth death rolls more times than I'd like to admit, I can honestly say that the Santana 20 is a solid boat and will respond, given some encouragement. When in the throes of wiping out, just hang on until she comes back around. At that point the skipper should be prepared to pump the main and the crew to pump the sheet to get the boat accelerating forward.

If the boat isn't moving forward the wind is going to keep you down. You've got to achieve some forward momentum and bear away to get things back to normal. On takedowns, get the jib up early and wait for (pray for) a lull. Weather strips seem to be more controlled, but we will do a flying leeward strip into the cockpit if we have to.

Key points to keep in mind: Take your time. Remember that it's just a race, nothing anyone should get hurt while doing. By keeping the boat under some semblance of control, your chances of sailing smart get much better. Smart sailors win. Do not blow the afterguy in a knockdown.

Play the jib/genoa. Backstay. Aft lowers. More backstay. Think heavy!

Bill Does Steering

Bill Jenkins

If you have had problems getting your boat up to speed, even after adjusting every string and turnbuckle, try taking a look at your steering techniques. Here are some Santana 20 steering tips that you may find helpful upwind, downwind and on a reach.

First, whenever you move the rudder you are slowing the boat. So minimize rudder movement and make sure that you have a good reason behind each rudder movement that you decide to make. Use the natural forces on your boat to help you steer whenever possible: When the boat heels to leeward, for example, it will tend to head up; when heeled to windward, the boat will want to head down.

Second, going fast upwind means keeping the keel working efficiently. So in anything other than smooth water and moderate conditions boat speed takes precedence over pointing angle. Don't try to pinch with the sails strapped in. When I spoke with two-time Class Champion Mike Sherlock about driving upwind, he immediately emphasized each of these points.

The skipper should sit on the weather side of the boat so that approaching waves can be seen and wind strength felt. Without waves, concentrate mainly at the telltales on the luff of the headsail to monitor the wind angle. In light wind, both telltales should flow back. When the wind picks up, sail higher through the smooth patches of water so the weather telltale flutters but the genoa does not actually luff. This "feathering" differs from pinching mainly in degree.

In chop or swell, on the other hand, it's more important to watch the water ahead of the boat

for approaching waves. Have the crew sit as far out on the rail as possible so that you have a clear view ahead. Then watch the wind angle through the heel of the boat and wind strength, with occasional glances at the telltales. When sailing to weather you'll encounter puffs and lulls, chop and swells. While you concentrate on the immediate situation to make your boat go as fast as possible, your forward crew should look several boat lengths to weather to help you anticipate what's coming next.



A well-balanced boat, driving smoothly to windward.

A puff or a lull causes an apparent shift in wind direction. This is called a "velocity shift." For example, when a puff hits you'll be able to head up a little and still keep the telltales flying properly. In breezy conditions a puff will try to round you up, tempting you to compensate with a hand pull on the tiller. Instead, move the tiller only slightly to weather and ease out either the traveler or the mainsheet, while allowing the boat to gently turn into the wind enough to react to the velocity shift. This coordination takes some practice, but it should be smooth and controlled to minimize both excess rudder movement and

boat heel angle. Pulling on the backstay will also depower your sails. I sometimes use the backstay instead of the traveler if the puff looks like it will last for a while.

In a lull, on the other hand, you'll see an apparent header. Mike Sherlock's technique is to keep the boat pointed high initially and use the excess speed, then ease sheets and bear off to the new heading. Once again, this takes practice, especially since it seems so counter-intuitive.

As the wind builds, chop becomes a factor and you need to steer more aggressively to keep your boat moving fast. As veteran Santana 20 sailor Charles Howard puts it, "Pretend that you're in an airplane and fly through the valleys." In other words, keep an eye on the waves and look for the gaps to sail through. Top Santana 20 sailor Chris Winnard has his crew looking two or three waves ahead and tries to set himself up so that he can pass to weather of most waves and avoid being pushed to leeward. If you must sail through steep chop, ease your sheets and bear off early to keep your speed up and minimize the angle at which you hit the wave. It's important to anticipate the wave and bear off *before* it hits. But, if you're taken by surprise, let the wave push the bow down and hold it down with the helm as the wave passes under the stern.

If you're out in the ocean, the swells affect the wind that blows over them when the swells are more than about two feet high. You have probably noticed that the wind blows harder on the face of a wave than it does on the back. As Chris Winnard says, your bow should follow a circular motion. If you have the correct mast rake and anticipate the pattern, the natural forces on the boat will make this almost automatic, requiring only a suggestion on the rudder from you. This technique will help you make gains to weather when everyone else is steering a straight (usually low) course.

When running with the spinnaker set, I have found that, unless tactical considerations dictate otherwise, the fastest path to the leeward mark is

the lowest course possible that still keeps the spinnaker full. If you sail lower, the apparent wind speed drops and the rocking motion from the waves collapses the chute. If you sail any higher, you are just sailing extra distance for which your increased boat speed cannot compensate. To maximize your speed to the leeward mark, head up in the lulls to keep the chute full and the boat moving fast, and head down, closer to the leeward mark, in the puffs.

If there is any swell when you are running, keep an eye out for the surfable waves. These are generally the long and tall waves that stay with you for a boat length or more. Bear off slightly and pump the chute (sheet and guy) and main jib as the boat starts to accelerate on the wave face. This keeps you on the wave face for as long as possible, moves you to leeward, and keeps you from stopping dead on the wave back. On the short, steep waves, steer a straight course and let your trimmer try to catch them with a well-timed pump.

When reaching, follow the same procedure as when running. Head up in the lulls and down in the puffs and waves. An important difference when reaching in heavy wind is that you're more likely to round up in the gusts. The key to preventing round-ups is anticipation. Know how far over your boat can heel and still be in control, then always keep well within that limit. Anticipate the gusts, and if you feel that you are about to lose control, bear off and ease the mainsheet to flatten out the boat. If you wait too long and find yourself spinning out, Chris Winnard recommends keeping the rudder close to center, to retain the attached flow, and dumping the spinnaker sheet fast. Also, sheet in on the main so that as you recover you have that sail pulling you forward. The flapping spinnaker sounds terrible, but it is better than lying on your side while the competition passes by. Also, it puts a lot less strain on your rig.

All of these are techniques that seem to make a Santana 20 go fast. When you are on the racecourse, of course, you just don't get a puff or

a chop alone. You may hit both at the same time, not to mention everything else that may be going on, so deciding exactly what response you should make takes practice. Take your boat and regular crew out with a second boat for comparison and see what works. If you keep these steering techniques in mind and remember the basics - minimize rudder movement and emphasize speed over pointing - you will have a good start on improving your performance.

More Breeze, More Bumps

Phillip Infelise

Sailing a Santana 20 in the ocean is very different from sailing one on an inland lake, protected sound or bay. Breeze and bumps make a difference - a big difference. You must adapt to those differences to be successful. Since conditions are different, the boat acts and feels differently and you need to learn to sail it in a completely different way. In most cases, sailing in ocean venues is much more of a speed and technique test than a tactical test, though exceptions abound.

Here are some areas of difference:

Breeze

There will generally be consistently more breeze on an ocean than on an inland lake. That is not a big issue in and of itself. In many ways more breeze can be a plus for you. You may feel some relief when not having to fight the fickle wind directions inherent in lake sailing. Most folks like some weather helm and not the limp helm characteristic of a drifter. Who thinks it's more fun and efficient to tack the genoa rather the jib?

You must adjust, however, to the fact that ocean breezes will be bigger and will not bend as much. This is the case unless there are:

(1) Natural obstructions (peninsulas, islands, coves, inlets, even tall trees) or

(2) Unnatural obstructions (big buildings obstructing an onshore wind, ships at anchor, bigger boats sailing on your course or just above it).

While wind speed may not vary as much, wind direction will constantly be changing. However, wind direction is more likely to change in a more predictable pattern and it may be easier to use it to your advantage than on the lakes (if you are not a local at either site).

While bigger breezes are assumed to be much more constant than sometimes-fickle lake breezes, they will usually require much more intense intellectual and physical attention. In light air, a 10% change in wind strength or direction may not always be worth the subtle movements required to render a gain in speed or height. In heavy air, a 2% change in strength or direction and a very quick adjustment to that change will be the difference between top ten and lower half of the fleet.

Bumps

Waves influence both the strategic and tactical aspects of your race and the manner in which your boat is sailed. Since waves seriously impact your boat speed through tacks, you simply must not tack as much. And sailing fast becomes much more of a boat speed than a tactical approach.

Moving Through Waves

You absolutely must learn to steer over, under, around and through waves in a pattern that induces more speed and more height. To a certain extent, really good skippers use a scallop steering technique to weather that it so successful that wave action pushes the boat farther to weather than in flatter water. A coordinated crew will constantly be adjusting helm, back-stay, mainsheet and jib sheet differently when climbing the face, on top of, and descending the backside of each wave. Those adjustments serve as a performance base. A very well-coordinated crew will add main

cunningham, aft lowers and jib cunningham adjustments to this base. Those crews which make these adjustments are the ones clawing further to weather on your lee bow and moving ahead when you think that you are maximizing speed and point. At the very top of the fleet, the three crew members are adding extremely subtle fore and aft and in and out weight adjustments to constantly put their hull in sync with the wave movements. This is obviously a very high finesse game.

Want to get really good at knowing intuitively how to do this? On a consistent wave day in a fairly good breeze, one by one, forward to back, close your eyes until the whole crew is shut out from seeing what is happening and is sailing strictly on the rhythm of the waves felt through your hands, butts and thighs. You will take some waves at a bad angle, and likely put yourselves in irons a few times. You will occasionally fumble and tweak the wrong controls. You may even get soaking wet and feel this exercise is stupid. But you will learn how to feel your way over waves and maximize your speed to windward. When you get to the point of being able to tack this way, you will really feel the effects of tacking in a down speed mode and how long it will take to rebuild. You will find this to be a very useful lesson, because it will enable you to understand why the boats clawing their way to weather of you are sailing flatter and faster.

Of course you must tack at some point. Reading the water and wind for the perfect time to tack and at the same time maintain some level of boat speed is key. Finding a flat spot is usually in the trough between waves. However, on a heavy day and in really big swells the troughs will actually be shielded light spots and feel like big headers. In those conditions, I recommend tacking on the backside decline of a wave, building speed on the fall yet retaining enough speed to crab to weather on the next face.

All of this fine uphill technique, however, pales in comparison to the gains that can be made when you are sliding downwind. On the ocean, in any reasonable amount of breeze, the available gains

off the wind are substantial compared to the more subtle upwind gains. Bottom line, the trick downwind is to learn when to reach, when to run when to face away from your mark and when to slip straight down (or even lower than) the rhumbline as you work your way downwind.

Want a candid observation from a newcomer? You can sail these boats much more dead down wind than you might think. By-the-lee works really well in heavy air dead down, albeit a bit risky. (Ask Jim Carollo about his reaction to my first few races with him aboard *Tiburón*.) Too many boats reach too high on the off-wind legs and there isn't enough speed gain available (without wave push) to offset the extra distance. By the way, this tip is just as valid on a lake as in the ocean.

Current

Current can be one of the most difficult aspects of ocean sailing, particularly in bays, sounds and estuaries where tidal flows can be dramatic. Be aware that current does not flow over the bottom equally, even in very specific areas. Often a move of just a few feet up or down the racecourse can mean a difference between a strong and weak current, or a totally reverse current that provides rivers of upwind flow against a downwind current. You have to know what current flow is doing throughout the day to properly plot your course geometry. Simple observations on the course prior to the start and during the race will suffice for an everyday regatta. For the big ones, you should subscribe to a service that overlays very detailed current information right on your normal course chart for that area. To be sure, a few knots difference in the current you are sailing with as compared to your competition is enough to overcome all the newest sails and latest go-fast goodies. Study the water, other boats, and any other visual clues that are available and make a mental picture of the current map and then refer to it frequently throughout the day.

Clouds

Watch the clouds and learn what they are telling you. Even if you are not an expert in cloud formation names, you at least need to understand what a particular formation will soon do to your racecourse. Ocean sailing has an advantage here, as you can usually track weather patterns for twenty miles or more and have a sense of what will happen on the course hours later. Usually the lake sailor only gets a brief warning of approaching weather patterns because cloud formations are typically obstructed from clear view by hills and other blockages. Study the patterns and watch for clues regarding wind direction and strength.

Surfing

A disputed concept for a Tuna to be sure. Takes a lot of breeze and just the right wave moment to bring on that surfing sensation, but you should also pay attention to legal "ooching" down the face of even very small waves. One pump and one kinetic "ooch" per wave face and you will be legal and picking up micro-boat lengths each time. Try it, you will like it. In the event that you plan on some real big wave surfing, that will take a lot of practice and a certain feel for the wave. To study, refer to Ken Read's surfing article in the March 2001 Sailing World.

Open Ocean or Protected Sailing Area

Whether you are inside or outside of the breakwater will determine if you are in smooth water, broken water, or heavy ground swells. There is also a slight current influence both immediately inside and outside of any breakwater that you may be able to use to your advantage. On a building breeze, you could face lumpy seas even inside of the breakwater, particularly on the first half of the weather leg, when you are not tucked up under the lee of the obstruction.

Beware of the backwash effect running along the outside of any breakwater on heavier days. It can be slow if you get too close. Very slow if you

totally miscalculate. However, the flip side is that savvy locals may use this reverse eddy to push them upwind by short-tacking perilously close up the breakwater. Follow them if you will, understanding that they have found every underwater bump the hard way.

Some Other Considerations

Unlike a fickle lake where conditions are much less predictable, there is much to gain by referring to **long-range weather forecasts** up to two weeks ahead of the regatta. We are not just interested in wind strength, but also direction. Whether it is blowing on-shore or offshore will have a major effect on wave height and moment. And that will largely determine whether wind strength will simply turn into more bumps and gear strain, or genuine speed potential.

To properly sail in bumps, you need to learn how to **read the wave patterns** that you must adjust to. The first part of this is so easy and too often overlooked – simply be willing to invest in very high quality sunglasses (you know, in the triple digit price range). You need to see what you are reading. The rest will just be a pure result of practice time – whenever you are on the open ocean and doing nothing else, practice judging the angle of the waves to the prevailing breeze and determine the time and distance between the waves as they arrive on your bow. Tag team this with a teammate and compare notes and accuracy will increase for the both of you.

Whenever possible, spend a few days sailing at the venue **charting wind directions and patterns** or, at the very least talking to the locals. It is usually very easy to stand on the shore of the lake and see the wind patterns develop and progress. It is more difficult to do so on the ocean, mostly because there is so much water that you really have to be out on it to truly get in sync with the patterns. You should be able to develop a fairly specific pattern for your venue, depending on time of day and temperature.

Here, for example, are some **charting notes** for Long Beach, CA in mid- summer. Make notes like this for wherever you are going to sail:

- *No wind before 12:30 except perhaps a light 2-8 kt southeasterly, bringing rather irregular chop from the south.*
- *Winds usually clocks in from 12:30 and 1:30, swinging from 190 to 210 degrees.*
- *Builds gradually throughout the afternoon, filling in strongest at 210-240 degrees. If the breeze clocks beyond 240, it mustn't be the summer.*
- *Typical 14 -18 knots by 5:00 PM.*
- *After 6:00 it begins dying, stays westerly, and usually shuts down completely at 7:00.*

Be advised to be very skeptical when the local conditions do not correspond to the chart you have created. Immediately reassess what is happening and look carefully for something strange to be coming shortly.

The Finish Line

I grew up sailing on Southern California ocean venues and feel more at home on them. Since '95, I have been trying to figure out the Inland Lake thing and I suppose that Dillon, CO is probably a reliable, though frustrating, teacher. I hope I have conveyed some level of understanding of the differences I have noted.

Mastering the major, sometimes subtle differences between the two types of venues and adjusting your tactical views and boat-handling techniques to suit the conditions will be keys to (eventual) success.

Spinnaker Trim

Dale Waagmeester

A sailboat under spinnaker is, without a doubt, one of sailing's most beautiful sights. There is something about that large, colorful balloon of

nylon that is appealing to the eyes of sailors and non-sailors alike. Every time I see a spinnaker flying, I am still somewhat amazed that it stays up there in the air, all by itself, without collapsing or flapping around like a flag in the breeze.

Spinnaker design is probably the most subtle, and for that reason the most difficult, of all sail design principles. With the exception of a small dinghy chute, a spinnaker's large size makes it difficult, if not impossible, to analyze its shape by a glance of an eye or a single shot of a camera. Because of this, discerning the difference between the shape of one spinnaker versus the shape of another is tough, even for an expert. The advent of computer sail design has increased the consistency of spinnaker design, but in these days of high technology, the difference between a good spinnaker and a great one is more art than science.

To understand spinnaker shape a little better, let's start off by discussing a few design principles. An elliptical shape (Fig. A) is better for downwind work, and the strong curvature in the leeches make the sail more stable and easy to fly.



Fig. A

Unfortunately, this leech curvature, that is so beneficial for stability, makes the sail reach like a pig. An arc shape (Fig. B) is a better reaching



Fig. B

shape, Its flat leading edge helps reach high, while its flat trailing edge reduces the boat's heel. The drawback to an arc shape is that this type of chute traditionally is very nervous and twitchy to trim. A full spinnaker flies steady as a rock, making it a

dream to trim. Just don't try to reach high or in a good breeze with it. A flat spinnaker is usually very fast, especially on a reach. The problem with a flat chute is that you have to have an expert trimming it, and even with an extremely proficient trimmer at the controls a brief lapse of concentration will ultimately end up in a complete collapse of the spinnaker. A good all purpose spinnaker design, therefore, is the perfect blend of an elliptical shape and an arc shape; flat enough to reach well, yet full enough to maintain its stability. Actually, a spinnaker is a vertical stack of different shapes, all strung together to optimize the sail's performance. In fact, the way that these "stacks" are piled vertically creates "vertical camber" (Fig. C), which affects a sail's performance almost as much as a sail's horizontal camber.

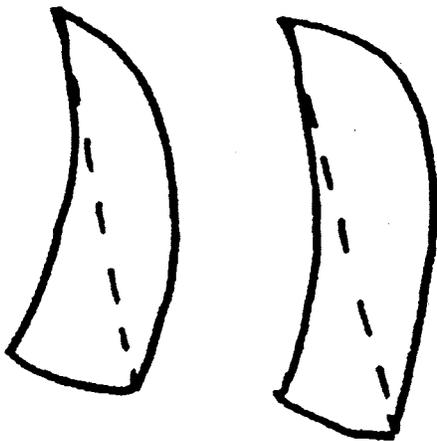


Fig. C

When you purchase a new spinnaker you assume that your sailmaker has taken all of these variables into consideration for you. Yet even the best designed spinnaker can be slow as molasses if it is not trimmed correctly. It never ceases to amaze me how many good sailors think that spinnaker trim is a simple matter of squaring the pole to the wind, keeping the clews level, and easing the sheet until the luff breaks. While this mode of spinnaker trim will work, it is not the way to squeeze the most horsepower out of your spinnaker.

Pole height is probably the most overlooked nuance of spinnaker trim. I'll bet that 90% of all

sailors think that you simply adjust the pole height to keep the clews of the spinnaker level. This technique is fine while sailing on a run, when the airflow is not running across the sail. As the breeze picks up, however, the chute may want to raise up too high and continuing to raise the pole will allow the head sections to fly too horizontally to the wind, losing precious projected area (Fig. D). In this situation lower the pole to keep the spinnaker from raising too high - even if the clews are not level. Of course, in a blow it is wise to lower the pole to "choke down" the spinnaker to keep it under control.

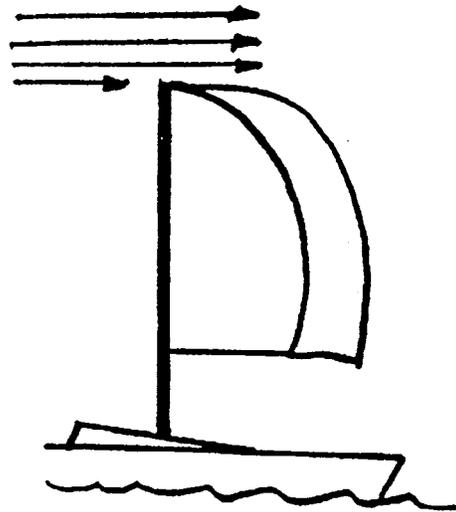


Fig. D

As soon as you begin to reach, and the airflow begins to run across the spinnaker from luff to leech, you should then abandon the "clews level" theory and keep the pole side (tack) lower than the sheet side (clew). Think of the spinnaker pole as a luff-tensioning device, just as you would a halyard or a cunningham. Raising the pole eases tension on the luff, and lowering the pole increases luff tension. In most cases, the proper pole height is no more difficult to decide on than figuring out how much cunningham to put on your mainsail.

A true (symmetrical) spinnaker is designed with the maximum draft right in the middle. This is fine when sailing downwind, or even when reaching in light air, but as the wind picks up

while sailing on a reach, a spinnaker with the draft in the middle will create a lot of side (heeling) force compared to forward drive. To counter this, we want to apply a little bit of luff tension (lower the pole height) to bring the draft forward, just as we would on a main or a genoa. Bringing the draft forward will flatten the leech, which reduces heel, and will make the entry on the luff rounder. From the beginning of this article, you should remember that a rounder entry makes a spinnaker more stable. It also can reduce how high the sail will point into the wind - so don't over do it, especially if you are having difficulty fetching a mark. If you have to trim a spinnaker with the tack and clew level in order to stay high enough on a reach, you can be sure that you are sailing too high for the spinnaker's optimum performance. In general, the harder the wind blows or the closer the reach, the lower the pole should be. It should be noted, however, that too much luff tension will cause the top of the spinnaker to curl to weather and the sail will break very high up on the shoulders. Try to avoid this, as it is indicative that your sail is not presenting itself to the wind evenly up the luff.

It should not be difficult to see why a spinnaker with the tack side flown lower than the clew side will be vastly superior when on a reach. With very little practice and experimentation, this aspect of sail trim will become second nature to you.

Another important factor of spinnaker trim is the fore and aft position of the spinnaker pole. The general, all-purpose rule of thumb is to keep the pole 90 degrees to the apparent wind direction. This rule works pretty well in most cases but, again, it is possible to fine-tune this guideline to increase performance.

Oversquaring the pole spreads the clews of the spinnaker apart, thus flattening the sail. This is particularly handy when on a reach or in heavy air. Undersquaring the pole pushes the clews closer together than usual, thus making the spinnaker fuller. This is the proper thing to do in light air or in choppy water. Since fore and aft spinnaker pole position affects the foot and lower sections of the

chute much more than the middle and upper sections, care must be given when undersquaring the pole in order to avoid forcing too big of a difference in the cross-sectional shape of the upper and lower halves.

An easy way to keep track of this is to pay close attention to the direction of the spinnaker luff as it comes off of the tip of the spinnaker pole. The spinnaker luff should fly straight off the end of the pole. If the luff rolls off to weather of the pole (Fig. E), it means that the pole is too far forward.

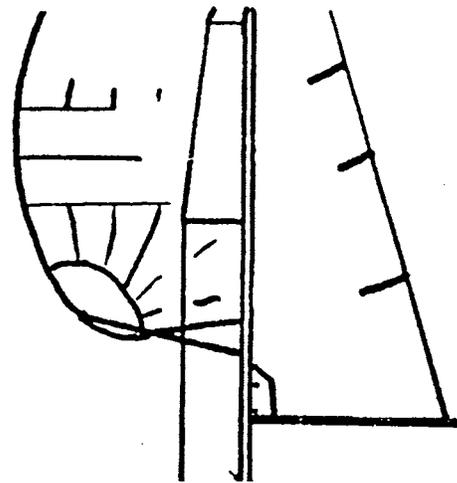


Fig. E

If the spinnaker luff flies off to leeward of the pole tip, then either the pole is too far back or the sheet is trimmed in too tight (Fig. F).

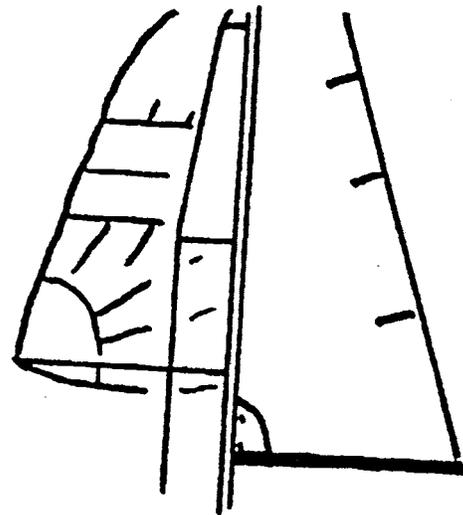


Fig. F

This is a sure-fire method for the pole trimmer to avoid the sore neck of constantly staring at the masthead fly. By utilizing this method, the person trimming the pole need only double check the masthead fly every couple of minutes of so. It is also a great way to check up on your sheet trimmer to make sure that they aren't running the sheet too tightly and thus stalling the chute. If the angle of the luff to the pole falls off to leeward and the pole is relatively square to the apparent wind, they you know for sure that the spinnaker is overtrimmed.

Trimming the spinnaker sheet is a pretty straightforward affair. Since overtrimming the spinnaker is slow, it is imperative to make sure that the sheet is eased as far out as possible. While the art of having a curl in the spinnaker luff is not necessarily fast in and of itself, it is the best way to insure that the sail is not overtrimmed. The slight loss of projected area that you suffer during a luff curl is far better than the loss of drive that you suffer with an overtrimmed sheet. WHEN IN DOUBT, LET IT OUT!!!

One overlooked aspect of sheet trim is the sheet lead. Sheet leads can be used to make the spinnaker fuller or flatter. On a reach, spreading the clews by moving the leads aft generally makes for a more efficient sail shape by flattening the chute. As a general rule, when the wind and the pole position move aft, the lead can be moved gradually forward, thus making the spinnaker fuller by allowing the clews to fly closer together. A spinnaker twing line is a great addition to any Santana 20 because it allows these lead changes to be done quickly and easily.

By learning and practicing these spinnaker trim techniques, I guarantee that you will improve your off wind performance as well as enjoy this point of sail much more.

Downwind Sailing: Heavy Air

Lance Purdy

On Easter Sunday, Jay, Patricia and I took *Sea Bear* out for some preseason practice. It was blowing a constant 18 - 20 knots, with some squalls coming through that produced gusts in excess of 25. By doing and testing, we discovered a few things that I have never seen described in Santana 20 literature. Furthermore, although much of the advice we have received about how to sail *Sea Bear* has proved to be right-on in practice, some of the things we learned during our Easter sail were contrary to what is some take as common knowledge in Santana 20 circles.

I'll try to pass on what we discovered about heavy air running. I recommend that readers cross check this against what they have heard or read from other sources.

Spinnaker Sets

You often hear that the spinnaker sheet should be left loose to prevent the chute from popping open before you can bear off. This suggestion worked perfectly. Although the wildly luffing chute was neither visually nor auditorially pleasing, and was technically a little slow, it sure beat broaching before we could even get started downwind.

Pole Position

A lot of misleading information about where to set the pole has been circulating in the Class. I have often heard that the pole should be forward to hide the chute behind the main. This advice turned out to be totally wrong. Yes, letting the pole forward will de-power the chute, but with the result of destabilizing the entire boat. Letting the pole forward brings the clews closer together, which deepens the chute and allows the spinnaker shoulders to swing back and forth, which leads to oscillation, which leads to disaster.

We also discovered that the lack of a true foreguy on the boat works against letting the pole forward. As the pole goes forward, the tweekers lose efficiency and the pole begins to bounce in the waves, which also leads to destabilization and increases the recipe for disaster.

Finally, stability aside, why would anyone want to de-power the chute anyway? Isn't the goal to get the boat planing?

Another thing I have heard and read is that the pole should be set so that the center seam of the chute is on the forestay and that this will perfectly balance the boat. Good concept, but the directions are misleading. You should set the pole to balance the boat, but the putting the seam on the forestay will not always work. Don't forget about the effect of the main. We found the boat was in balance when the pole was quite far back with the center seam 18 to 24 inches to the guy side of the forestay. Keep the pole back!

It is often recommended that the pole be kept low in heavy air. This is good advice. A low pole brings the center of effort down, keeping the bow from plowing through the waves and reducing oscillation while giving up only a little bit of power. We found that the best way to keep the pole low was to invert it, in other words make the attachment to the mast higher than the attachment to the clew so that the pole was pointing down. This helped the tweekers do their job and kept the pole and chute stable in the waves. Incidentally, another bit of common advice that the sheet side tweeker should be left on in heavy air is correct and does help to keep the spinnaker and pole down.

On the Helm

I have often heard Santana 20 sailors complain that the boat is very unstable in heavy air. I found this to be both true and false. It is true that the boat is very unstable while dropping on and off a surf or plane. However, once planing, although the ride can be terrifying, the boat is quite easy to steer. The solution is to get the boat surfing as

quickly as possible - and keep it there. First, as stated above, keep the sails powered up. Next, resist the urge to head up. I realize nobody wants to death roll, but heading up makes it much harder for the driving force of the sails to overcome the tremendous drag involved when breaking hull speed. In other words, if the boat is sailing high when a puff or a wave hits, the boat will tend to heel and try to head further up, leading to an often drastic adjustment on the helm, both of which combine to produce a very scary moment before the boat takes off. On the other hand, if the boat is already dead down wind (DDW) when the puff or wave hits, it just starts to fly, without scary moments.

It is true that puffs are often accompanied by a wind shift, and that waves are rarely perpendicular to the wind. This meant that I did have to make some helm adjustment with each puff or wave. However, I found that too much anticipation led to over-steering. The Santana 20 is very responsive to the helm, and quick reactionary actions easily prevented broaching. After a while, I completely abandoned the wind indicator and just responded to the boat and sails. When a puff or wave hit, and the boat began to roll, I quickly turned the boat toward the roll, forced the bow under the spinnaker and thereby aligned the forces working on the boat.

The key is to react quickly before the boat heels too much and the helm becomes ineffective. One quick pull on the tiller, with an immediate return to neutral, stopped the roll and sent the boat flying every time.

Body Weight

We all know that the Santana 20, like a dinghy, is very sensitive to body weight. However, we sometimes ignore this factor when running. We found that it cannot be ignored in heavy air! Earlier I stated that the boat was balanced with the center seam of the chute 18 to 24 inches to the guy side of the boat. In truth, this balance could not be achieved without proper crew

position. While surfing at 7- 9 knots, with the pole to starboard, I as skipper sat on the port side, actually hiking at times. Jay (middle) sat to starboard where he could see the chute, but inboard. Patricia (fordeck) moved back from the companionway, to lower the center of gravity, and hiked to port. In other words, with the pole to starboard and back, although the helm was neutral, we had to shift our weight to port to prevent a tendency to death roll and enable me to steer DDW.

When big puffs hit, and the boat totally broke loose (12+ knots at one point), things got a little more interesting. In order to prevent the bow from plowing under the waves, we had to move our weight drastically aft. Everyone got as far back as possible, with the middle actually sitting behind the traveler and the forward sitting on the traveler. Unfortunately, with all this weight aft, the tendency for the boat to roll increased, and steering became more difficult. If anyone has a solution for this problem, please let all of us know.

Jibing

It is often said that you should jibe in the puffs, when the boat is going it's fastest. We found this to be generally true when the boat was surfing steadily at 7-9 knots. When a puff hit, the boat had the increased power to stay on the wave during the jibe maneuver, without much increase in sheet tension. However, in tricky conditions where the boat is constantly dropping on and off a plane, perhaps waiting for a lull is a good idea. I say this because, if the chute collapses during a jibe, the boat will instantly fall off a surf or plane, leading to a very scary few seconds during which the boat is totally out of balance.

Another situation in which I don't recommend jibing in the puffs is when the boat is screaming at 10+ knots. In fact, it may be impossible to jibe in those conditions, because if anyone goes forward, the bow could go under. At this point, there are

two choices. One, wait for a lull. Two, release the sheet, collapse the chute, and then try to jibe.

One final jibing note. There has been some recent discussion about the best way to rig the spinnaker pole, whether via the trolley system or end-for-end. We had few problems with the trolley system. I believe, however, that an end-for-end system might be better in a blow. It may be quicker, with less opportunity to foul the pole in the shrouds. Anything that will speed up the process is of benefit in heavy air. If the end-for-end system is to be used, it must be done from the companionway. Nobody should go on the bow unless absolutely necessary.

Takedowns

Takedowns should be undertaken well in advance of the mark, and should be done from the cockpit or companionway. More time must be allowed because, for safety sake and even with the chute collapsed, nobody should be on the bow. A windward takedown will take considerably longer from the cockpit, unless you have practiced it before. Through a couple of practice roundings, we discovered that losing even an entire boat length with an early takedown was more than recovered when, with clear decks and no fouled lines, we were able to immediately go to close-hauled at the mark.

Balance

I'll conclude by stating that probably the most important thing we learned about running in heavy air was balance and that proper balance is a dynamic activity. At first we had some tricky moments, but after a while we all began to instinctively react to maintain equilibrium. In the heat of the moment, if you forget everything else, remember that the boat must be perfectly balanced to sail DDW. If you can't comfortably sail DDW, move your crew around and change the pole position until the boat feels right. Before you know it, you'll be flying.



Work hard to keep the bow of the boat under the spinnaker.

Downwind Sailing: Running in Moderate Air

Lance Purdy

Santana 20 Fleet 19, Eugene, Oregon, made more than a respectable showing at the recent Western Regionals, Huntington Lake, California. We held our own upwind. We gave up a little bit of speed now and again to the pros, mostly because we lacked their new sails. However, we often made up the speed difference with solid upwind tactics, especially when the wind got shifty and local knowledge wasn't so important. On the other hand, Fleet members unfortunately displayed an inability to run fast downwind. Not only did the pros outclass us on the runs, but Fresno Yacht Club members, perhaps aided by local knowledge, consistently beat us as well.

After the first day of racing, when at one point Tom Shock pulled 15 boat lengths on *Sea Bear* on one downwind leg, I realized that I had lost the knack of downwind sailing that years of running on the San Joaquin River had honed. Being trounced did, however, give us an opportunity to refresh our running skills. Watching the pros, a brief talk with Andrew Kerr, a longer talk with Ron Fish, a dredging up of my San Joaquin River memories and a discussion with the *Sea Bear* crew lead to much improved downwind speed during the last three races.

In the balance of this article I will describe three of obvious mistakes committed by *Sea Bear* and other Fleet 19 participants which at times hampered downwind performance.

Indiscriminately Fighting

Probably the biggest thing Fleet 19 was guilty of was fighting for position for no tactical reason. Often cutting our own throats, we never really stopped the bleeding during the entire event. **Do not**, and I say again for emphasis, **DO NOT**, while on a run fight with the competitors immediately around you, at least until you get close to the leeward mark. It is much more important to find a lane of clear pressure than to beat one boat at the top of the run. Pass boats by sailing faster, not by taking their air. During a fight you will sail way too high. I guarantee that you'll lose two boats for every one you pass. During the regatta, I repeatedly had to fend off other Fleet 19 boats that were zigzagging all over behind me in horrible entanglements with one other. I found the Fleet 19 regatta pattern frustrating and tiresome, especially when I found myself subconsciously joining in. Often, in order to extricate *Sea Bear* from the damaging dance, I had to bite the bullet and let boats reach up over the top of my air. Sure I may have lost a boat length, but once boats were above me, I could sail low enough that they could never again take my air without gybing. Unfortunately, during the melee, we all let the lead boats escape.

Sail Low

This leads into my second point. Fleet 19 boats sailed way too high downwind most of the time and also jibed way too much. When a puff hits while running in moderate air, the boat will tend to heel toward the spinnaker. The proper reaction is to let the boat roll slightly and naturally head down. A dead down wind direction is ideal, and even by the lee is no problem for short periods. You should let the boat head down because in moderate wind you do not have enough pressure to cause a death roll or make the boat plane, but you are moving very close to hull speed. When the boat is near hull speed, it should be headed as close to the mark as possible. Sailing a shorter distance is fast. Furthermore, sailing low in the puffs allows you to head up later in the lulls. Sound familiar? This is exactly the same concept we all practice on reaches. While running it's just more subtle, only a few degrees of deviation usually, and let the roll of the boat do the work, not the helm. It may not seem like much, but on a two-mile run, sailing low could easily result in a 5 to 10 boat length gain.

Crew Weight Forward

The third sin we were all guilty of at times was improper weight placement. Crew weight in moderate conditions should be **forward and toward the spinnaker**. All the top boats had their skippers in front of the traveler and their forward in front of the shrouds. Weight forward reduces wetted surface and should be practiced until the boat is at hull speed. We who still use old decks should be especially conscious of this. I know it's not easy to move forward on the old deck, but it must be done. Weight is moved toward the spinnaker to roll the boat so that the chute falls out from under the main, thus presenting the most projected area to the wind. Don't worry about the slight lee helm that occurs, it helps you sail low. In defense of Fleet 19, by the end of the regatta most of our boats had

considerably improved their weight placement techniques.

In conclusion, all of us who attended should try to remember what we learned on the water. Hopefully, we will be more prepared the next time. Also, for anyone who was not at the Regionals, I hope this article will at least get you thinking about the often-overlooked intricacies of running.

Downwind Sailing: Running at Smaller than Optimum Angles

Lance Purdy

After rounding the weather mark and near the lead, you often find yourself in a position where you need to sail lower than you would like, to maintain clear air and to stay between the competition and the leeward mark. The alternative is to keep your air clear by sailing too high, which really is not an option because you give up all hope of covering the center and you end up risking the entire race at the Cornersville Casino.

Because this is a common situation, all of the top boats in the class become very adept at sailing fast at smaller than optimum angles. Here are some tips to help developing skippers improve their results when forced to sail low.

Avoid fighting with individual boats around you. Focus on finding a clear lane of air and sailing fast. If a single boat is trying to drive over you on starboard jibe, it is often better to let it cross right over your air. Usually you will lose less than one boat length before they go by, leaving you complete freedom to continue sailing your own low and fast course.

Roll the boat to weather. When the boat is sailing deeper than you would like, there is very little hope of any lift being generated by the chute. Therefore you must focus on maximum projected

area. In order to do this, roll the boat to weather to get the chute out from behind the main and also to keep the upper outside leech open.

Use as little helm as possible. When already sailing a bit slow, you definitely don't want to slow the boat even more with excessive helm. Steer the boat by rolling it from side to side. The fact that it is already rolled a bit to weather will help. When a puff hits, the boat will roll even farther to weather, inducing a bit of lee helm and helping you drive closer down. When a lull develops, the boat will roll more upright, enabling the boat to head up with less helm use. With a little practice, the crew can also carefully lean to amplify this rolling motion with subtle bodyweight transfers, thereby cutting down on helm use even more.

Keep your weight low. One of the worst things about sailing lower than optimum is that the boat accelerates very slowly. You therefore want to avoid decelerating effects as much as possible. Keeping your body weight low will reduce the pitching effect of wake and chop and help keep the boat from drastically slowing down.

Avoid jibing if at all possible. By sailing low, you have forsaken the advantage of jibing back and forth on higher faster angles in order to take advantage of clear air and good position. Once you have committed yourself to the sailing low plan, don't get jumpy and jibe several times, because jibes will only slow you down. Jibe only to cover the returning outside boats, or to get to increased pressure.

Don't get upset if you sometimes lose one or two of the outside boats. Occasionally a boat will sail to a corner, get lifted, or jibe and come roaring back on an awesome angle. If you have been consistently sailing in clear air, however, you will usually discover that, even when things go wrong, you probably still passed a few boats by staying low, while giving nothing away to the main fleet.

Foredeck Crew Tips

Adam Kline

Acting as a foredeck is the hardest Santana 20 crew position. The foredeck is usually responsible for calling wind puffs, waves, vegetation and debris in the water ahead, crossing situations, and enemy boat positions. Responsibilities for calling laylines, start lines, bouys and the like also fall to the foredeck. The foredeck may also control the outhaul, cunningham, and vang in the upwind mode and, when headed downwind, set the spinnaker pole, hoist the chute, jibe the pole and, at the conclusion of the downwind leg, stow the pole, hoist the genoa and douse the spinnaker.

Sailing a Santana 20 takes a TOTAL TEAM EFFORT. This is a compilation of the steps one should follow while undertaking to perform foredeck responsibilities. These steps describe the procedures I use when I act as foredeck. If you commit them to memory and follow them in sequence you will be on your way to being a top quality foredeck crewmember.

Prior to Tacking Upwind

First. Look in the direction of the tack to verify the skipper's decision that there is room to tack. You can never be too careful and two sets of eyes are always better than one. Caution the skipper if there is a potential hazard or acknowledge the command assumption that it is clear with a "Clear."

Second. Take the genoa sheet from the middle crew and take all the sheet wraps from the winch except one. This allows the middle to take the windward sheet and position him/herself to get the best leverage to pull the genoa around. When you have only one wrap on the winch yell "fore deck ready." When ready, the middle yells "middle ready."

Third. As the boat turns head to wind take the last turn off the winch and throw it at the jib sheet block at the other side of the boat. This

lessens the chance that it will snag. Now, jump up and position yourself in between the shrouds and the mast. I call this the triangle. Wait for the clew of the genoa to approach and give it a swat with your hand as it goes by.

Forth. Grab the sheet you just released and give it a tug to make sure it is running free. If you feel any resistance, then the sheet is stuck and you will need to do what you can to clear it. The sheet can sometimes be stuck under the middle's butt and hence you have a butt cleat. Yell "butt cleat" and the middle will either stand up which he should have been doing anyway or do a little dance to free the line from under his feet. If there is no resistance then the sheet is running free so you can now run in front of the mast and around the shrouds on the other, now windward, side. I hold onto the shrouds for balance and in the unlikely event that I slip.

Fifth. Now grab the tail of the genoa from the middle who, hopefully, has a few wraps on the winch and help tail it in. Look to leeward and check for boats on a collision course. Vocalize the leeward situation by saying "clear to leeward" or "starboard/port boat in X number of yards," estimating the distance for the skipper. This step is very important. **Remember to look to leeward after every tack.** Even if you think that there are no other boats around --- look to leeward. It's also helpful to tell the skipper if necessary to alter course to maintain speed. Coaching the skipper immediately after the conclusion of a tack helps to get the boat back up to full speed quickly, because most skippers get side tracked by the traveler and backstay.

Sixth. Once the tack has been concluded and the boat is on the new course, it's time to place yourself to keep the boat flat and resume your normal upwind duties.

To summarize the tacking sequence

1. Look in the direction of the tack to verify that it's clear.

2. Take the genoa sheet from the middle crew and remove all but one wrap.
3. Yell "Fore deck Ready".
4. As the boat turns head to wind, take the last turn off the winch and throw the loose sheet to the ratchet block on the other side of the boat.
5. Jump in the triangle and slap the clew of the genoa as it goes by.
6. Take the free genoa sheet and give it a tug.
7. Run around the mast and the shrouds.
8. Take the tail of the genoa sheet from the middle crew and tail it in.
9. Look to leeward.
10. Coach the skipper to correct course. For example "You're pinching, head down".



A smooth spinnaker set requires a team effort.

Setting the Spinnaker

I prefer an end-for-end-rigged spinnaker pole, which is found on most boats except Santana 20s. Most Santana 20 sailors use a pole with a trolley system. An end for end pole seems faster to jibe, but slower to set.

First. Once on the layline to the windward mark, release what will be the spinnaker guy from its cleat. This will be the spinnaker line on which everyone on the starboard side of the boat is probably sitting. Reach in front of the tweaker and put the guy in the outboard jaw of the spinnaker pole. You should first release the spinnaker pole from the boom to accomplish this.

Second. With the sheet clipped in the outboard jaw, raise the topping lift and lock the inboard end of the spinnaker pole to the mast.

Third. Open the window of the port hatch, where the spinnaker is stowed. Prepare to hoist the spinnaker by grabbing the spinnaker halyard at the base of the mast. You should hoist while standing on the starboard side of the boat, adjacent to the mast. The middle crew should pull the forward spinnaker clew out to the tip of the pole prior to the hoist to help prevent an hourglass twist of the spinnaker as it is hoisted. The spinnaker can be hoisted about 1/3 of the way up the mast, depending on wind speed, prior to rounding. The higher the wind speed, then less the spinnaker can be cheated out of the hatch.

Forth. Once rounding the mark, start hoisting. Once the spinnaker is all of the way up, it's time to douse the genoa. Release the genoa halyard. The working genoa sheet probably still has wraps on the starboard sheet winch, so while simultaneously grabbing the genoa clew take the wraps of the winch and pull the clew through the triangle on the starboard side.

Fifth. Have the middle release the aft lower shroud adjusters. Flake the spin halyard to prevent knots that would prevent it from running free when the spinnaker is doused. It's better to do this sooner than later. An emergency might arise, such as the requirement of a penalty turn or the appearance of a dangerously strong windline, that might require an early douse. Always clean house early to insure that lines are not tangled later.

Sixth. Move to the boom side of the boat, opposite the middle crew, who is flying the spinnaker, to help keep the boat in balance.

To summarize the hoist sequence

1. Release the starboard spinnaker sheet from cam cleat, and anything else that may hold it.
2. Place the portion of the sheet from in front of the tweaker into the outboard pole jaws.
3. Set the topping lift.
4. Open the spinnaker hatch.
5. Stand up to hoist
6. Cheat the spinnaker out of hatch, and to the pole tip, as far as conditions reasonably permit.
7. Hoist while rounding
8. Move to the companionway to douse the genoa.
9. Take genoa sheet off its winch and pull genoa clew through starboard triangle.
10. Release the aft lowers.
11. Flake the spinnaker halyard.
12. "Clean house" by straightening all lines so that they will run free.
13. Sit opposite middle crew, or wherever required to balance the boat.

Jibing the Spinnaker

First. Pull on the leeward spinnaker sheet tweaker.

Second. Duck under the boom and position yourself in the leeward triangle, next to, but not in front of, the mast.

Third. Take the sheet of the spinnaker now acting as a guy with your hand furthest from the mast and, with the other hand, grab the pole on the mast and, as the boat starts to turn yell "trip" and release the pole from the mast.

Forth. Insert the former guy that you had in your hand in the jaws of the pole end that you just released. Release the spinnaker sheet from the other end of the pole. Now swing the pole out the windward side and connect the unconnected

end of the pole to the mast. Yell "made." Gently return to the boom side of the boat, if appropriate to do so for balance, and release the tweaker on that side.

To summarize the jibe sequence

1. Set the leeward side tweaker.
2. Duck the boom and get in the leeward triangle.
3. Take the sheet of the spinnaker and the mast end of the pole.
4. Yell "trip" and release the pole from the mast as the boat turns.
5. Insert the sheet in hand into the jaw of pole, release the sheet from the other end of the pole, and swing the pole to windward
6. The attach the end of the pole to the mast and yell "made."
7. Return to the boom side of boat and release the tweaker.

Dousing the Spinnaker

First. Start by getting the starboard genoa sheet wrapped on a winch and the starboard clew moved to the outside of the starboard shrouds.

Second. Pull on the aft lower cars, if appropriate. Hoist the genoa. Pull on the port tweaker. Get into the triangle on the side to which the douse is to be made, the port side for a port rounding, for example.

Third. Release and store the pole. Open the hatch into which the spinnaker is to be stowed. Grab the spinnaker clew and force it over the hatch opening. Release the spinnaker halyard. Pull the tape of the spinnaker luff into the hatch. Once the spinnaker head goes into the hatch, pull the foot into the hatch too, but be careful that the sail doesn't rip on the forestay or jib tack. The spinnaker should now be back, appropriately stowed, exactly the way in which it will come out.



Spinnaker down, sails trimmed, sailing fast to windward.

Fourth. Close the hatch and pull the spinnaker halyard to the weather rail, clipped into its upwind location.

To summarize the douse sequence

1. Put genoa sheet on the appropriate winch and move the clew around the shrouds to what will be the leeward side following the leeward mark rounding.
2. Engage the aft lower shrouds.
3. Set the tweakers.
4. Get in triangle on the side of the boat to which the spinnaker will be doused.
5. Release and stow the pole.
6. Open the hatch in which the spinnaker will be doused.
7. Grab the spinnaker clew and force it towards the hatch opening.
8. Release the spinnaker halyard.
9. Run the tape of the spinnaker luff into the open hatch.
10. Do the same with the foot tape.
11. Close the hatch
12. Stow the halyard in its windward side holder.

Some final thoughts: While heading upwind, try to provide useful, relevant information to the other crewmembers. Remember that each

crewmember should be responsible for his/her crew duties. For example, if you notice a line that the middle crew could or should be handling, remind them to do it. The same goes for you. Don't let the skipper do anything but concentrate on driving the boat fast. The best part of the foredeck position is that you get to actually get to keep your eyes out of the boat, watching the race. It's part of your job. Cool.

Pre-Race Strategy - Keep Your Head Out of the Boat!

Andrew Kerr

Much has been documented about starting a sailboat race. The purpose of this article is to focus on the importance and role of the crew in assessing the crucial changes that can occur immediately before the start of the race and in adjusting to those changes, if necessary. It is very easy to get caught up in the rapid one-on-one situations (that almost amount to mayhem!) on the starting line and lose perspective of the "Big Picture." That broader view of what's happening includes what's going on beyond the start line: Which side of the course ahead has more wind velocity and in which direction, if any, is the breeze shifting?

Top sailors are constantly identifying and analyzing the first race leg so that they don't end up starting in a disadvantageous start line position. It is obviously important to have a starting strategy determined before the start, but you very need to nurture the flexibility to change your game plan up to 3-4 minutes before the start gun. Here are some ideas about achieving that ability.

On bigger boats - say with more than three crewmembers - have your tactician separate him/herself almost entirely from the pre-start maneuvering and (along with anyone else who is available) **constantly** scan the first leg to identify

the puffs and analyze the texture of the water. For instance, the tactician may see a boat sailing upwind while pointing very high on port tack indicating a wind shift to the left. Diagram 1. This means that you may want to start to the left of the group on the line to get to that shift. You may make that observation with three minutes to go and then modify your strategy accordingly - the best sailors very often are those who are constantly re-evaluating their initial assumptions and acting on that new information.

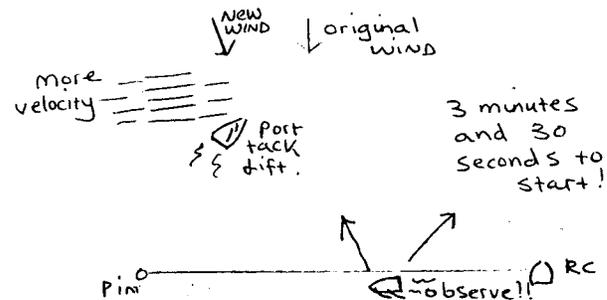


Diagram 1

One technique which helps identify the breeze on the first leg is to stand up - it gives you a better vantage point from which to scan the racecourse. (Note: Standing up in a sailboat while racing is slow - especially downwind, so limit this to the pre-start!)

Stay near the line! First, so that you have a good view of the racecourse and are able to observe, but also so that by trimming your sails you can perceive the orientation of the line. For example, at two minutes and thirty seconds to go, you suddenly find yourself trimming in your sails to get to the pin. This indicates a left shift and suggests a left end start. Beware, however, if the line is restricted by the committee for a prior start or if the "around the ends rule" - 51 (C) - is in effect!

If there is a fleet of boats starting before you, watch it like a hawk. Don't be fooled by its start. Pay attention instead to who crosses ahead. That is a very valuable piece of information. In Diagram 2, L "wins" the start, but further analysis up the beat shows R crossing ahead. This

suggests that the right side of the course may be favored.

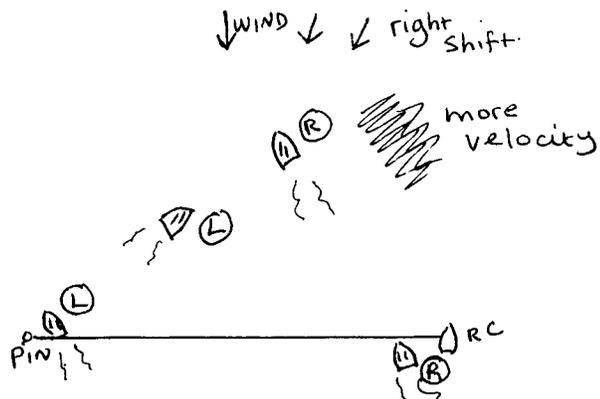


Diagram 2

It is a good idea to take as many head-to-wind readings as is practicable, especially in an oscillating breeze. Write the numbers down with a grease pencil and note the times. You may take a head to wind reading at four minutes to go and discover a new shift that may turn your original strategy upside down! Keep re-evaluating!

When taking a head-to-wind reading, try to get your boom to sway back and forth across the centerline. Diagram 3. You will find that this is a much more accurate method than looking at the masthead fly, which is very often swaying around. Do not broadcast your findings. (i.e.: Don't point with your finger or arm or make you bow obviously point toward the new shift.) Conversely, observe others to gather such information.

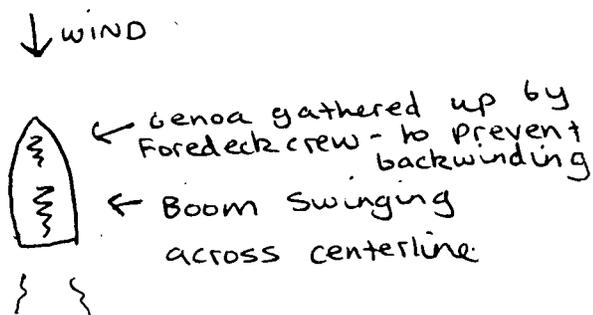


Diagram 3

At J-World Sailing School we run many, many starts. The more you start, the better you get. The sharper your boat handling becomes, the easier you will find it to be to keep your head out of the

boat and looking up the course before the start. Three key ingredients to achieving this are, in my opinion, time on the water, time on the water and time on the water! It will help you keep your eyes open and improve your results. You will also have more fun!



Rounding Offset Marks

Tactics and Strategy

Andrew Kerr

As with the proliferation of the use of the "leeward gate," race committees are more and more using an "offset mark" at the windward mark. This mark helps reduce congestion, in particular on the port tack layline, reduces risks of windward mark collisions and thus the number of protests. Diagram 1 explains what an offset mark is:

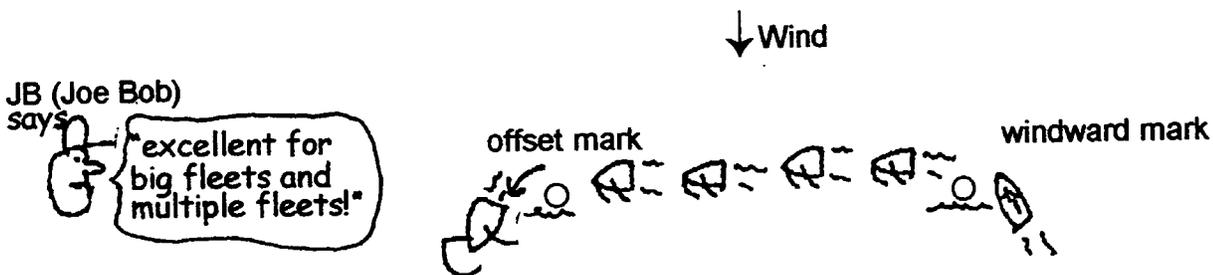


Diagram 1

In Diagram 1, we can see that the boats reach from the windward mark to the offset mark. The length of that distance usually depends on the size of the fleet and the race committee's judgement about the conditions. **The offset mark is a mark of the course.** It must therefore be passed on the required side and, if touched, a 360 degree penalty turn must be completed. One top Melges 24 class competitor at Key West Race Week '97 (not the author!) had been sailing a very good regatta until he was disqualified by the jury for not rounding an offset mark! Beware!

An educated (and important) question to ask at the skippers' meeting is how far the windward and offset marks are to be spaced apart. This will help formulate your boathandling strategy and visualization. Often - but not always - the committee will state the distance in the sailing instructions.

One of the tactical moves the offset mark highlights is how ill advised it is to approach the windward mark by overstanding the port tack layline. First, there are several rules violations that one can commit by this tactic, either by encroaching with starboard tackers (rule #10) or tacking too close while in the two boat length "zone" surrounding the windward mark - something that the rules are very much trying to discourage. An added problem following the use of an offset mark is dealing with the windshadows of starboard tack boats reaching between the two marks.

In Diagram 2, boat A is in, shall we say, a "tactically naive" position! The pulses of boat A's crewmembers have likely doubled. Try to avoid this situation. Those in boat A would probably prefer the situation appearing in Diagram 3.

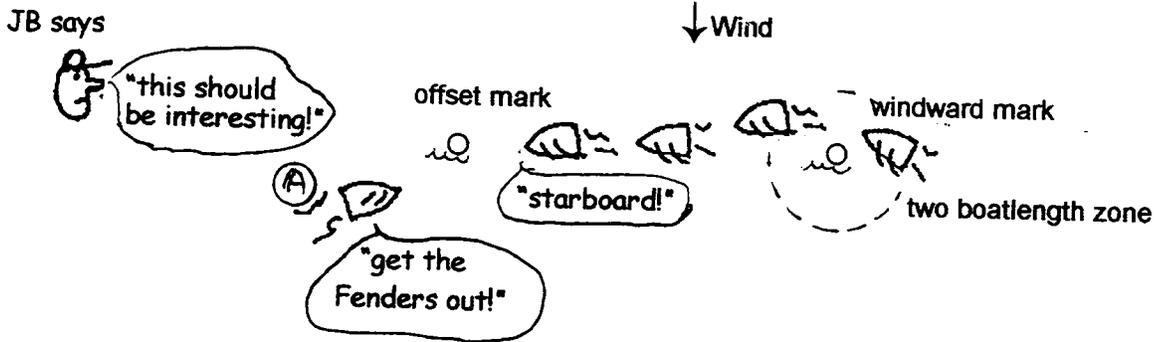


Diagram 2

In Diagram 3, serenity and order reign! Boat B elects to tack at least 8-10 lengths shy of the port layline, thereby ensuring much clearer wind. B then tacks on starboard layline outside of the two boat length zone. This avoids the rules violations that could occur if interfering with the starboard tack parade or by "tacking too close" in the two boat length zone. (Racing Rule 18.3, Parts A and B)

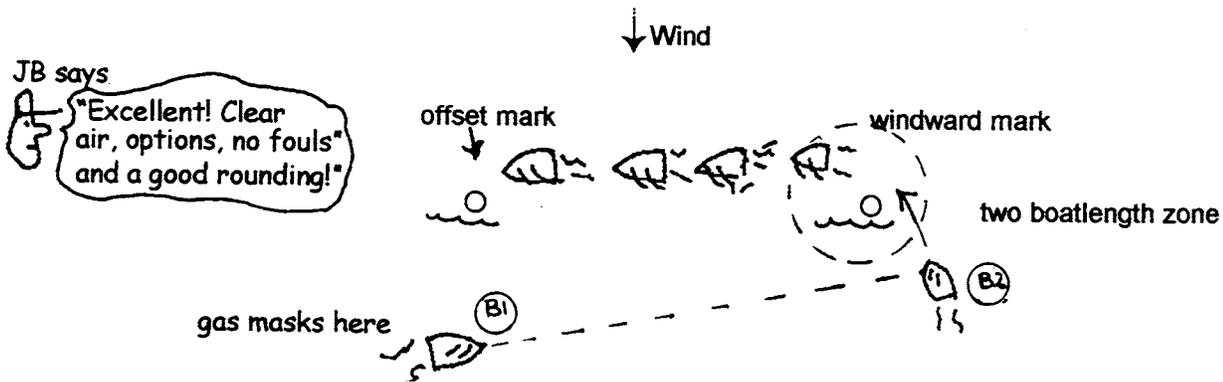


Diagram 3

A substantial windshift can dictate whether to set the spinnaker between the two marks. There can sometimes be a substantial right shift upwind (veering shift), illustrated in Diagram 4, that makes an early spinnaker set possible.

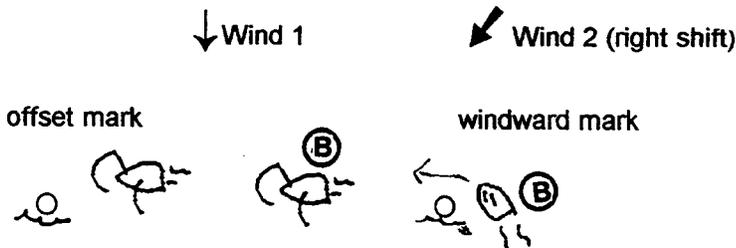


Diagram 4

Boat B is lifted upwind so, after passing the windward mark and bearing away for the offset mark, the wind is enough aft to set the spinnaker. However, if the opposite is true, and the wind shifts left (backing shift), then an early spinnaker set will not be possible. This is depicted in Diagram 5. In the latter case, the spinnaker cannot be set until after passing the offset mark.

In Diagram 5, boat B sets the pole and, instead of fully hoisting the chute before reaching the offset mark, merely "pre-feeds" the tack of the spinnaker after passing the windward mark. Upon reaching the offset mark, Boat B bears away and hoists. **The key element here is paying close attention to changes in the wind direction.** If substantially lifted upwind on starboard tack, you can probably hoist between the marks. A big port tack lift upwind will probably necessitate a delay of your spinnaker set.

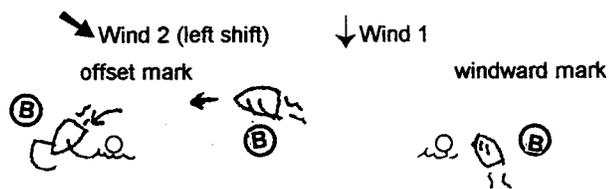


Diagram 5

Another key element of offset mark rounding is what I call the "starboard tack bear away, sail a bit - then jibe" tactic. Don't worry, I don't actually say this on the boat, but it is the smart way to set, then jibe and keep your air clear. An often-made mistake is chronicled in Diagram 6. Boat B, after setting the spinnaker immediately, jibes into the windshadow of the parade of boats between the marks. Boat B comes to a grinding halt in the windshadow, as the Boat B spinnaker trimmer stares incredulously at the limp chute. The tactician is quiet and the skipper wonders when his boat will get back up to speed. And where has it gone?

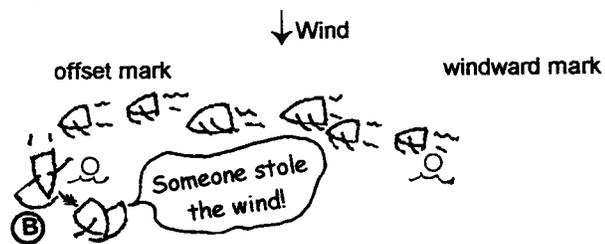


Diagram 6

Thus, if you want to jibe onto port, first execute a bear away set, then sail 6 to 10 lengths before jibing. That keeps your wind clear and the boat moving fast. See Diagram 7.

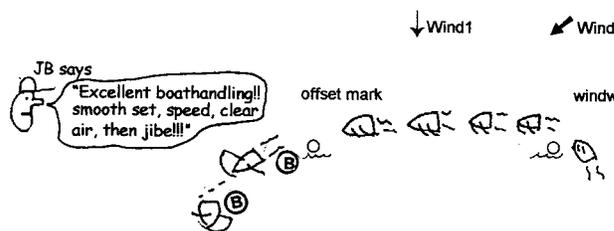


Diagram 7

With many great Santana 20 regattas ahead of us, let's look forward to rounding offset marks! I hope that this article helps get you around them smoother and faster. See you at the next Santana 20 regatta and may the force be with you!

Choose Your Leeward Mark

Andrew Kerr

I have noticed that more and more big fleet race organizers are opting for the use of a "leeward gate" (two leeward marks), to help minimize and distribute mark traffic as well as give us competitors another tactical and strategic challenge.

Having been a participant in many of these races, I would like to offer some rules of thumb that may pay great dividends for you in leeward mark selection. I hope they prove helpful the next time you are confronted with a choice of leeward mark!

Go to the mark that is further upwind.

Committees are very good at setting marks evenly, but very often one is slightly closer. One should go around Mark 2 in the Diagram 1 example.

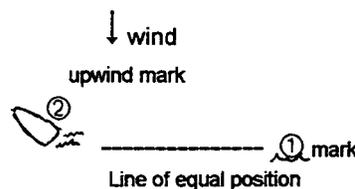


Diagram 1

Go to the mark that will take you to the favored side of the course. For instance, if the right side of the windward leg paid, go around the port downwind mark. In Diagram 2, Boat A elects to round Mark 2, facilitating a sprint to the right upwind side of the course. (Remember: This assumes no substantial windshifts. Always keep your attention focused on the possibility of changing conditions!)

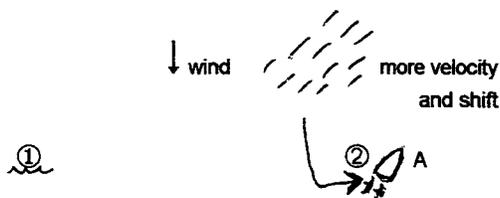


Diagram 2

Go around the mark with the least traffic. This is key! An example of this is in Diagram 3. Rounding in clear air and flatter water (Mark 1 in this example), will help accelerate from the pack and gain on the leaders. The bigger the fleet, the more important this is. Boat A is in great shape to round smoothly with good speed and in clear air - an excellent rounding. Meanwhile, the pack at the congested mark is slowing each competitor down! Boat A should make good gains.

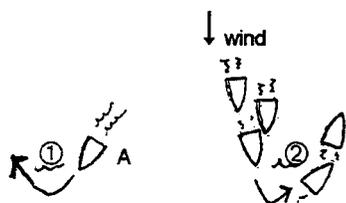


Diagram 3

Go around the mark that provides the smoother rounding. In Diagram 4, we see that Boat A has set up for a better rounding of Mark 1. The much easier windward spinnaker takedown around this mark a great way to "slingshot" away from the mark. Boat B, on the other hand, must jibe and drop the spinnaker simultaneously - a more complicated and speed killing maneuver. (This is particularly the case in very light or heavy air.)

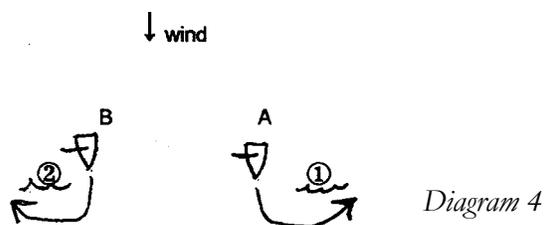


Diagram 4

Try to orchestrate your final move to be as smooth as possible. (As Boat A has in this example.) This is of course not always possible, so practice spinnaker drops and leeward mark roundings as much as possible. Your goal as always is to have everyone on the rail as you round the mark, in a position to trim the sails in perfectly as the skipper heads up to windward. If in doubt, drop the spinnaker early to execute a good mark rounding.

Consolidate on a group that has mistakenly rounded in a pack at the unfavored mark. This is best done by either tacking to windward of that group or tacking and crossing it. Diagram 5. If you don't consolidate, your gain may be taken away from you by a windshift. One exception to this would be if you are in clear air, on a lift and sailing unhindered to the side of the course favored by more velocity or a persistent shift. Generally though, if you think you can cross a group that was previously ahead of you, do it!

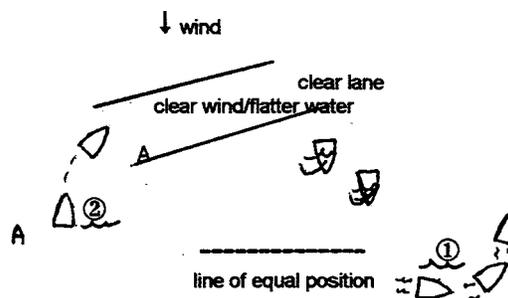


Diagram 5

Wait for flat water and clear air before tacking at the leeward mark. In Diagram 6, Boat A has rounded the "favored" (more windward) mark, delayed until it's clear of leeward mark layline spinnakers and reached flat water, and then tacked to windward of a pack that has rounded the unfavored mark. What a great way to pick off 3 more boats! It is a mistake is to tack

immediately into a wall of disturbed air and chopped up water, this losing both speed and pointing. Try to "hang in" off the "lee-bow effect" of your competitor until your lane of clear wind and flatter water opens.... then tack. In Diagram 6, Boat B waits for its lane, then tacks.

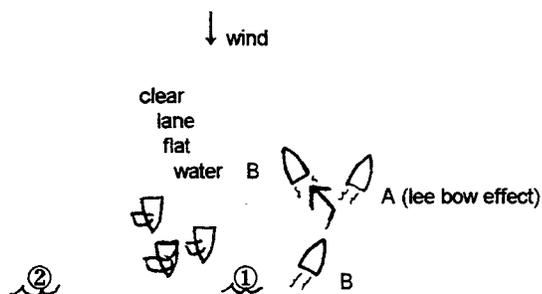


Diagram 6

Be decisive with mark selection. Indecision about which mark to round could mean losing the inside position on a pack that was more resolute. It is usually better to be the inside boat at the "wrong" mark (thus with clear air and option to tack) than to be outside, pinned and in bad air at the "favored" mark. In Diagram 7, Mark 1 requires you to work to the right of your competitors in order to obtain the coveted inside overlap and Mark 2 to work to the left of them. Boats D and A have worked to their respective inside positions - the places to be! It is strategically very important to be inside boat and not pinned outside by a group of boats. That way you can execute your strategy.

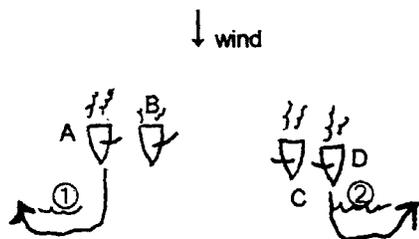


Diagram 7

With the resurgence of our Santana 20 class, I am hopeful that bigger fleet (20 boats plus) events will allow our class to experience the added tactical challenge and opportunity that two

leeward marks present. Good luck at your next Santana 20 regatta!

Lake Sailing - Expect the Unexpected

Andrew Kerr

I gave a talk this spring at the Western Regionals, held in conjunction with the Camellia Cup, hosted by Folsom Lake Yacht Club. On the drive up to Folsom Lake, fellow *Disaster Area* teammates Chris Winnard, Simon Smith, and I discussed some of the key elements of successful lake sailing. We tried to recall as many different scenarios as we could from the lakes upon which we have raced.

Our conversation was illuminating and provided, with some valuable input from *Aquila* skipper Paul Stephens, the basis for my Folsom Yacht Club presentation. Here are my main points:

Get an overview map of the lake. What exactly is the surrounding terrain? Is it hilly, or flat? Where are the narrowest points? Where would wind velocity be most unobstructed?

Interview local sailors for possible local knowledge pointers. This can be done either over the phone beforehand or at the regatta site. (Note: Sailors may respond positively to liquid refreshment!)

Play the sides of the lake and avoid the middle as much as you can - unless there is a definite velocity reason to go there. The general rule is to stay out of the middle, because velocity and topographically oriented shifts tend to come in from the sides, leaving the middle competitors in a "being passed by boats from both sides" syndrome.

Get out to the starting line early and sail the course to test the wind and monitor the compass carefully to build a history of the conditions.

Watch the wind velocity like a hawk. Simon Smith pays close attention to how puffs "fan out" on the water. If they fan to the side, it's generally a lift. If they fan to the bow, it's generally a header. Simon commented that being able to anticipate these shifts when the velocity "touched down on the water," was an important reason for his team winning the 1995 J24 world championships, held on Lake Ontario, from Rochester NY.

Chris Winnard emphasizes **exercising patience when sailing up one side of a lake on a weather leg.** It's easy to panic and tack towards the middle when you see a group of boats in that direction temporarily sailing higher and faster. He advises, however, to wait it out and let your side of the course come in with its own shift and velocity. Otherwise, one tends to chase elusive puffs all day - often for naught.

Watch the fleets in front of you, when possible, to observe from which side of the course the crossing boats up the course are coming. This can help you to determine the favored side

As a general rule, **go to the side of the lake that is closest to the weather mark.**

As a general rule, **cross the lake at its narrowest point.** This will avoid sailing a long distance across the lake, thus missing out on topographical and shoreline velocity.

Watch smoke on the land or water to detect windshifts. Especially, when we are becalmed, we watch the team on *Cheap Dills* carefully as they pass boat after boat with a "Winston Genny" smoking away. (The Surgeon General's warning doesn't mention this innovative behavior!).

Always tack or jibe in velocity. This keeps you at top speed. When tacking, we always wait for velocity and then roll aggressively, so our direction change has maximum gain and minimal loss. By the same token, the forward crew's downwind role is to watch for puffs, so that any jibe is performed in velocity while moving towards

more velocity. The importance of good roll jibing technique cannot be overemphasized, because you "spend" less distance and energy with a smoother maneuver.

All crew movements should be smooth, especially in light air. This applies to everything, from shifting weight on the boat to trimming sails. The smoother your movements, the better.

Above all, keep your sense of humor! The more difficult the conditions, the more important this becomes. For example, when you relinquish your lead in a drifter (which happens to all of us), the key is to keep watching for velocity and to constantly communicate within your team about what is the fastest way to the new velocity. By keeping perspective in this way, you will not be behind for long!

I hope these pointers prove useful in your lake sailing experience.

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