

There are several different things that you can focus on when you seek to optimize a boat to participate in a long distance ocean race: reducing boat weight, making sure rig tune and boat trim is maximized, sail and hardware optimization, maneuver efficiency, driving at and above polars, crew efficiency, maximizing safety, etc. Where you place the emphasis will depend on your personal preferences – all will lead to a quicker race. That said, regardless of which objectives are most important to you, the easiest way to increase your chances of having a better race is to adhere to the race safety requirements, required equipment lists, and sailing instructions.

### **Philosophy of the Race**

How aggressive you are on each of the above optimization strategies depends upon your crews' goals for the race. Therefore, your first priority should be defining the philosophy for your race – all boat preparation decisions will flow from there.

Those crews that put priority on setting up a pure racing machine may make weight reduction the primary objective of their preparations and place less emphasis on crew comfort. Some will go as far as hiring boat designers to help calculate changes in righting moment position and implementing hull and boat structure modifications to optimize for the anticipated 70% downwind race. They may also hire sail designers to recut specialized sails in anticipation of 30% close to broad reaching, and 70% VMG sailing.

Others, whose primary objective is to focus on the experience, be a part of an incredible event, and have a life-long memory may focus more on crew comfort. They might choose to take a bit more weight sacrificing some speed for a glass of wine at sunset!

It is VERY easy to spend money optimizing your boat for the race. New sails, new running or standing rigging, new bottom, etc. are all very expensive and will make your boat go faster. However, there are many small things that you can do to optimize your boat both before and once you start racing that will give you greater performance with much less cost.

There is no wrong way to sail this race. But starting off with a realistic goal and objective will drive all of your decisions going forward and help manage your crew expectations. To do that it is important to sit down and really think about what you (as a group) want out of this experience. As much as possible surround yourself with crew who are like minded. Identify your known skill sets, strengths, weaknesses and make sure that each person is honest about their expectations for the race.

Above all else, keep it simple. The more complicated you get with electronics, communication, navigation equipment, watch schedules, rigging, storage, menus etc. the more difficult it will be for your crew to manage all the details as they get more fatigued which you guessed it → leads to a slow boat.

### **Race Rules, Minimum Equipment, Safety and Organization**

First things first - review the rules! The offshore minimum equipment list will be your bible and will establish the minimum equipment that you take (it's a lot, don't worry!) From there you may decide to take more for safety or comfort of your crew, but you may not take less. Try to be as organized as possible. Having one crewmember serve as a designated organizer to manage your document binder with all race documents and equipment lists is an easy way to keep all important documents together and to keep program management moving in the right direction.

### **Physical Fitness**

Get your whole crew in the gym and get in shape! The race to Hawaii is physically and mentally demanding. The healthier and more physically fit you are, the easier it will be to perform tasks quickly and efficiently in the ocean (and at night) leading to better overall boat performance and a faster race.

Hydrate, Hydrate, Hydrate!! Both before the start and during the race – make sure to take in a balance of water and necessary electrolytes!

### **Boat Maintenance**

Do not put off any boat maintenance projects. Now is the time. Try and perform as much maintenance yourself (as a crew) as possible. In the event that any of your equipment breaks offshore you won't have the luxury of consulting with anyone else to get assistance fixing it. If you need a new halyard built and don't know how to splice– now is the time to learn. If you need the oil filter replaced on your engine don't just hire someone to do it – learn how or make sure someone on your crew has that knowledge.

If you think anything may be broken, worn, or not working properly, now is the time to take it apart and find out and then fix or replace it as necessary. Stuck sheaves, cam cleats with broken springs, missing ball bearings, oiling winches are all very simple, quick projects (at the dock!) that will make your experience offshore much easier. The less time spent making repairs offshore means more time resting or racing – both of which will result in a better and faster race. Repairs which are simple onshore can be much more complicated offshore and will add hours to your race. Remember - fiberglass and carbon work is like adult kindergarten; lots of cutting material and gluing things together- you just can't eat this glue!

### **Less is More (aka - Recycle/Reuse!)**

Make smart buying decisions on the few things you do decide to purchase. You need less of everything than you think you do – ie. you only need sporks / bowls for ½ of your crew - as half the crew will be eating while the other half continues to push the boat. The crews swap to allow the on watch crew to eat. There is no need for each crew member to have their own bowl. (Maybe take a spare in case you have a butter fingers on board)

No need to buy everything brand new. If you can borrow something or buy it second hand DO IT! In terms of safety equipment and spares see if you know someone that went two years ago with a similar boat that isn't going this year and call them– you (and they!) will be surprised what they have in their garage. You need a Band it tool (or spectra!).....but not a new one.

### **Weight and Boat Trim**

Weight and boat trim are key – after all you have entered a race and the faster you get to the finish, the better you will do against your “competitors” and the sooner you can enjoy that Mai Tai. The lighter the boat, the faster it will get to Hawaii. As far as the ‘trim’ of the boat, as you start packing all of your provisions, sails, water, safety, spares on board you will notice that your boat sits very differently in the water than when empty or when in ‘normal’ configuration. You want to keep in mind how the weight will affect the boat under sail and pack it accordingly. Think about how much time you will spend on various points of sail and maximize trim for those needs. In addition, you will want to explore the

rules regarding ‘stacking’ and make sure that you have a plan in place to take advantage of the opportunity that those rules allow. If you choose to stack, getting the sails out from down below and on the rail will not only improve righting moment but will also give you more room below which will increase crew comfort which will enable your crew to push the boat harder. If you are going that route, make sure you have a stacking system in place prior to leaving the dock. While it may seem simple to just put everything on the rail you will need a system in place to secure all of that very expensive, very heavy and very necessary equipment so it doesn’t go overboard! (Note: Sails on the rail also provide extra protection to the crew from waves and water!)

We suggest starting the preparation process by emptying EVERYTHING out of your boat. You need to take a hard look at each item that goes on board your boat and determine if you absolutely need this (not *want* this) for the 7-14 days in the ocean that represent your race. You need less than you think! Your world revolves around your watch schedule and sleeping, sailing, eating, hydrating and pooping. That’s about all you will do out there. So the library of books downstairs can go. The extra can of shaving cream in the medicine cabinet can go. (For that matter the medicine cabinet can go!) And for every boat owner in existence, PLEASE EMPTY THE CHART TABLE. The Tides and Currents for SF Bay from 1996 does NOT need to go to Hawaii.

Once your boat is empty of all loose items (We mean ALL loose items: if it isn’t fastened or glued and isn’t necessary, get it off – and if it is fastened or glued – does it need to be?), clean your boat from bow to stern, masthead to keelbolts. Anticipate that everything will at some point get wet and any dirt and grime will end up in the bilge. If you don’t clean your boat, the ocean will do it for you and leave it sloshing around the bilge in a brown, ugly, unhappy mess that someone needs to clean up for the health of your crew. Do yourself a favor and get it cleaned before you get in the ocean.

Aim to have your boat fully packed and race ready one week before the start - except water tanks and perishables. This gives you a chance to confirm everything is stored safely and properly and helps confirm you didn’t forget anything in your preparation. These tasks always take more time than you think. The extra week will give you a chance to get some of your lower priority tasks completed instead of rushing to get those high priority tasks done before the start.

Following the philosophy of reducing weight, you will need less than you think of everything. Toilet paper, paper towels, socks, shirts, underwear (okay, take as much underwear as you need!); you will use less of each than you anticipate.

### **Clean Your (Boat) Bottom**

While putting a new bottom on a boat or a ‘race’ bottom may be outside your budget, ensuring that the bottom is cleaned and as fair as possible before you leave for Hawaii is key! If you have the luxury of hauling the boat and aren’t afraid of a bit of hard work invest in a longboard – it’s character building trust us!

### **Crew Optimization**

Crew optimization is as important, if not more important than physical boat optimization. If your crew is wet, cold, tired, seasick, dehydrated, feeling concerned for their safety, unhappy with another crew member, or just generally physically unprepared they will not be focused on sailing the boat fast to Hawaii. An unhappy crewmember will reduce performance by not focusing on sail trim or

driving efficiently and that negativity will infect the whole crew. If anything goes wrong in the ocean, you want to give you and your crew every possible opportunity to come out of the incident safely and in good health – the more alert and focused they are the greater the chance of a positive outcome in the event of adversity.

While it may seem strange, a major part of optimizing the sailing performance of the boat is accomplished by ensuring that the crew will be comfortable, healthy and happy during the race. The only thing you and your crew should have to do while racing to Hawaii is race, eat, and rest so they can race– not fix things, not build things, not learn new sail configurations, sail changes, or figure out how to work the stove or learn to drive at night!

### **Organization and Cleanliness on Board**

Be **DISCIPLINED**. Organization and cleanliness are key to crew comfort and health and boat performance. After several days offshore, crew will get tired. It becomes easier and easier to leave dishes in the sink (or cockpit bags). It will be so easy to just keep your foulies on and jump into a bunk or just flush the head with four pumps instead of counting to thirty.

This will quickly lead to disorganization onboard which equals a slower boat. If the crew is unable to stay or get dry, if wet gear does not have a place to dry, if you have trash that starts to smell, if the bilge is filthy if the head is unusable your crew will be unhappy and the boat performance will suffer.

Prior to leaving the dock make sure that you have come up with an organizational system that allows for a designated place for each item you will use and a mechanism for keeping it in the same spot. During our double handed race we relied heavily on strategically placed bungee and industrial Velcro to keep things where they belonged (ie. –Floorboards velcroed down / computer velcroed down / cups with Velcro hooks on bottom and loops on the counter surface in the galley). Making sure the soap and sponge are in the same place every time you need them may seem like a small detail onshore but it will save you time and effort offshore which you guessed it → will allow crew to rest more and race harder. The devil truly is in the details. Carabiner hooks for hanging foulies/ wet gear on pre-tied spectra loops hanging in the bow will save a lot of time and keep down below much more organized.

While underway, the object each morning is to have the boat looking the same or better than it did when you started. If done twice daily a cleaning routine is easy to keep up. If each crewmember doesn't do their part it becomes increasingly more and more difficult to keep up with the mess and disaster. This is challenging for race and crew morale. That wonderful experience of drinking wine at sunset that you wanted to remember for the rest of your life? You don't want that memory to be replaced with one of picking up the floorboard in the head to clean the mess that has accumulated over three or four days. Be disciplined from the start to the finish! Clorox Bleach Spray is your friend!

### **Water**

Keep yourself and crew hydrated with plenty of fresh water and electrolytes. A dehydrated crew cannot sail focused or fast. Personal, labeled water bottles with easy access to the water tanks to fill up make it easier for crew to hydrate. Consider powdered lemonade, gatorade or any electrolyte replacement powder to improve taste and make it easier to get down and possibly mask the taste of water stored in tanks. Pee should be light yellow to clear. If it is not, drink until it is.

## **Sleep and the Watch System**

Sleep is a weapon.

Sleep is the most important task a crew member can perform in a 24 hour period. Set a simple watch schedule well before the race and STICK TO IT. Your body will perform best when it is in a set cycle. DO NOT LET YOUR WATCH PARTNER SLEEP IN and DO NOT try to be a hero by staying up. It will come back to haunt you. You will be doing the team and yourself a disservice by changing not only your partners sleep schedule, but your own. Regardless of how good you may feel on one particular watch, wake your partner up on time and get yourself in your bunk. It's not about how you feel at the moment, it's how your body reacts after unpredictable sleep patterns over 24, 36, 48 hours and longer. GET SLEEP. And if you can't sleep, just get rest. The performance of the boat depends upon disciplined sleep schedules.

Be disciplined about wake up times. Ask your opposite crew how soon they want to be woken up to their watch schedule. Most people will say between 10 and 15 minutes to get themselves out of bed, get dressed, fill their water bottle, eat a snack, before getting on deck exactly at their watch schedule time. Watches start when a person is on deck and sailing the boat. Make sure the watch starts at the time the watch is supposed to start, not 10-15 minutes afterwards. Those 10-15 minutes have just been stolen from the sleep schedule of the person who has been on watch for 3, 4 or 6 hours.

## **Food.**

Make sure your crew is well fed. Calories are in high demand on the ocean. Your body will never really rest; even in the bunk while sleeping your body will be working to keep you level in the bunk. You will use more energy than you normally do during a 24 hour period and require lots of calories to replenish and not feel drained and tired.

Keep it simple, keep it bland, and take hot sauce. We have a ton of sample menus and recommended foods for you to take that we are happy to share but the philosophy behind all of those choices is straightforward – keep it simple and keep it light (not in terms of calories, rather in terms of weight). The point of all of the prep work you do onshore is to minimize the weight, the time spent getting the calories in, and frankly the time spent getting the calories out so you can focus on resting and racing. With that in mind – make sure you and your crew try everything you are going to take before you leave – both eating the food and preparing the food. Take only easy to prepare and digest, calorically dense foods. This is especially important for the first two nights underway when crew are more likely to experience sea sickness. You can have your steak once you get to Hawaii. Remove all packaging and excess garbage before you pack it on the boat. Your garbage should never have any leftover food in it and should never smell. With five people racing to Hawaii in just under eight days we finished with less than two bags of trash. With two people in 10 days it was less than one. We recommend that you pack day bags (remember to stuff them in reverse order with dinner /snack/lunch/snack /breakfast) so no one has to think about what to prepare or eat – the thinking happens onshore before the race ever starts. Be aware of packing foods with too much sodium! Know your crew's food allergies, if any! Know if any of your crew is addicted to caffeine.

Ocean Racing is NO place to try lose weight, to quit smoking, detox or to give up caffeine!!!

## **Sail and Rig Tune**

Get your rig tuned with this race in mind. The basic rule – move it forward in the boat for a downwind race. If you don't know how much or how to consult with someone who can help. Rig tune is complex and varies from boat to boat so we are not going to try to tell you specifically how to do it here but know that it matters and do not leave the dock without tuning your rig for this race!

Preparing your sails and rig is important to prevent chafe, prolong sail life and reduce opportunities for failure. We recommend flaking and vacuum bagging kites before the start and race flaking all of the other sails you anticipate you will use. For the sails you are taking 'just in case' – they can possibly be bricked and stacked but should be bricked in such a manner so they could easily be readied for use.

## **Hardware Configuration**

Take a hard look at the hardware your boat already has. Simple changes in position of fair leads, clutches, and turning blocks may help your crew to perform necessary tasks from sail changes to trim adjustments while shorthanded offshore. Remember - half your crew will likely be downstairs asleep during basic maneuvers, so anything that can be done ahead of time to make tasks simpler and easier is important.

Keep a close eye on sheet leads. Prior to the race determine if you will need deflecting twings or inhaulers to keep sheets off of stanchions or unfair leads and have those pre-made and ready to deploy. Whip markings onto sheets and halyards so you can easily set them at night or when fatigued. Send your bowman up the rig while the spinnaker is up to look at leads from the mast exits. Add spectra chafe tip cover to halyards as it will reduce wear and tear and prolong halyards. During the race don't forget to move halyards 6 inches every 12 hours or so to reduce wear on a single spot. Consider sending your bowman up the rig every 48 hours to look for issues on the mast and halyard exits.

## **Waterproofing the Boat**

As stated earlier, anticipate every nook and cranny getting wet during the race!! Fight hard to avoid that. This starts with waterproofing the boat. Find any open holes and plug them up. You will NOT find them at the dock with a hose. Take the boat sailing, offshore, in heavy air and preferably at night to locate leaks!! Build a good mast boot to avoid water coming in through the mast partners. Remove, re-bed and caulk any hardware fasteners that let water ingress or that you suspect will. When the boat heels over, water often washes down the deck to the cabin joint on the weather side and when it gets to the cockpit, it will follow the cabin shear and drip into the hatch. Seal and cover the bow hatch. Seal portholes and cover with sail tape. Add neoprene gaskets around where lines enter and exit the cockpit walls. Make sure all internal scuppers and water plumbing is watertight.

Once the hull is watertight, the biggest way for water to enter a boat is by crew foulies. Crew should immediately take off foulies once they get downstairs. Crew must be aware they are bringing water downstairs and do as much as possible to contain and remove it. Make sure you plan a storage place for foulies before you leave the dock – we often use hanging hooks in the bow which is otherwise generally empty. Either way, crew foulies should be removed and placed in the same spot each time so

water can be sponged and bucketed from a single bilge compartment instead of many different compartments. Also, crew will always know where their gear is! Make sure crew are dry before getting into bunks. If you are not getting out of your foulies you MUST sleep on the floor or a sail if available. Otherwise take the time to towel down and put on dry long underwear before getting in the bunk!! Having to sleep in a wet bunk is the fastest way to make crew unhappy and lower morale and slow down the boat.

### **Electronics**

Electronics can be a long and complicated discussion. To sail optimally they need to work and that's why they are on this list. Our opinion is to keep it simple. You need to be able to communicate your position daily to the race committee and you need to communicate via satellite and vhf for safety issues or you can and likely will lose time off your race. You want to have working instruments that tell you accurate wind strength, wind angles and boatspeed. Ideally you will also have software that can input your boats theoretical performance in different wind conditions and the forecasted wind conditions to help route you in the direction that your boat will perform its best. You need to be able to see your instruments at night – test them before you leave the dock. Confirm well before you leave the dock that you and your crew know how to use each system and that you are confident that it will work like you need it to. Calibrate your instruments before you leave the dock.

### **Spares**

Be prepared for things to happen but try and prevent them from happening by maximizing your maintenance program BEFORE you leave the dock. None the less make sure you have the necessary skills on your crew and the supplies on your boat. Learn how to remove water from fuel. Learn how to replace belts on your engine, replace pawls in winches and to check all wiring on your alternator. Carry kits that can help solve problems in the middle of the ocean that have small amounts of all the necessary items you would need to repair damage or fix problems. Try and take things that can serve more than one purpose with an eye towards maximizing their utility while minimizing their weight and storage size.

Do not take anything that you (or someone on your crew) doesn't know how to use telling yourself that if it becomes necessary you will learn how to use it / fix it underway. That's just silly. Either know how to use it or get rid of it. If it is a required piece of equipment – practice good seamanship and learn how to use it before you leave the dock.

Otherwise, generally:

- An engine kit should include spare water pump impeller, spare belts, hand crank starter, fuel and oil filters.
- A hull fix kit should include small tubes of two part epoxy, underwater epoxy, fiberglass or carbon cloth, sand paper, duct tape.
- Tool kits should include at least one screwdriver, socket and wrench for any fitting on you boat as well as a hand drill.
- Sail repair kits should include sail tape, needles and whipping twine, sharp shears, acetone and rags, Kevlar stickyback and other stickyback for larger repairs.

- Rigging and Splicing kits should include fids, a palm, share needles and whipping twine, lighter, extra spectra chafe cover.
- Electrical kits should include a voltmeter at a minimum. They also could include extra small gauge wire, butt end connectors, electrical tape, fuses, set of small screwdrivers, wire strippers, crimpers.

All these things will help solve problems as they arise in the ocean. However, don't go overboard. You don't need a full drill press on board. You are looking to fix small issues that can be fixed so you can keep pushing the boat towards max performance.

### **Sail! (This is the point right?)**

Putting aside everything discussed above, the single most important thing you can do to optimize your race performance is spend time underway, as a crew, on the boat.

GO SAILING! Sailing before the race should be focused on the maneuvers you will most likely perform during the race. Sail out the gate and practice your sail change progressions: Going from a jib to a Jib Top or Blast Reacher, reefing while close reaching, hoisting a tight luffed reaching spinnaker or Code 0, hoisting an A2 downwind from the reaching spinnakers, peeling to a smaller spinnaker and back to a larger spinnaker as squalls hit. During each maneuver, keep crew in the same positions so they can safely perform these maneuvers day or night, just out of their bunks with little sleep. Each crewmember needs to have the muscle memory to go to their positions and perform their tasks safely.

Are you going to use socks or a spinnaker net? Test them now, not when you first hoist two days in!!!

Also, practice at night! The worst surprise is during your first night out when you realize you can't see your instruments, you can't see the compass and you can't see the horizon or the nav lights on your bow reflect off the spinnaker and blind you! Those problems need to be identified prior to the race and instruments moved for better visibility and the compass raised or instruments better lit before the those spectacular offshore nights.

Lastly, we want to emphasize the importance of having a reefing system that is effective, easy to use and familiar to the whole crew. Often times, sailing with a reef can be a faster sail configuration than sailing without one.

### **Have Fun**

After all that, don't forget to HAVE FUN! This is the opportunity of a lifetime, enjoy it!

Aloha!