

A Special Edition of **SPEED & Smarts**™

The newsletter of how-to tips for racing sailors

Issue SE-001



Pre-Start Strategizing

Develop a good gameplan

One of my favorite things about sailing is that no two races are exactly alike. Every time you sail out to the starting line you find a unique set of wind and weather conditions. If you want to be successful in this environment, you must be smart and well-prepared.

One of the best ways to get ready for a race is to develop a strategy. This is your plan for how to get around the race course as quickly as possible. It takes into account factors like wind, current and waves, but not the interference of other boats (that's tactics).

Your strategy is an invaluable guide to keep you on the right track throughout your race. It must be in place when you come off the starting line, and this means you have

to begin working on your gameplan well before the start of the race.

There are many things you should consider when putting together your gameplan. Here is a simple three-step process you can use before the start of any race to come up with a solid strategy. The steps are explained in greater detail throughout the rest of this issue.

STEP 1: Figure out what the wind is doing.

I've put the wind in Step 1 because it is often the most crucial strategic factor. In most races, even a small change in the wind can produce a big change in the results. That's why, in most cases, you should think about the wind more than other strategic factors. The wind is



It's always important to go fast, but if you go fast in the wrong direction you will get nowhere quickly. That's why you need a good strategic gameplan that is in place before you even think about starting the race.



This Special Edition #1 of *Speed & Smarts* newsletter has been produced exclusively for members of [US Sailing](#).

almost always changing in both direction and velocity, and you must consider this when making up your gameplan.

STEP 2: Evaluate the current.

The speed and direction of current can have a significant impact on strategy, especially if the current varies across the course. Current exists almost everywhere – from tidal bays and sounds to rivers and wind-driven lakes. Remember that current will affect your sailing wind, so this must be a strategic concern as well.

STEP 3: Check out the course geometry.

Take a look at where the marks are positioned. Is the first mark directly upwind? How far is it? If the course is not set up square to the wind, you should factor this into your strategy since you usually want to sail the longer tack first.

Turn the page for an in-depth explanation of these three steps.

Publisher's Note: *The material in this issue first appeared in an older version of Speed & Smarts. New editions of the newsletter are still being published bi-monthly [here](#).*



STRATEGY

STEP 1 Figure out the wind patterns

The first, and usually most important, step you must take in creating a strategic gameplan is to figure out the wind. Changes in the wind direction or strength can have a huge effect on which boat comes out ahead. So before the start, try to predict what the wind will do during the first leg. If you can do this, it will be easy to figure out the favored side of the course.

Collecting info about the wind

In order to predict wind patterns after the start, you need to gather as much information about the wind before the start as you can. Here are some ideas.

There are two basic ways to collect wind information. The first is by listening to or receiving predictions or forecasts. The second is

by using your own powers of observation to gather data.

Normally, but not always, you get forecasts before you leave the dock each morning. In the U.S., these might include NOAA weather radio, the weather channel on TV or a commercial weather service that gives you forecasts by fax or e-mail.

Observations of the wind are usually made once you are sailing around in the course area. These include all the telltale clues you see (e.g. flags, clouds) as well as all the data you collect (e.g. compass numbers on each tack).

When making observations, don't just sail around the starting area and look upwind. To get good information you should try to sail to each side of the course and experience what's there.

A third, and very valuable, way to get information about the wind in your racing area is local knowledge. Before you go out, make sure you talk to sailors who have spent a lot of time in that racing area. This is a combination of predicted and observed information.

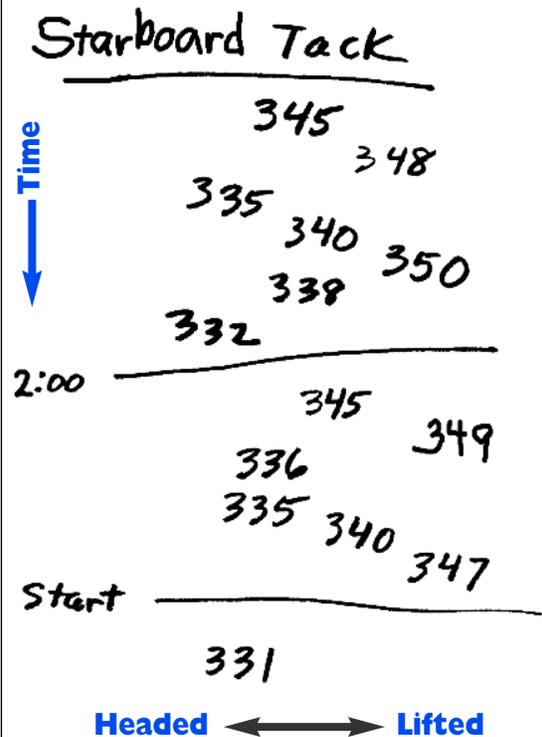
You should usually give more weight to your own observations than to forecasts. That's because observations are specific to your racing area and the time of your race, while forecasts are usually quite general. For example, if the weather radio calls for the wind to shift clockwise, that may happen over the course of a day or an afternoon. But it may have nothing to do with your 15-minute first beat.

Forecasts and predictions will have less and less relevance when your races are shorter and there are more geographic effects in your racing area. The weather channel, for example, cannot know what will happen to leeward of a point of land near your windward mark.

always changing. While there are some times when you may feel certain of a predicted shift, you never know for sure. So you must always keep your head out of the boat and view each moment of the race as completely new and unique.

If you want to predict the wind, you must be proactive, not reactive. By the time you feel the wind on your neck or read it on your instruments, the shift or puff has already happened. So keep your eyes out in front of the boat.

On some days, you may not have the slightest idea of what the wind is doing. That's OK because wind patterns are not always so obvious, even for the best sailors.



A simple way to keep track of changes in the wind is to write your compass headings for each tack in pencil on the deck. I like to write the lower numbers on the left side and the higher numbers to the right (as shown above). This way I can quickly see the range of headings on each tack. It also helps me keep track of the wind trend over time.

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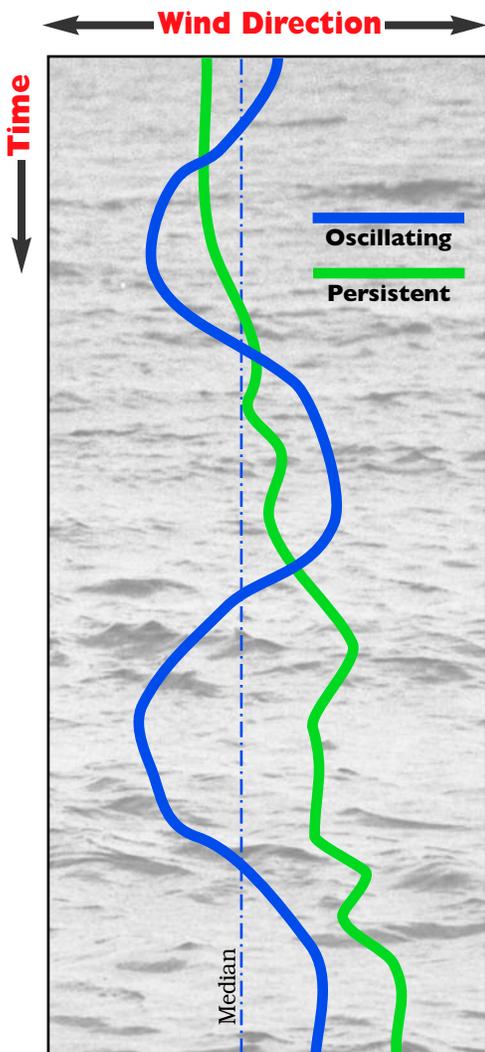
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Rules of thumb for the wind

One generalization you can make about the wind is that it is almost

In these situations, just keep watching for more clues, and stay in a position where you can take advantage of whatever happens.

► Before the start, you must always assess the relative importance of wind versus other strategic factors. For example, will you go left for better wind or right for better



Here is one way to show changes in wind direction over time. The beauty of this kind of graph is that you can extrapolate into the future and make a pretty good guess about what the wind will do next.

You can create this graph with a bunch of wind readings, or use your headings on each tack (as shown at left). The blue line shows how an oscillating breeze shifts back and forth (usually fairly regularly) around a median (average) direction.

The green line shows a breeze that is shifting persistently. That is, it shifts steadily in one direction (with small oscillations) over time.

current? Wind is usually more important because slight shifts in direction or increases in velocity can make a big difference. But this is not always the case.

Wind direction and velocity

When you're collecting information about the wind, there are two important considerations: 1) changes in the wind direction; and 2) changes in wind velocity. Here are some ideas for each.

► When you are looking for wind velocity, the appearance of the water surface is key. In general, darker water means more wind because of the way wind ripples reflect light from the sky. However:

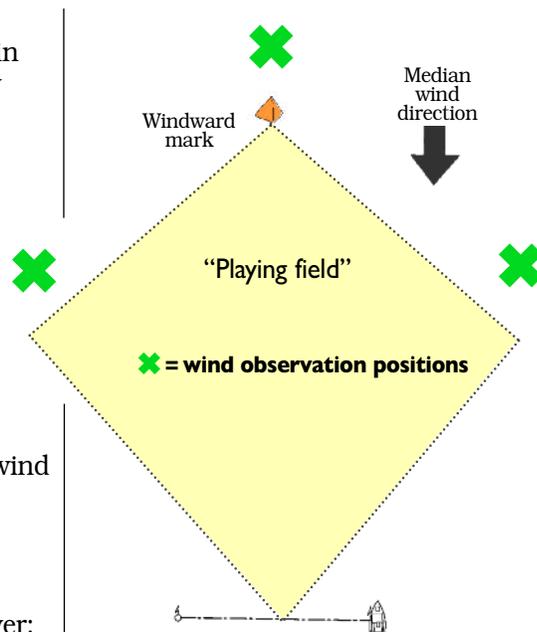
- Glare from the sun can sometimes make more wind look like less wind, and vice versa.
- Sometimes what looks like more wind is really the effects of current.
- Ripple-less water does not always mean no wind because occasionally wind stays just above the water.

► When you're trying to find shifts in direction, it's very hard to tell much by looking at ripples on the water. You have to rely on clues like the angle of other boats sailing farther up the first leg.

► When you're trying to find shifts in direction, it's very hard to tell much by looking at ripples on the water. You have to rely on clues like the angle of other boats sailing farther up the first leg.

► The pattern of windshifts usually falls into one of two general categories - either oscillating or persistent. Before you settle on a strategic plan, one of the most important things you have to decide is whether you will play the wind shifts as oscillating or persistent. How well you make this decision throughout the race will have a lot to do with your success.

► In an oscillating breeze, how much information do you need to collect about the puffs? I usually record only the range of the shifts (e.g. the high and low compass numbers) and not their timing. That's because the range of the shifts is normally what determines



In the '92 America's Cup, we had a sophisticated system for collecting wind data before each race. This included three tenders with wind instruments across the course (above). One boat was about a half mile to windward of the first mark, while the other two were slightly to windward of the corners of the course. Before the prep signal, all their wind data came in to a computer on America³ that displayed a running graph like the one at left.

when you should tack, and it's more reliable than the timing.

► Another important strategic factor is deciding on the relative importance of wind velocity versus shifts in wind direction. In other words, when you are sailing up the first beat, will you sail for better pressure or the next shift? A good guideline is that velocity is usually more important in lighter air while shifts are more critical in breeze.

Since the wind direction and velocity are so important in your strategy, spend a good part of your time before the start collecting information about them. And don't forget to keep doing this throughout the race as well. •

“One of the most important things you have to decide is whether you will play the wind shifts as oscillating or persistent.”

STEP 2

Evaluate the current flow

Another important factor in any pre-start strategic plan is the current. First you must observe and get an accurate picture of how the current is flowing across the course area. Then you have to figure out how this affects your strategic plan.

Collecting current information

Just as you must gather wind data before the start, you have to collect information about the set (direction) and drift (speed) of the current.

✓ Before you leave the dock, look at local tide charts or current charts for predictions about current direction and strength. The relative daily tide height will give you a good idea of how strong the current may be that day.

✓ Don't rely solely on this type of forecast for your strategy, though, since it won't cover the peculiarities of your course area. Make sure you talk to local knowledge gurus, and collect your own observations about current in the racing area.

✓ When you are sailing around before the start, think about two important things: 1) Does the current set or drift vary across the race course? and 2) Will the current set or drift change between the start of the race and the finish?

✓ The best place to see current on the race course is near any buoy or boat that is anchored to the bottom. Marks, lobster pot buoys, the committee boat and other anchored boats are all good indicators, so make sure you sail by these (in different parts of the course) during your pre-start preparation time.

✓ One way to measure current is by placing an object like a sponge in the water near a buoy. Let this sponge drift for 10 minutes and see how far it moves away from the buoy. This will give you a good idea of the current set and drift.

✓ To gauge current in different parts of the course, look around to see where the appearance of the water and waves might look a little confused or unusual.

✓ As you collect information on current, think about the relative importance of this data versus other strategic factors. For example, let's say you observe a half-knot current flowing across your course. In light air this could have a huge effect, so it should be a strategic priority. In heavy air, however, you might not even notice a half-knot current, so you should focus on other strategic factors.

Strategic principles in current

It's important to collect accurate info about current because this will likely affect how you sail the race.

✓ First of all, if the current is the same across the course and it will stay that way during the race, then as far as current is concerned, it doesn't matter which way you go. In other words, it won't matter if you sail the upcurrent tack first or last. All boats are on the same "moving rug" and will be affected equally by the current.

✓ The same principle applies at the starting line. If the current is running from the pin toward the RC boat, the pin is not favored just because it's farther upcurrent.

✓ One place on the race course where current often makes a big difference is at marks, including the

starting and finishing lines. These are fixed to the bottom so they are not part of the "moving rug." As a result, the current will skew all your laylines and rhumb lines.

✓ The current may also have a great effect on course geometry (see next page). Even if the first mark is set directly into the wind, if you have a cross-current, one tack (the one that is more upcurrent) may actually be a lot longer than the other. So consider this when making your first-leg strategic plan.

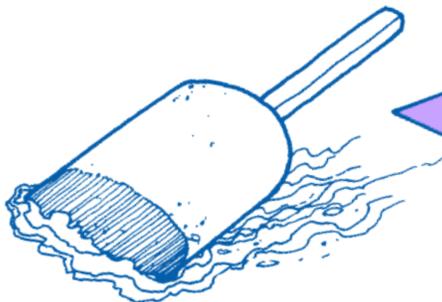
✓ Remember that if the set or drift of the current changes, it will affect not only how you move over the bottom, but it will also change your sailing wind (the vector sum of the true wind plus wind created by current). Strategically, this will make the most difference when the wind is lighter. •

Waves and strategy

Another factor that might influence your strategy is the presence (or absence) of waves on the course. Normally you should avoid bigger waves when sailing upwind and aim for bigger waves when sailing downwind (so you can surf).

However, when you have current the opposite might actually be the case. That's because bigger waves mean either more current flowing against the wind or less current flowing with the wind.

In these conditions, you should actually head for bigger waves on the beats because that is where you will get the strongest push to windward from the current. You will also have a stronger sailing wind (because of the wind caused by current). On runs, sail for smoother water. Though you'll have slightly less sailing wind there, you will probably gain by being in better current.



Unless you have fancy instruments, the only place where you can judge current on the race course is at anchored objects like marks, crab buoys or lobster pots. Therefore, be sure to take a good look at these as you sail around before the start.

STEP 3 Check out the course geometry

When I talk about race-course geometry, I mean how the marks are positioned relative to each other and the wind direction. When you are strategizing before the start, you should be concerned primarily with the location of the first mark. For example, is it dead upwind from the starting line? Here are some other things to consider.

Look for the first mark

One of my basic rules of thumb is that before you get to a mark you should always locate the next mark visually. So when you're sailing around before the start, try to see where they put the windward mark. Then use this information to help plan your first-leg strategy.

The race committee (RC) does not have to designate the course until the warning signal (five minutes before your start), and they may not even have the first mark in place at this time. Therefore, you should first make a strategy using just your wind and current info. Then add in the course geometry when that becomes available.

Under the new rules, you have only five minutes from the time the course is displayed until your start. So try to be around the committee boat at your warning signal. This way you will be sure to see what the RC displays for your course as well as the bearing and

distance to the first mark.

Unless you have no other choice, don't rely on the compass bearing that the race committee posts for the first mark. Just because they post it doesn't mean that's where the mark will be. If at all possible, aim your bow at the mark before the start and get your own compass bearing. This is a good way to double-check the numbers and will give you a first-mark bearing on the same compass you use for your wind readings.

Look at not only the bearing to the first mark, but the distance as well. The shorter the first leg, the sooner you will get to the sides of the course and hit a layline.

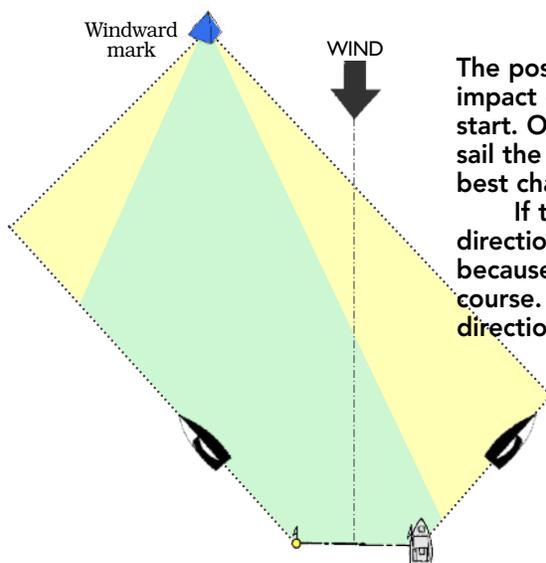
Consider future windshifts. If the first mark is not to windward, maybe the RC thinks the wind will shift. If the mark is to windward but the wind shifts before or while you are on the first leg, then that will affect geometry.

Don't forget the current. As I mentioned on the previous page, even if the first mark appears to be set directly upwind, a cross-current may make one tack longer.

Once you've found the first mark, update your strategy so you follow these basic principles: Sail the longer tack first. Avoid laylines and corners as long as possible. When in doubt, stay closer to the middle of the course. •

The starting line

The angle of the starting line is one of your most important geometric considerations. However, I recommend that you first figure out a strategic plan based on all other factors; then add in the starting line last. One reason for this is that the line is usually set quite late, and the RC can change it until the prep signal. Also, many sailors put way too much importance on the bias of the line and not enough on where they want to go on the first leg. We'll talk a lot more about starting in the next issue.

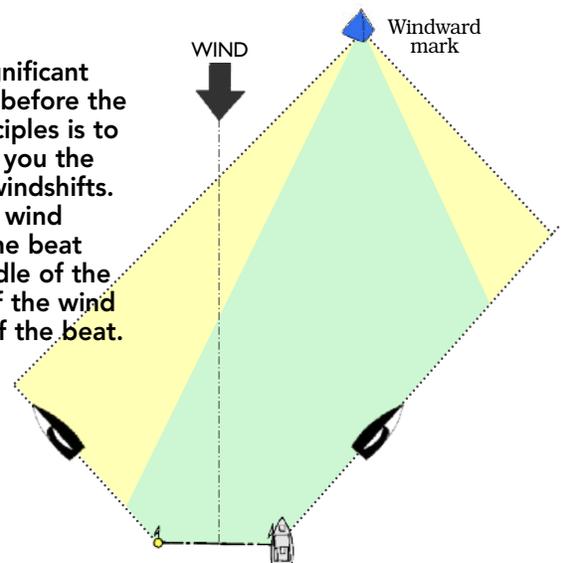


The position of the first mark can have a significant impact on the strategic plan that you make before the start. One of your most basic strategic principles is to sail the longer tack first, since that will give you the best chance of taking advantage of future windshifts.

If the first mark is set to the left of the wind direction (left), that favors the left side of the beat because going left will keep you in the middle of the course. If the first mark is set to the right of the wind direction (right), that favors the right side of the beat.

"Playing field" – the sailing area between the laylines

"Center field" – the most advantageous part of the playing field





Strategize with a partner

When it comes to collecting strategic information before a race, it's often better to have a little help than do this completely on your own. That's why you should consider working together with someone in another boat.

According to rule 41 (Outside Help), a boat shall not receive help while she is racing. However, there is no rule against getting or giving help before your preparatory signal or after you finish. In fact, doing so will promote camaraderie and may help improve your chances of picking the correct side of the course.

If you'd like to have a "strategy buddy," try approaching another competitor in your fleet before you head out to the course. Pick someone you think is friendly, smart and cooperative, and see if they'd be willing to work together on strategy before the start. Here are some things the two of you can do:

◆ **Sail around the course area.**

I like to check out wind and current all around the course before the

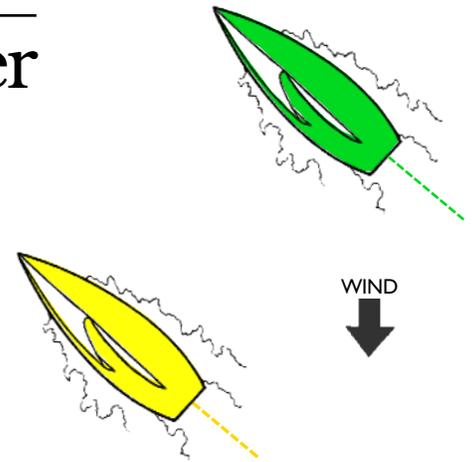
race, but sometimes there isn't time to do this. If you have a buddy, however, you can split the course in half. After each person sails around their half, meet at the starting line to discuss what you learned.

◆ **Check the starting line.**

If you want to determine which end of the line is really favored, work with a buddy. Synchronize watches so you start at opposite ends of the line on opposite tacks at the same time. Then see which boat crosses in front of the other. This will tell you not only which end is farther upwind – it will also show you by how much that end is favored.

◆ **Tune up side by side.**

Speed-testing with another boat is a great way to warm up for steering, changing gears and communication. It's also a perfect time to gather strategic information (see diagram at right). That's because it is very easy to identify lifts and headers when you have another boat right next to you. And by watching the relative performance



When you're preparing for a start, it's a great idea to tune with another boat so you can get up to speed in that day's conditions. While you're doing this, don't forget to watch for strategic clues. Wind oscillations, for example, are easy to see from the relative positions of two boats sailing side by side.

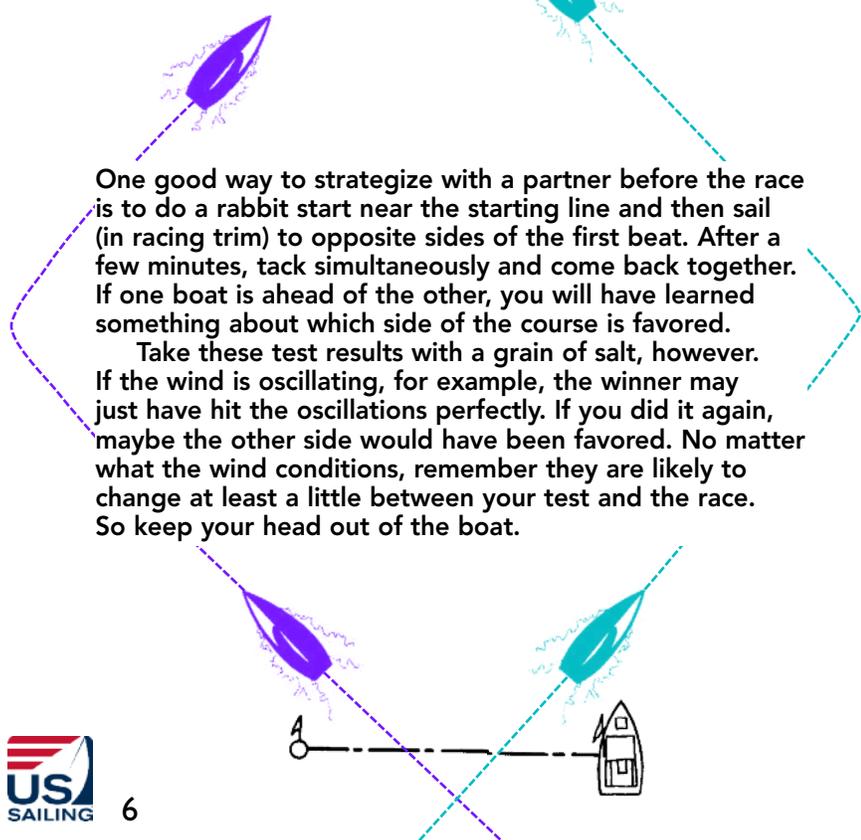
Also, sometimes when you are testing, the boat on the left (or right) side always gains, even when you switch positions. This may not be a result of speed, but a clue that one side of the course is better.

of the boats, you may also get a feeling for which side is favored.

◆ **Split tacks upwind.** Another way to figure out which side of the course is favored is to sail to opposite sides of the course with your partner and see which boat comes out ahead (see diagram at left). Of course, you must keep in mind that the wind may change between your test and the first beat of the race.

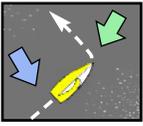
Perhaps the oldest and most common method of sharing strategic information are the discussions you have with other sailors in the clubhouse or parking lot. If you want to be successful, you should learn all you can about "local knowledge" from experienced sailors who race in that area a lot.

These are a few of the things you can do to improve your strategic preparation. As they say, two heads are better than one, so think about working with a partner. Just remember that once you start racing you must handle strategy (and everything else) on your own. •



One good way to strategize with a partner before the race is to do a rabbit start near the starting line and then sail (in racing trim) to opposite sides of the first beat. After a few minutes, tack simultaneously and come back together. If one boat is ahead of the other, you will have learned something about which side of the course is favored.

Take these test results with a grain of salt, however. If the wind is oscillating, for example, the winner may just have hit the oscillations perfectly. If you did it again, maybe the other side would have been favored. No matter what the wind conditions, remember they are likely to change at least a little between your test and the race. So keep your head out of the boat.



STRATEGY

Put it all together and make a plan

In the first half of this issue, we talked about the strategic importance of wind, current and course geometry. Because these factors can have such a large impact on the race results, you must do your “homework” on them before the start of each race.

Once you’ve collected a bunch of observations, or data, you can start piecing these together into a coherent plan for the race. Here are some basic rules of thumb about strategizing.

1. Decide on a strategic gameplan before the race starts.

Don’t wait until after the start to decide which side of the course to play – do this before your warning gun. Of course, you won’t always have a clear idea of what’s going to happen on the first beat. In that case, make a gameplan that keeps you in position to take advantage of whatever develops after the start.

2. Use your gameplan as a guide for tactical decisions during the race.

Once you’ve made up a gameplan, don’t forget about it! Use it as a guide throughout the race. Your plan should help you anticipate what to do before you get into tight situations with other boats. For example, when you are converging with a starboard tacker, use your strategy to decide whether to duck or tack.

3. Keep your strategy flexible.

The wind (or your observation of it) can change at any moment, and when it does your strategy will probably have to change, too. Therefore, be flexible. Keep reevaluating your gameplan during the race based on new data you collect and observations you make.

4. Continuously collect new data to update your strategic gameplan.

The race course is a dynamic environment, with wind, current and waves that change constantly while you are racing. Therefore, keep your head out of the boat. Use all the clues around you to see things that may affect you strategically, and work these into your plan.

A sample game plan

As you approach starting time, pull together all the predictions you’ve heard (e.g. weather radio, local knowledge) and the observations you’ve made (e.g. wind direction during the last hour). Try to involve all your team members in this process by sharing the strategic information with them. If you have time, ask everyone to explain what they’ve seen around the course during your pre-start preparation time.

Once you’ve identified all the strategic ingredients, prioritize them. In other words, try to assign a relative importance to each one. For example, are differences in wind velocity across the course more or less critical than changes in current?

By your warning gun, you should have a specific plan for at least the first windward leg. A sample strategy might sound something like this: “The breeze is oscillating, but also shifting slowly to the right, and velocity looks steady across the course. Therefore, we will play the shifts up the beat, working to the right but being careful not to overstand. We’re thinking about a jibe set at the first mark.”

Don’t forget to factor in the geometry of the first mark and starting line once they are set. Also, make sure before you start that you have set up a system to keep collecting data while you are racing. For example,

you may assign one person to track wind shifts continuously and another crew to watch for current on buoys you pass. This information will be key for updating your strategic plan when conditions change during the race. •





BRAINSTORM

Pre-start warm-ups

If you want to be at your optimum performance when the starting signal goes off, you need to warm up beforehand so you are ready, both physically and mentally. Here are some things you can do to prepare for any race:

→ **Stretch your body** – Most people underestimate the physical requirements of sailboat racing. Almost any boat can be tiring, whether you are hiking or trimming in heavy air or crouching to leeward in a drifter. So make sure you stretch all your appropriate muscles before you get started. This will prevent injury and help you function more efficiently.

→ **Drink water** – The human body needs a lot of fluids, especially when you are exercising in hot, sunny conditions like you find in many races. So drink a lot of water before you start the race (and keep drinking during it).

→ **Practice boathandling** – One good idea for your crew is to practice common maneuvers like tacks and jibes. This will not only get you warmed up, but it will help you remember and fine-tune your boathandling technique.

→ **Sail the leeward leg angles** – If you know the angle of the downwind legs early enough, try sailing these before the race. Set your spinnaker and get used to the wind and wave angles. Is it easy to hold your chute? Which jibe are you on? Can you surf on the waves? These things are good to know before the race, plus this practice will help your helmsperson and chute trimmers get in sync.

→ **Hold a crew meeting** – This mental warm-up is always a good idea because it helps get every crewmember's mind focused on the race. Do this on the way out to the course and you can review your pre-start plan as well. Don't forget to go over the sailing instructions so everyone knows what's going on.

→ **Get ready mentally** – When you stretch your muscles, don't forget to prepare your mind, too. Some people need quiet time, others visualize success and most benefit from some kind of inspiration. Encourage your crewmembers to do whatever they need to be totally ready and psyched up.

→ **Check for possible breakdowns** – This is a good exercise that can help avoid disasters and build confidence. You should actually do this before leaving the dock, but it's a good idea any time before the start.

→ **Sail around the course area** – If you have enough time, one pre-start goal might be to sail around the entire course area (and round the marks if they are set). This will allow you to experience the wind and current on both sides of the course, which will be a big help in planning your strategy. •



It's always a smart idea to give your hiking straps a good testing before the start. This will ensure that the straps are secure and adjusted correctly. It also lets you practice hiking technique and stretch out the muscles you will use. Besides, you have to hike hard for at least a little while to get an accurate idea of your boatspeed before the race.

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