



Starting strategy

Keep the big picture in mind

There is definitely a lot more to starting than how soon you get across the line after the gun. You can't treat starting simply as an "end" in itself. When the race is over, no one cares who was ahead at the beginning. You have to view the start as a means to an end. The ultimate goal is to be in a good spot when you cross the finish line, and any start is valuable only to the extent it helps you do that.

A good start is made up of a number of different elements, including clear air, good boatspeed, and good strategic position. Let's discuss the last criterion, which is what I call the macro view, or "big picture," of starting. The easiest approach is to pretend there are no other boats on the course, and decide where on the line you should start in order to get to

the first mark as quickly as possible. Figuring out this starting position is sometimes pretty straightforward. If the wind has been clocking to the right all day, for example, it's obvious you should start very close to the righthand end (unless the lefthand end is much more upwind). There are other times, however, when starting can be a little trickier. In these situations, you need to take a more methodical approach:

STEP 1: Figure out the wind trends. Your first job in formulating a *start* strategy is to put together a *race* strategy. The two go hand-in-hand. Therefore, the best thing you can do is go out to the starting area early and gather the information you need to get around the course (see graph on page 7). The important questions you'll want to ask

Starboard exceptions

You are sailing on a starboard tack, and you're converging with a boat on port tack. In most situations like this, you have right of way. However, there are at least six times when you must alter *your* course to stay clear of the port tacker. How many can you name? (See page 11 for answer)

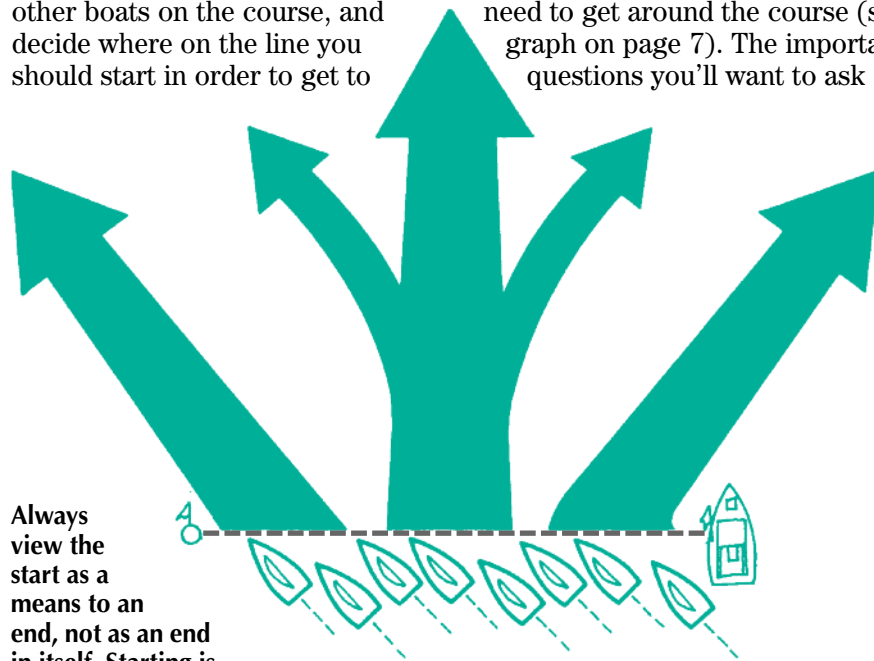


QUICK QUIZ

include: Where is the most wind velocity? How is the wind shifting? and What is the current?

Your answers might sound like:
A) "The puffs look stronger on the right side, and the wind is steadily shifting clockwise"; or
B) "The wind is oscillating regularly, with starboard-tack headings ranging from 280° to 305°"; or
C) "The current is flowing in the direction of the wind, but it is weaker to the left of the mark where the water is not so deep."

ake these observations continu-
(continued on page 2)



Always view the start as a means to an end, not as an end in itself. Starting is the first step in implementing your race strategy, so make sure your position on the line sets you up for where you want to go on the first beat. If you're not sure which side is favored, start closer to the middle and postpone your decision until the choice becomes more obvious.

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Welcome . . . to the premier issue of *Speed and Smarts*! If you're like most racing sailors I know, you are eager to learn. And there's nothing you'd like better than improving your race results next summer. That's why I've started this new instructional newsletter.

Every month I will share my experience and ideas on how you can sail your boat faster and smarter. I'll give you practical and useful tips, techniques and strategies to help you win more races.

Of course, winning isn't everything. As Stuart Walker once said, "Winning may be the object of the game, but it is not the object of *playing* the game."

To me, the object of playing the game is to have fun and do the best possible. You probably won't win

every race, but you can always learn how to improve your performance the next time out. I call this the "no-lose approach" because, if you take this attitude, you'll be a winner every time.

It is in this spirit that I have started *Speed and Smarts*. This newsletter is written for all racers, including skippers, crews, men, women, one-design and big boat sailors. If you'd like a useful, expert approach to racing that is guaranteed to improve your performance, I hope you'll become a subscriber. And if you have any questions or comments, I welcome your input. Thanks and good sailing!

David Dellenbaugh

J.H. Peterson photo

Starting Strategy

(continued from page 1)

ally, because the wind is always changing. Don't just figure out what the breeze is doing half an hour before your start and then stop watching.

STEP 2: Strategize for the first beat.

Once you feel like you have a good handle on the wind and weather, figure out specifically what you want to do on the first beat, especially during the first half of the leg. Which side of the course do you like? How far do you want to get to that side? How much will you play the shifts? You should have this strategy firmed up by the time your warning gun goes off, though you must revise it whenever necessary.

Based on the observations listed above, you might come up with the following strategies:

- A) "Since we expect a persistent shift to the right, we want to get to the right side of the course early in the leg, but we won't go too far and risk overstanding."
- B) "With a puffy, oscillating breeze, we'll stay in the middle as much as possible all the way up the leg."
- C) "There's better current on the top left part of the course, so we'll gradually work in that direction."

STEP 3: Check the starting line.

Before we can use our first-leg strategy to come up with a starting plan, we need one more piece of informa-

tion – the attitude of the starting line. Basically, we need to know which end of the line is "better" (i.e. farther upwind), and by how much, since this will affect where we want to position ourselves at the start. (There are a number of ways to figure out which end of the line is favored, and I'll discuss these in a future issue.)

STEP 4: Develop a macro strategy for the start.

Now we're ready to put everything together and come up with a master strategy. The goal is to choose our starting position and consider any moves we're going to make right after the start. If the starting line is square, our strategy for the situations above might be:

- A) "We want to get to the right early, so we'll start at the committee boat and tack as soon as possible."
- B) "With an oscillating breeze, we're going to start in the middle of the line and just play the shifts."
- C) "Because the current is weaker to the left of the weather mark, we'll start about a third of the way from



The driving force behind every start should be your first-leg strategy. If you want to go right, for example, don't get pinned in the position of 1342 or the boats to leeward of her. GBR-1187 has the best position for tacking to the right; she is also far enough to windward of Bow 77 that she can probably keep going left too.

the pin and slowly work left."

Note that in each situation (A, B and C), your position on the starting line corresponds roughly to the place you want to be on the first beat. Of course, you will modify this somewhat according to what you discover in Step 3.

For example, let's say you like the middle of the course but the starboard end of the line is favored by 10°. Instead of starting right in the middle of the line, shift toward the committee boat. A good spot might be about a quarter of the way down the line from the boat. ●

Sheer Strategy

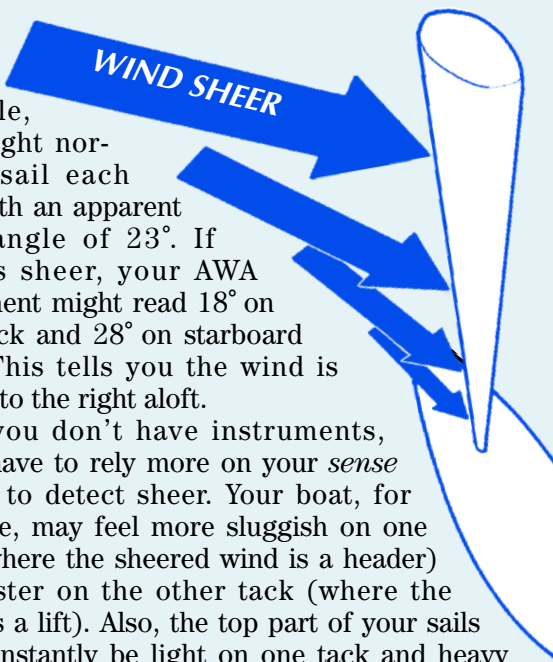
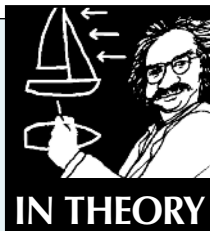
One thing that can be very helpful for strategic planning is information about wind sheer. **Wind sheer** is a change in direction of the wind from one height to another. When wind sheer exists, the wind direction at your masthead might be as much as 10 or 20 degrees different from the wind direction you feel at (or slightly above) sea level.

If your boat has *instruments*, it's easy to identify sheer. Just look for differences in boatspeed and/or apparent wind angle (AWA) from one tack to the other.

For example, you might normally sail each tack with an apparent wind angle of 23°. If there's sheer, your AWA instrument might read 18° on port tack and 28° on starboard tack. This tells you the wind is shifted to the right aloft.

If you don't have instruments, you'll have to rely more on your *sense of feel* to detect sheer. Your boat, for example, may feel more sluggish on one tack (where the sheered wind is a header) and faster on the other tack (where the sheer is a lift). Also, the top part of your sails may constantly be light on one tack and heavy on the other.

It's important to know about sheer because very often sheer is an *indicator of a windshift* to come. If the wind is sheered one way up top, for example, it's a good bet there will be a similar shift at surface level sooner or later. Your strategy is to head toward this next windshift. Do this by staying on the tack with the slower speed, the smaller AWA, the lighter sail tops or a more sluggish feel.



UPDATE *Not updated for current racing rules!*

Appealing changes

If you're serious about your racing (or judging), you probably use the published interpretations of the racing rules when preparing for protest hearings. But did you know your current appeals book is out of date? Worse yet, the next time you cite a case from that book, you may discover the appeal no longer exists!

To stay up-to-date on the appeals (and avoid potential embarrassments), I strongly suggest you get a copy of the new International Yacht Racing Union (IYRU) Case Book or the U. S. Sailing Association (USSA) Appeals Book (or the appropriate publication from your national authority). Both have just been completely updated so all interpretations conform to the new 1993-96 racing rules.

Changes to the IYRU Case Book

The IYRU Case Book ("Interpretations of the International Yacht Racing Rules 1993-1996") is compiled by the IYRU Racing Rules Committee. This group reviews the appeals cases that are submitted to it by national authorities, and publishes those that help to clarify the meaning of particular rules. The latest changes include:

Cases deleted: 4, 18, 23, 37, 41, 54, 59, 69, 74, 81, 94, 97, 100, 104, 118, 122, 125 and 139.

Cases added: 149 (was Royal Yachting Association 71/6), 150 (RYA 93/2), 151 (was U.S. Sailing Association 195), 152 (USSA 231), 153 (USSA 232), 154 (USSA 281), 155 (USSA 282), 156 (USSA 283), 157 (USSA 285), 158 (USSA 289), 159 (USSA 290), 160 (USSA 291), 161 (RYA 92/1), 162 (RYA 92/10) and 163 (USSA 53).

Revisions in the USSA Appeals Book

The USSA Appeals Book is organized by the USSA Appeals Committee, which publishes those decisions it makes that are particularly helpful in clarifying the meaning of specific rules. *Tentative* changes include:

Appeals deleted: 3, 60, 86, 113, 121, 129, 135, 142, 151, 153, 166, 185, 205, 212, 230, 237, 238, 241, 242, 255, 270, 274 and 284.

Appeals added: 293 (redress), 294 (bowsprits).●

● **For further info:** *The new IYRU Case Book is available from the IYRU office: 27 Broadwall, Waterloo, London SE1 9PL England; Phone 44-71-928-6611; Fax 44-71-401-8304. This A4-size booklet with spiral binder costs £10 (including air mail postage).*


● *The new USSA Appeals Book will be available (for about \$20) from U.S. Sailing, Box 209, Newport, RI 02840; Phone 401-849-5200; Fax 401-849-5208. This loose-leaf, 8.5 x 11", 3-hole-punched package will also be available on disk. The book contains all the USSA appeals and IYRU cases; the price also includes 3 annual supplements covering all new appeals through 1996!*

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Melges magic

The “Wizard of Zenda” shares his experience and insights on how to develop a successful strategy.

Since 1986, I have spent more than 200 days sailing with Buddy Melges, and I can honestly say he is a bit of a magician. His ability to read the wind on the water and feel a boat's pulse is legendary. And, as you will see in this interview, he has a lot of good, practical suggestions that will help anyone who's trying to sail faster around the race course.

DAVID: Buddy, I know you feel preparation is a big key to success. What routine do you follow when you're getting ready for the start?

BUDDY: “We try to get out to the race area roughly an hour ahead of time. We aim for a spot about a mile to leeward of the starting line. Then we beat up through the line and go at least another mile to windward.”

As we sail to windward, we record our headings in pencil on the gel coat so we have a record of the wind. We use the port and starboard headings to figure out the phasing that is taking place because that later helps us determine our strategy. We also go through a bunch of tacks and jibes to warm up the crew and get them thinking.”

Do you spend any time tuning up with other boats before the start?

“If we can do our upwind sailing with another boat we always like that because it lets you know if a little tweaking is necessary. It gets you up to speed in the open field. But those settings that we go to for optimizing boatspeed are not the ones we go to at the starting line. When we come off the line, we want to be at our ‘horsepower’ marks, not the ‘high-speed’ marks.”

For tuning, I recommend picking someone at your own level, at least to start with. Then go with him

to gain your confidence. If you're really eager to get up the ladder, pick someone faster than you and try to figure out what he's doing.”

How long before the start do you usually formulate your strategy?

“I've never been one to say ‘I'm going to do this’ or ‘I'm going to do that’ on the first weather leg. I try to develop boatspeed, and if I have boatspeed I go off the middle of the line. Then I look for where the good guys are going.”

Those first five minutes you need deep concentration in order to get your boat up to speed quicker. This requires time in the boat so you know exactly where your adjustments are for different velocities and sea conditions. Once you pop out in front, you're in control of your own destiny and you can go with the flow.

The choice of which way to go is really made by my crew. They don't necessarily favor one side or the other, but they tell me where the ‘heavies’ are going. It seems like the majority of the top sailors are almost always correct, so you should go with that flow. Even if I do get run over, I still want to know where the heavies are going so I can stay in their ballcourt.”

That sounds great if you have good speed, but what happens when your speed is average or worse?

“Then you have to use everything at your disposal. If you have no confidence in your boatspeed, you better have good weather information, even before you leave the dock. And you have to be ready to use all the tactics possible.”

The worse your speed, the farther you should move away from the middle of the starting line toward

the end that will get you to the favored side sooner. You also better know how to handle your boat around the starting line so you can carve a big hole and get your boat up to at least its maximum boat-speed, even though it might be slower than the enemy.

When you're sailing a smaller boat against a larger boat, which happens in offshore sailing, everybody wants to start to windward of the big boats. But that isn't necessarily the best way to do it. In fact, if you can get off the line well, it will take a long time for a bigger boat to get over you. Then you can make your decision about whether to let him roll over you, or tack.”

When you need to rely on strategy more than speed, what kind of info do you try to get before the start?

“When I wake up in the morning I look out the window, and I usually know what's going to happen by looking at the wind direction. I also listen to the weather radio for the predicted temperature because I know the wind will usually be directly related to temperature.”

The race course is a small cell in the overall forecasting of what Mother Nature is going to do. So what you have to do is go out there and force her hand by doing wind checks to find out if in fact she's going to turn right as the sun comes up and the day gets warmer.

You also try to use all of the little telltales around that are available to you, like smoke, flags on buildings, flags on powerboats . . . just make sure they're stationary.”

When you are looking upwind at the course, what are the keys to reading the wind on the water?

“You can't just look up the course

and say 'Hey, look at the nice wind.' You have to concentrate on that wind. You have to watch it for more than a second or two. This means a minute, three minutes, four minutes, maybe as long as five minutes. Try to see which way the ripples or whitecaps are moving, so you'll know how the wind is shifting.

The other thing we watch for is any boat sailing out on the race course. A cruising boat is obviously off the wind a lot of times, but you never want to miss when it tacks because this will tell you the exact

increase or a velocity decrease. We all know everyone does very well on increases, but very poorly on the decreases. They sit with their high-speed adjustments much too long, and that's why the good guys sail away when it gets into that up-and-down condition."

If you get out to the race course a little later than you'd like, how do you prioritize your time?

"If I'm disorganized and out there late, I would do the best job possible at getting my boat set up so it's

we are. Then we look for him again on the next crossing and see what has changed. It gives us a sense of which side is better.

Also, as you're going up the first beat, if you see the boats on your hip looking down at you, you better keep sailing. If they're looking up, you better think about getting over there pretty soon. This 'fleet compass' will be more overriding than your onboard compass."

Do you ever start near an end?

"If one end is heavily favored and it's the first race of the series, I'd fight for that end and go for all the apples. If it was further into the series, I'd move a little closer to the middle of the line.

If I like the right side and the pin end is favored, I'd be up off the group that wants the heavy favor. And when that group tacked, I'd have a tendency to tack underneath and lead them back to the favored side of the race course.

If we have a square line with a starboard course favor, my tendency is to start just underneath the starboard group and sail on out and let my boatspeed and boat handling go to work for me.

Early in the series I want to build a point score, but I wouldn't be so desperate as to hang it all

out. Patience is bliss in sailboat racing, and most of us don't have nearly enough patience." ●

☛ **For further info:** *Tune in to future issues for more of Buddy's helpful tips on starting and other subjects. If you can't wait, or if you'd like an in-depth description of Buddy's overall philosophy, get his 192-page book called "Sailing Smart." It's available for \$9.95 (plus shipping and tax) from Melges Boat Works, P.O. Box 1, Zenda, WI 53195, Phone 414-248-6621; Fax 414-275-8021.*



During the '92 America's Cup, I steered *America*³ for the 10-minute pre-start while Buddy played 'strategist.' He kept a constant eye on the wind up the course and didn't let us lose sight of the forest for the trees. This was a key factor to our success in hitting the first shift correctly in almost every race.

wind direction at that point.

Also, I concentrate a half mile or quarter mile in front of the boat when I'm sailing. I have to present my boat for Mother Nature when she arrives, and the only way I know how to do that is to keep my eye far enough up the race course.

This also lets me know ahead of time whether we will get a velocity

fast in the existing conditions. Then I would go to the middle of the line, get my start and begin looking for the heavies."

How would you figure out what the wind is doing?

"The first time we cross tacks with another boat, we identify exactly how far ahead or behind that boat

Dear Dave,

Q I usually have a lot of wrinkles in the lower forward part of my main. Should I pull the cunningham to get rid of these?



It depends. The effect of tensioning the cunningham is to move the draft forward and flatten the sail. You should consider this if:

a) the position of maximum draft in your mainsail is further than 50% aft (which is not uncommon with well-used sails); or if

b) it's windy enough that you need to depower your sail plan and decrease weather helm. Otherwise, sailing with a few 'speed wrinkles' is usually the fastest way to go because it gives the sail maximum power. Of course, before you even touch the cunningham, you should make sure your main halyard is up as far as possible.

Q On runs, a lot of boats in my fleet sail with windward heel. Is this fast and, if so, how much is fastest?

There are at least three reasons why it can be a good idea to heel any size boat to windward when sailing dead downwind:

1) You usually need windward heel to minimize helm in the rudder. While helm helps create 'feel' and lift upwind, downwind it is all drag. So heel the boat to windward until you can let go of your wheel or tiller and have the boat keep going in a straight line;

2) A second reason for windward heel is to minimize wetted surface. On some boats, heeling to windward (and moving weight forward) will actually decrease the amount of hull area that's in the water. This is fast;

3) A third benefit of heeling your boat to windward is that this makes your spinnaker fly farther out to the windward side of the boat. This is good because it gets more of the chute out of the mainsail's wind shadow. ●

Your questions on any aspect of sailboat racing are always welcome. Please address letters to: "Dear Dave," c/o Speed and Smarts, P.O. Box 435, Easton, CT 06612, USA.

★ Every letter published will receive a free copy of my laminated Quick Reference Racing Rules card from Davis Instruments.

Get a handle on wind

One of the most important things about pre-start planning is figuring out what the wind is doing. It's critical to know, for example, whether the wind is oscillating or shifting persistently, since this will make a big difference in your strategic planning. That's why it's important to get out to the starting area well ahead of time – an hour early if possible – so you'll have enough time to sail upwind and identify the wind pattern.

When you are checking the wind, keep a record of your readings. This will make it easier to remember wind data and identify trends. One of the simplest ways to do this is by using a graph such as the one shown at right. This chart is easy to fill out and, with a quick glance, you can tell what the wind pattern has been, where the wind is likely to be at the start and what it will probably do at the beginning of the first beat.

What you're trying to do is figure out two things: 1) the range over which the wind is shifting, and 2) the period, or frequency, of phases. If you know both of these, you can more accurately project what the wind will be doing at the start and, as you sail up the first beat, you'll be best able to use the windshifts to your strategic advantage.

Using a wind pattern chart

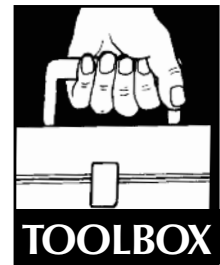
On the facing page I have created a simple graph that you can use to record wind patterns. If you want to use this onboard, take the larger, blank graph and make a copy of it at about 150% (so it fills up a standard letter-size sheet). Then laminate it between two sheets of clear sticky-back plastic. Attach this form to a clipboard, or tape it in your cockpit where it's easy to write on and see. Then get a grease pencil or other erasable marker that will write clearly on the plastic surface. Now you are ready to start plotting the wind!

On your way out to the race course, write the time of your start in the lefthand column just above the word "START." Then label the rest of the lines in five minute (or larger) intervals. Sail upwind on starboard tack for several minutes and figure out your average heading. Write this number in the top row just above the line labelled "MEDIAN."

When you are sailing on your average starboard heading, tack and determine your average heading on port tack. Write this in the bottom row just below the line labelled "MEDIAN." Then fill in the rest of the slots in the top and bottom rows with five-degree (or larger) increments (*see sample at right*).

Once you've filled out all the labels on the top, left and bottom of the chart, you're ready to start filling in your wind data. Sail upwind for a while and record your headings as dots on the graph (● for starboard tack headings and □ for port tack). Try to get a good sampling of readings on both tacks, over the full range of wind velocity and direction. Then you can start con-

nd patterns before your start

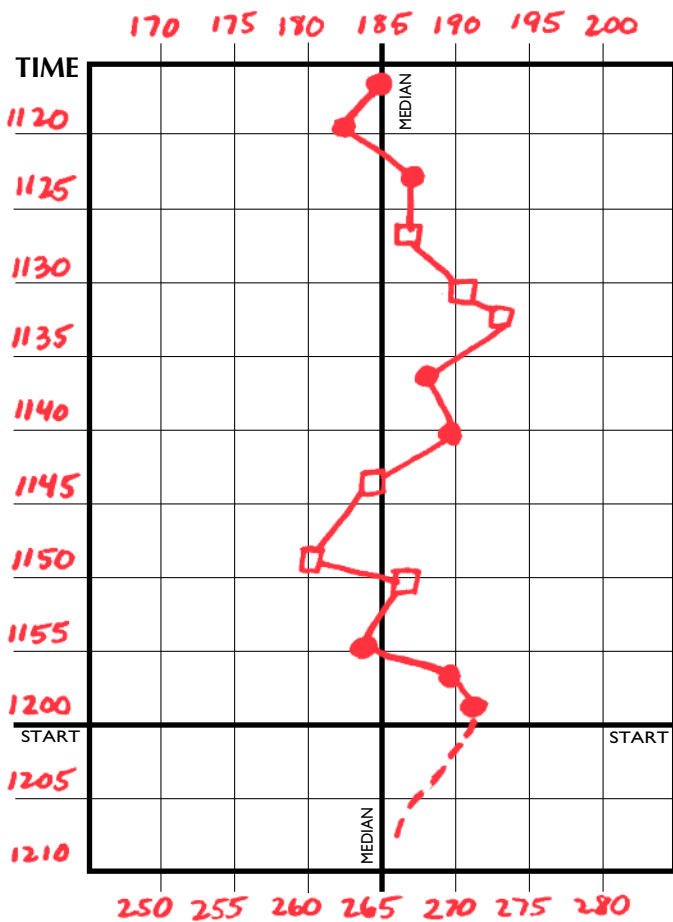


necting the dots. Hopefully, the resulting curve will show some pattern in the wind.

One of the beauties of this tool is that you can easily see what the wind is doing. When the curve swings to the left, it means there was a lefthand shift in the wind. When your dots move to the right, they show a righthand shift.

At some point close to the start, stop recording your headings and project the curve forward until the beginning of the first beat. This is the most important step! Make sure you incorporate this information into your start and race strategies. ●

STARBOARD TACK HEADINGS ●



PORT TACK HEADINGS □

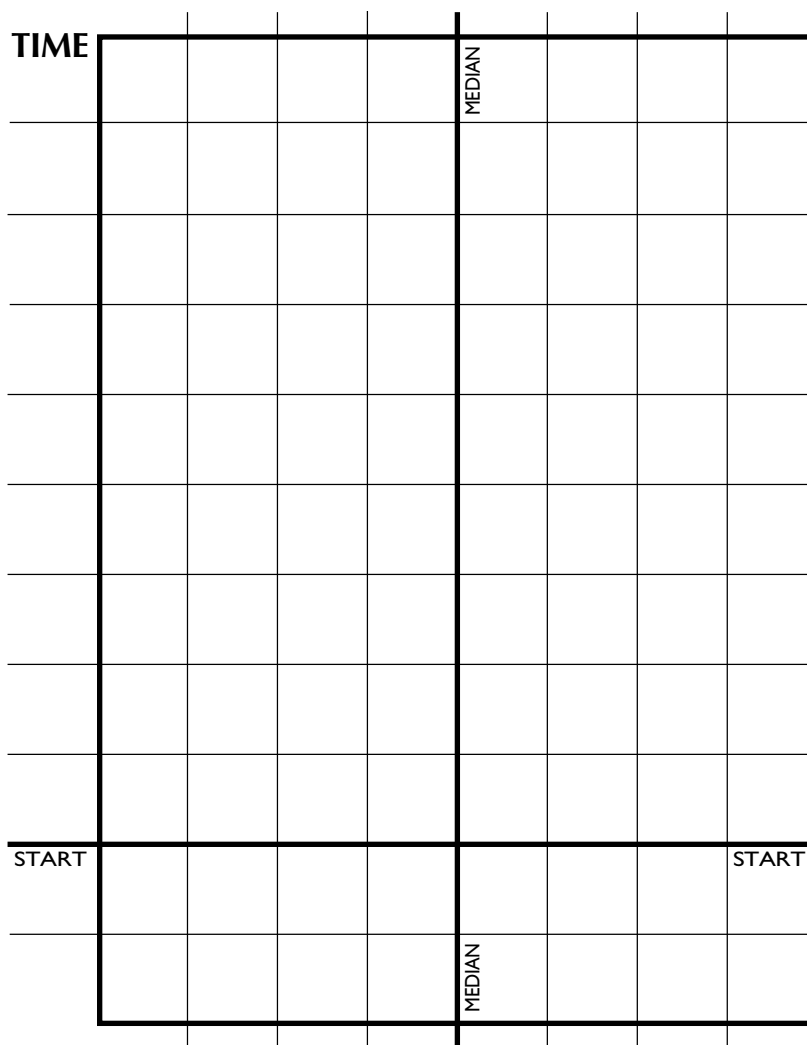
One of the easiest ways to understand (and predict) wind patterns is by using a simple graph of time versus direction (right). By plotting your headings on each tack, you can get a curve showing the amplitude and frequency of wind oscillations (above). Then, if you project this pattern beyond the starting time, you will get a great jump on your race strategy.

TIPS Try to get in the habit of taking your pre-start wind readings while you are on a tack, not head to wind. The reason is that head-to-wind readings are useless after the start. (If you really need to know the actual wind direction, simply bisect the angle between tacks.)

■ Make sure you get good starboard tack numbers before the start. These are critical when you come off the starting line for knowing if you are lifted or headed. They're also important because, during the starting sequence, you will check the wind by sailing closehauled on starboard tack (so you have right of way).

■ Don't forget to keep taking wind readings between the 10 minute gun and the start. This is the most valuable wind data of all because it is the closest in time to your actual race. It's too easy to get preoccupied with everything else that happens during the starting sequence – so keep your head out of the boat!

STARBOARD TACK HEADINGS ●



PORT TACK HEADINGS □



Tune up with a friend

In sailboat racing, speed is relative. No matter how the boat feels, or what your instruments say, the final measure of boatspeed is how fast you go relative to your competition. When you're trying to get up to speed, therefore, there's nothing better than getting a little help from another boat.

Two-boat testing is quite easy to do because all it requires is one other boat and a joint desire to get better. You can set up special sessions for speed testing, like we do in practicing for the America's Cup, or you can simply hook up with a friend half an hour before your next race. In either case, here are a few tips on how to gather useful information in an efficient way.

The casual pre-race tune-up

Make it a habit to sail upwind (and downwind, if possible) with another boat before every race you sail. This will give you a chance to get your boat up to speed in the existing conditions, start focusing on the upcoming race and, hopefully, build your confidence. It's important to do this on all kinds of boats, especially when: a) you weren't too fast the last time out; or b) you are racing with new people and need some time to work on your sail-trimming communication.

The best thing about a quick tune-up like this is that it's easy. You don't have to plan ahead, and it doesn't require much cooperation with the other boat (beyond getting into a good testing position – see diagrams). Both boats simply sail as fast as they can. If you aren't going fast, change a few things until you are happy with your performance.

I recommend picking a friendly competitor who will give you some tips if you aren't quite up to speed. Also, try choosing a boat that is usually the same speed or

just a bit faster than you are. That way you will have a good target to shoot for.

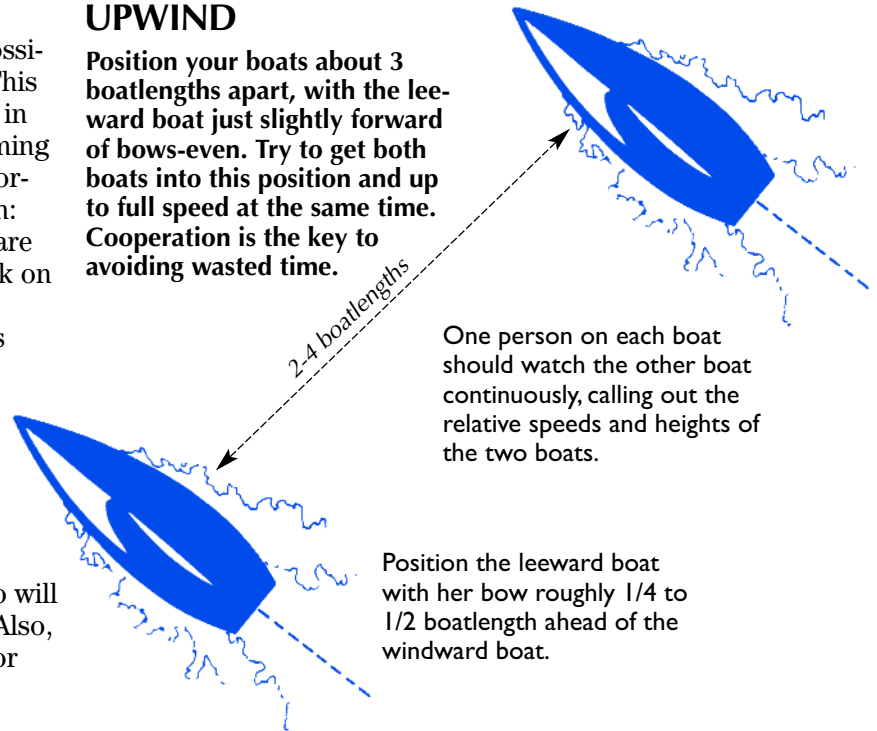
The more serious speed test

If you'd like a more scientific (and more effective) approach to two-boat testing, set up a practice session on a non-race day. Choose a tuning partner who will be open, honest and cooperative, and who usually sails at least as fast as you. Then follow these 9 steps:

1 Before going out, sit down and identify the variable(s) you want to test. For example, you might want to find out if it would be better to sheet your genoa a little more inboard. Or, on a windy day, you might want to see if it's better to raise your centerboard and move your center of lateral resistance aft to reduce helm. ➡

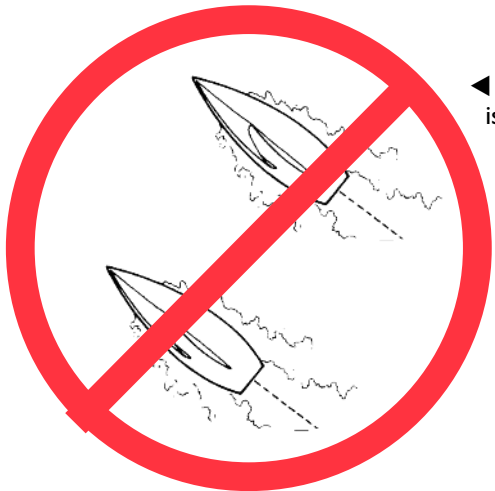
UPWIND

Position your boats about 3 boatlengths apart, with the leeward boat just slightly forward of bows-even. Try to get both boats into this position and up to full speed at the same time. Cooperation is the key to avoiding wasted time.

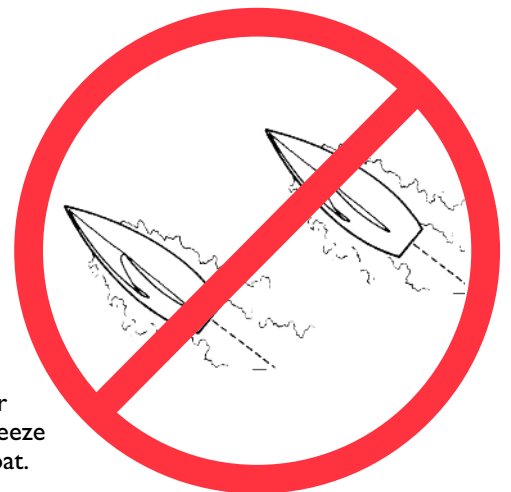


One person on each boat should watch the other boat continuously, calling out the relative speeds and heights of the two boats.

Position the leeward boat with her bow roughly 1/4 to 1/2 boatlength ahead of the windward boat.



◀ The windward boat is starting too far ahead, and it will be too easy for her to foot off and roll over the leeward boat.

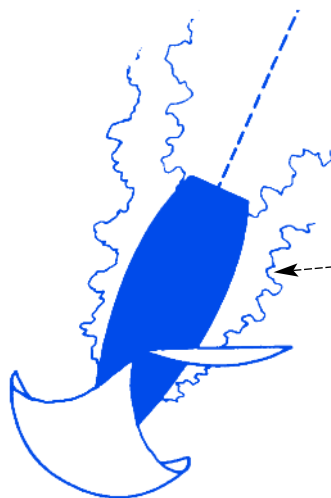


▶ The leeward boat is starting too far ahead, and it will be too tempting for her to pinch up and squeeze off the windward boat.

DOWNWIND

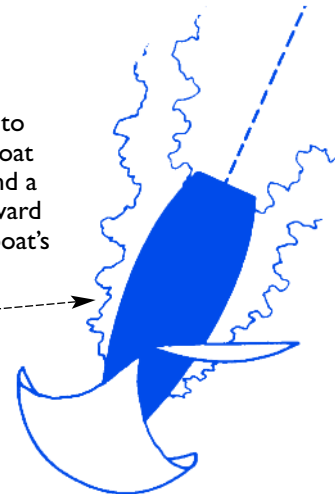
The boats should be about 4 boatlengths apart laterally, with the leeward boat not quite overlapped with the windward boat. Once you're in this position, both boats should sail their normal downwind angles (i.e. the course that maximizes their VMG).

Both boats must have their apparent wind free of the other boat's wind shadow.



In light air, you have to move the leeward boat slightly farther aft and a little more to windward to avoid the other boat's wind shadow.

Make sure the leeward boat is clear of disturbed water (i.e. wake) from the windward boat.



2 Decide which of the two boats will remain constant (the “Control”) and which one will try out the various changes (the “Test Boat”).

3 Start out by setting the boats up as evenly as possible. This includes crew weight, general tuning, sails, trim adjustments, etc.

4 Put the two boats in the upwind test position (left) and start sailing. Sail until either a) one boat is obviously faster, or b) the boats get out of position (due, for example, to a windshift). Repeat the test with the same boat to leeward; then change sides and do at least two more tests. Continue as long as necessary until you get consistent results.

5 When you first hook up, you are trying to get an idea of the relative base speeds of each boat. This initial tune-up might take a few minutes or a couple hours, depending mainly on the steadiness of the wind.

JH Peterson photo



These two Melges 32s are racing, but they're also in a good position to compare upwind speed and pointing. Though they can't get feedback from the other boat, they can try testing different sail trim changes.

6 Ideally, you'd like to start with both boats going exactly the same speed. Then you can change one variable and clearly see the effect. However, this is not essential, as long as you know which boat is faster and by how much. For example, if you know Boat A usually gains one boatlength in 5 minutes of testing, then you can measure future changes against this standard.

7 Once you are comfortable with the base speeds, change one variable on your Test Boat and go through the testing procedure again. To get the most definitive results, leave the Control constant and change only one thing at a time on the Test Boat.

8 After each test, sail over to the other boat (if you're testing upwind, head downwind) and talk about what happened. Be honest. Continue discussing until you both agree on which boat was faster and by how much. Be sure to consider the effect of external variables such as windshifts.

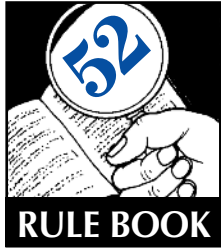
9 Repeat this procedure, changing sides, until you get consistent results. Many times you will get inconclusive results and you may not learn much about the variable you are testing (or you'll learn it is equally fast in different settings). Discovering a change that leads to a measurable increase in speed is one of the most exciting parts of sailing. It means you will have a little bit more of an edge the next time you go racing!

No matter how conclusive your results are, two-boat tuning will definitely help you become a better sailor. Besides improving your speed, it teaches you concentration and keeps you focused on going fast whenever you're near other boats in a race. ●

TIP When you are speed-testing with another boat before the start of a race, be sure to use this time for your *strategy planning* as well. Straight-line sailing is a great time to learn about the wind by recording compass headings. It also usually takes you to different parts of the course where you can study the wind and current. And sailing with a partner (even right next to them) will often give you a good idea of whether it's generally better to be on the left or right of other boats.

Exonerate yourself after hitting a mark

Twenty-five years ago, hitting a mark meant you had to “hit the showers.” Then, in 1969, because that punishment seemed too severe for the “crime,” the international racing rules were modified to offer a reprieve for mark hitters: You could exonerate yourself by re-rounding the mark.



This gentler alternative worked well for 20 years, except when boats were trying to re-round a mark in a crowd and it was unclear who had to stay clear of whom.

In 1989, in an effort to clean up that part of the rule, the penalty for hitting a mark was changed to two circles done when clear of the mark and other boats. Now, in the most recent rule changes, the penalty has been reduced to *one* circle!

The requirements of rule 52

Racing rule 52.1 says you must not touch a mark; when you do, rule 52.2(a) allows you to exonerate yourself by sailing clear of other boats as soon as possible and immediately doing a 360° turn, including one tack and one jibe (see text of rule in box).

According to rule 45, you lose all your rights when you begin to get clear, and you don't regain your rights until you have completed the penalty and are on a proper course to the next mark (see diagram).

Tactical tips when you hit a mark

Whenever you *do* happen to hit a mark, you can minimize your disadvantage by having a good understand-

ing of the new rule 52. Just remember the following:

- If you hit a starting mark before the preparatory signal (i.e. before you are racing), you have not infringed any rule (see the preamble to Part V and the definition of ‘racing’ in Part I).

- If you hit a starting mark between the preparatory signal and the start, you may (and you must!) do your penalty turn immediately. Fortunately, you no longer have to wait until after the starting gun.

- If you hit a starting mark (e.g. the pin) and you are over the line early at the same time, you can do your penalty turn and return behind the line simultaneously. However, you must get clear of other boats as soon as possible, and you must immediately do a complete 360° turn.

Rule 52 Touching a Mark

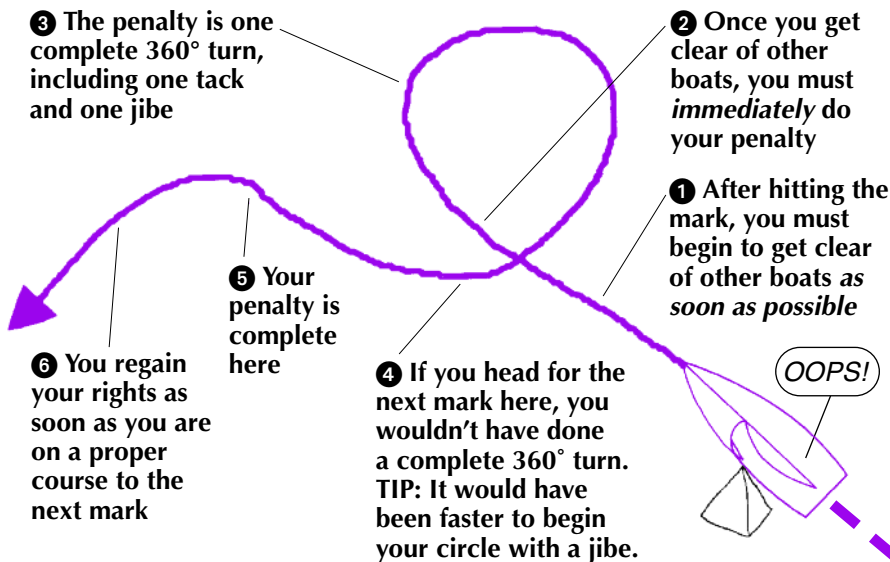
52.2(a) When a yacht infringes rule 52.1, she may exonerate herself by, as soon as possible, sailing well clear of all other yachts and, while remaining clear, immediately making one complete 360-degree turn including one tack and one gybe.

- If you have a choice between hitting a mark or fouling another boat, pick the former. This is safer, and means you must only do one circle instead of doing two (under the 720° rule), taking an I flag, or withdrawing.

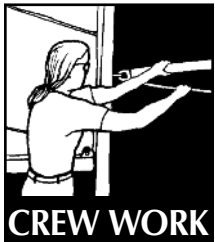
- If you hit a mark and foul another boat at the same time, this is considered one incident, and you don't have to do two penalties. You just have to exonerate yourself for infringing the right-of-way rule by doing a 720° penalty or accepting an I flag penalty (see Appendix B1, rules 1.1 and 2.1).

- If another boat infringes a rule and forces you to hit a mark, you don't have to exonerate yourself. But if the other boat does not withdraw or accept a penalty, you must file a *valid* protest (see rule 52.3 and IYRU Case 120).

- If you touch a finish mark (before you clear the line), you will not be recorded as finishing until you complete your 360° turn, return completely to the course side of the finish line, and then finish (see rule 52.2b). ●



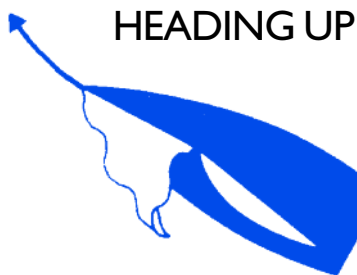
● **Try this:** When you have a few minutes for practice, pretend you just hit a mark, and try some 360° turns. Get your whole crew working as a team, trimming the sails (see article at right) and using their weight to help turn the boat. Your goal is to come out of the turn with as much speed as possible. That way you won't lose much time whenever you hit a mark or need to do a 720° penalty.



Use sail trim to turn your boat

Everyone knows you turn a boat with the rudder. This directs the stern of the boat in one direction and turns the boat by pivoting it around the centerboard or keel.

However, steering with the rudder has a couple of limitations: 1) You can't turn if you are not moving very fast because the rudder only works when water is flowing over its surface; and 2) Steering with the rudder slows you down. The further



If you want to turn the boat toward the wind, the sail trimmers should undertrim the headsail and overtrim the main. This will help the boat turn with a minimum of rudder drag.

you turn the tiller or wheel to one side, the more of the rudder's surface area will be exposed to the flowing water, and the more the rudder will act as a brake.

Because the rudder has disadvantages, you must use other turning methods if you want to go fast. Here's where the crew plays an important role. You may have noticed on a windy day, for example, that the skipper has a hard time bearing off around the windward mark unless the mainsail trimmer dumps the mainsheet. In fact, many times the sail trimmers have more control over the direction of the boat than the helmsperson!

Just like the rudder, your sails can be used to help turn the boat around its underwater pivot point.

☛ **Try this:** On your next practice day, sail to open water and take out your rudder (if possible). Then practice turning the boat with your sails only (you may need to raise the centerboard a bit).

Sailboards are a great example of how this works. Since boards don't have rudders, they rely on the position of the sail for turning. When a boardsailor wants to bear off, she pushes the whole sail forward over the bow. This puts more wind pressure forward of the daggerboard, so the bow pivots to leeward.

The same principle applies to a sailboat. If you want to turn *away from* the wind, pull the jib or genoa in tight and let the main out (below). This moves the effective sail area forward, which pushes the bow away from the wind and pivots the boat around the keel/centerboard.

If you want to head up *toward* the wind, let the jib out and trim the main in tight (left). Now the working sail area is *behind* the center-



If you want to turn the boat away from the wind, the sail trimmers should overtrim the headsail and undertrim the main.

board, so the boat will head up.

As a sail trimmer, you should use these techniques any time the boat changes course. It's very important to ease the main, for example, whenever you are rounding a windward mark, bearing off behind a starboard tacker or trying to keep from broaching on a reach.

Likewise, ease the jib a little any time you are luffing into a tack or rounding a leeward mark. If you do this consistently, your gains around the race course will be significant. ●

You've spent a ton of money on your boat; now spend a little on yourself!

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Not updated for current rules!

QUIZ ANSWER

As a starboard tacker, you have the right of way (rule 10), and you should hold your course to let the port tacker (P) keep clear. In some situations, however, *you* must alter course to stay clear of P:

- 1) P is racing and you have not yet started or have already finished (rule 30.1);
- 2) You were over early at the start, and you are returning to the line to restart (rule 44);
- 3) You are in the middle of doing a 360° turn after hitting a mark (rule 45);
- 4) You are in the middle of doing a 720° penalty turn after fouling another boat (Appen. B1 1.1);
- 5) You're about to round a leeward mark to starboard, and P has buoy room (rule 42);
- 6) P is anchored, aground, capsized or rescuing a person overboard (rule 46); and
- 7) P has not kept clear and you must alter course to avoid a collision (rule 32).

Onboard essentials

Have you ever gotten half way to the race course and realized you weren't wearing a stopwatch? Or tried to protest and discovered you had no red flag on board?



Getting off the dock can be pretty hectic, and it's easy to leave behind some of the most important

racing peripherals. If you keep a handy checklist, however, you won't ever have to worry about forgetting anything.

Here's a list that I recommend using every morning before you leave the dock. Copy this, laminate it with clear plastic sticky-back on both sides, and post it in a convenient place on your boat. Feel free to add any other items for your particular boat and crew.

Now all you'll have to do is remember to check the checklist! Good luck. ●

- 2 stopwatches** Always run 2 watches simultaneously in case one stops or misses the time.
- Sun screen** Use a high SPF number, even on cloudy days, to protect your skin. Don't forget lip balm.
- Water bottles** Drink lots of water; freeze the night before if it's hot. Bike bottles are easiest to drink while racing.
- 2 protest flags** Red, rectangular; B flags ideal. Keep backup in case you lose one. Must be easy, quick to reach.
- Sunglasses/hat** Wear glasses to protect eyes from sun and help you see wind on water. A hat or visor helps too.
- "I" flag** You must have this if the Scoring Penalty (Appendix B1) is in effect.
- Sailing instructions** Keep these in a see-through, waterproof bag. Have all crew read them on the way out to start.
- Rulebook** Great reference for code flags, race committee procedures and important rules.
- Life jackets** Must have one for each crew. Be sure they are comfy and meet requirements of rules.
- Tool kit** Only bare essentials to minimize weight. Include basic first aid supplies in waterproof bag.
- Sailing gloves** Make sure each sail trimmer brings a pair of gloves just in case.
- Wet notes book** Great for onboard lists of repairs and ideas, even when it's wet. Don't forget a pencil or two.
- Boat equipment** Sails, spinnaker pole, sheets, etc. It would be embarrassing to forget these "obvious" items.
- Tide/current info** You need to know times of high and low tide in racing area. Current chart would be great too.
- Foul weather gear** Try to minimize weight here, but I believe crew comfort is always worth a few extra pounds.
- Identification flag** Make sure you have any flag required by sailing instructions, and fly it in the right place.

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