Settings and Techniques to Maximize Boat Speed

(David Ames)

Wind Range 15-20 kts

In medium to heavy sailing conditions your ability to properly de-power the Flying Scot and your boat handling are as important as having a good start and playing the wind shifts. In 15-20 kts. the focus of your upwind technique should be on steering to the jib tell tales and managing the heel of the boat with the vang and the main sheet. Ideally, you want to minimize the amount of feathering that you have to do and keep the boat on a slight leeward heel (5-7 degrees) to sail at the best VMG. Staying in phase with the wind shifts is still important because it helps reduce the amount of distance sailed in the race and can help a lighter crew compete with heavier boats. Downwind you should focus on being on the headed jibe at the weather mark and then make the determination to sail high or low based on where you see the most pressure.

Mast Rake: 28' 5" **Headstay Tension: 120-150 lbs. for snug jib shape.**

Halyard Tensions – The best way to judge halyard tension is to sail down wind and tighten the halyards until there are no wrinkles in the luff of the sails and then sail upwind and make small adjustments to the halyard tensions based on the luff wrinkles.

15 kt Range. Sailing upwind there should be some horizontal wrinkles in the main and the jib halyard should be tuned slightly tighter so that the luff of the jib should have the slightest hint of a horizontal wrinkle. You are still trying to power up the sails and hike hard to achieve the fastest boat speed. No cunning ham yet. Strap the outhaul.

20 kt range. In 20 kts, I actually drop my main halyard until the boom is just above level with the vang on. This means dropping the halyard 5-6 positions on the winch. The reason I drop the main halyard is to de-power the main and prevent inversion in the luff of the main which is super slow. By dropping the main halyard, you are twisting the upper part of the leach which keeps you from having to ease the main beyond the corner of the boat. Easing the main beyond the corner of the boat will kill your pointing and is one of the causes of inversion in the luff of the main. Then, I put vang on to keep the main leach from twisting too much. The cunning ham is tightened to compensate for the lower main halyard. Strap the outhaul. I tighten the jib halyard until there is no wrinkles in the luff. Tightening the jib halyard is like having a jib Cunningham and moves the draft forward helping to depower the jib.

Boat Heel – In 15-20 kts. I am going to divide my boat heel notes into upwind and downwind heel.

Up wind the bottom of the hull shape has the best aspect ratio when you are on a 7-10-degree leeward heel. The center board performs best when the boat is flat but that is at odds with the best wetted surface shape. **Determining the best heel (between flat and 7-10-degrees) depends on the amount of pressure you have in the sails.** If you are sailing in a lull, you should be trying to building pressure in the sails by steering exactly to the tell tales and then let the boat heel up due to excess pressure being built in the main. By allowing the boat to load up and heel you will be able to generate helm and the boat will want to point which gives the best pointing angle and you will be able to hike out more and go faster. In

situations where the wind is above 15 kts. the pressure will build quickly and you will be hiking out and easing the main to prevent the boat from over heeling past 10 degrees. The problem with heeling too much is that the centerboard will begin to slip sideways and you will lose pointing. The best technique is to steer to the telltales and make sure to **not get into a habit of pinching** and then manage the optimal heel of the boat with your mainsheet trim. Pinching to flatten the boat will destabilize the flow in the sails and make the pressure unstable. Pinching to flatten the boat is the biggest mistake I see in most sailor's techniques in 15-20 kts. **What is fast is once you have excess pressure is to steer at the upper range of the tell tales to where you are almost pinching, hike hard, and use the main sheet and vang to keep the boat right in the 7-10-degree heel range.**

Down wind the bottom of the hull shape has the best aspect ratio when you are on a 7-degree leeward or weather heel and sailing the boat flat is slow in all wind ranges. Your decision to choose what heel is appropriate comes from the pressure in your sails. If your pressure is soft in your sails and you want to heat up your sailing angle then you should be on a leeward heel. If you have good pressure in your sails and you want to sail a lower angle to the mark then you should be on a weather heel. I will discuss all the different downwind techniques in a different section.

Sail Trim

The Jib: When sailing upwind in 15 kts the jib should be trimmed in until the upper tell tale on the leach is just about stalled. The foot of the jib is still the critical indicator for how tight the crew should trim and the foot of the jib should be trimmed until a slight horizontal crease forms between the tack and foot of the jib. Trimming based on pressure is the main goal so if you are trying to build pressure make sure both sails are eased 1 inch and if you have good pressure be patient and only sheet in the last inch after the pressure has fully built and you are attempting to point. If you rig is overpowered the crew can over trim the jib to help depower the rig and you will be able to point slightly higher which will help reduce over heeling.

The Main: Ease, Hike, Trim, and then Point/Feather.

The main should be trimmed to manage the heel of the boat. The main and vang are your two main controls that you use in 15-20 kts to make the boat go fast. When a puff hits your boat, you should ease aggressively to prevent the boat from heeling too much. Once you have eased you should hike out as hard as possible to maximize forward boat speed and then you should re-trim the main and load up the boat. I like to feather the boat slightly if the crew is fully hiking out and my boat is in the ideal heel but I will only feather for a couple of boat lengths at a time to prevent pinching. If your main is consistently outside of the corner of the boat you should consider lowering the main to de-power. The vang should be tightened as you ease the main sheet and will depower and prevent the leach from twisting too much. **Do Not Pinch**.

Steering Technique – In 15-20 kts. the wind flow and pressure built through the jib/main slot is dynamic which means that your steering angle will affect the amount of flow through the slot. The only difference from light winds is that stalling mainly occurs from over trimming. In order to accelerate from tacks and lulls, the **sails must be trimmed out about 1 inch from where they would be at top speed**. The skipper needs to steer so that **both telltales on the jib are flowing perfectly straight back** which will maximize the flow. Pressure will build very fast and then you can trim in the main and jib in the final inch

and begin pointing right away. If you feel that you have too much pressure just ease the main and increase the vang sheet to keep the boat on the optimal heel.