Alliance Standing Plans

Alliance Philosophy: Have Fun, Look Good, Place Well. Be continuously dissatisfied with Alliance's VMG performance! Safety at Sea is fundamental in all we do!

Purpose: Alliance Standing Plans provide a common baseline of guidance and principles for everyone to understand with specifics where needed. The application of experience and judgement is critically important along with great communication.

Expectations:

1. **Person in Charge** (PIC) – Will be designated and the overall "captain" Alliance. Never hesitate to get him/her up and involved in decisions that are safety related or related potential hazards (storms, potential collision situation, and significant changes in weather ...). Judgement required on when and every individual on the crew has that responsibility.
2. **Backup PIC** – Will always be designated and ready to take command should something happen to PIC.
3. **Watch Captains (WC)** – Makes decisions with PIC and Navigator. In charge during watch section evolutions, on watch safety supervisor, directs crew rotations, provides input to PIC and Navigator, communicates ability to carry out tactics, makes recommendations and carries out sail changes, makes and reviews log entries, oversees meal preps and clean up, general stowage, and watch routines (wake-ups, etc.).
4. **Navigator/tactician -** We like Chelsea's flow (big picture weather patterns and currents, what is expected to be seen during the race and how we see will impact race decisions), phases of race (starting plan, first leg...final leg), hazards on the course, decision points and sail changes. Communicate boat mode (close hauled, running, reaching...) to the watch section along with conditionals like "close hauled until above/below XXX). And remember to get topside, look around and incorporate observations that the topside crew sees.
5. **Safety:** PFDs with harnesses (attached around PFD) are to be **worn on deck at all times** unless specified otherwise by the Person in charge. Everyone is expected to be clipped in when: (a) a storm is approaching, (b) at night, (c) true wind speed is above 20 knots, and (d) any appreciable sea.
6. **Race Performance:** Distance racing is all about consistent boat speed and the ability to push the boat in the right direction as hard as possible for as long as possible**. Planning ahead for expected weather changes and shifting sails early will often lead to winning success by preventing torn sails, equipment damage and injury. If in doubt, down shift early (reef, jib change, dousing a spinnaker…). Squalls at night are difficult to see and create the most challenging conditions when conducting boat evolutions.** Proficiency at reefing mitigates risk to the main sail and reefing will often result in better boat performance with reduced heel. Similarly, knowing when to shake a reef, or switch to a higher performing sail for the new conditions pays dividends.
7. **Leverage the experts** when needed and get them up when needed. (Radar, navigation, electronics, sailing experience, trim, medical...) We have a team of experts who are becoming an expert team.
8. **All hands on deck.** There will be situations that require "manning battle stations". Some of these can be anticipated and some not. These are typically related rapidly changing weather conditions to do sail changes or get sails down in a storm. Expect these situations to occur on occasions and be ready to quickly get safety gear on and topside.

9. **Watch turnover.** The on watch WC controls. We do not want to be excessively formal but before you head to the bunk, check with the on watch WC and you should not expect to hit the rack until sails stowed, galley clean, and required tasks are completed. Once the watch section turnover has occurred, the WC can turnover. Integral to the turnover will be a briefing on racing current objectives, weather and expected changes, equipment status, (battery, water tanks, bilge status, VHF mode and volume, Iridium status, any boat messages, stowage of gear, sail stack ...)
10. **Safety and health** - Always be aware of your teammate's status. Are they geared up properly, wearing the proper safety equipment, how are they doing... We each are relying on each other and this is part of being on an off shore racing team. Be safety conscience, stay healthy (eat, hydrate, sleep, manage energy…), communicate with others, be ready and on watch when scheduled (or early),
11. **Alliance Speed Team (driver, main trimmer and spin/jib trimmer)**: Always focused on the main thing – boat balance, speed, active trimming, Alliance's performance headed in the right direction…VMG! Big gains can be made at night.
12. **US Sailing Safety at Sea:** A Guide to Safety Under Sail and Personal Survival. A key resource to refer to often and the foundation for doing well.

Alliance Watch Standing Plan

Watch Standing: Each watch will be responsible for completing the following tasks.

1) Marking our position on the chart at least every two hours
2) Maintaining a proper lookout (on radar when needed) and radio watch (know status of volume and scan…HI POWER). Check Iridium phone for messages and calls. Log all checks
3) Checking the bilge at least once (prior to assuming watch)
4) Checking the rigging at least once (prior to assuming watch)
5) Checking the forecast weather (prior to assuming watch)
6) Checking current sail configuration and ready stack on deck (prior to assuming watch)
7) Checking the navigational lights at least once on any watch between dusk and dawn
8) Checking the batteries (monitor discharge rate, maintain state of charge greater than 50% and voltage above 12 volts) every two hours (when feasible, run the generator during daylight hours). Charge battery at 1800rpm and work to achieve 90% charge.
9) Entering hourly position, course made good/speed made good; true wind speed/direction, set/drift; and barometric reading in the log
10) Recording the water temperature every hour when approaching the West Wall of the Gulf Stream;
11) Entering in the log relevant data, including course/speed and sail changes, radio traffic to/from Alliance, Maydays and Pan Pans, significant vessel sightings

Advising the PIC: Notifications should be made whenever there is (a) a significant/un-forecasted change in wind, weather or sea conditions; (b) a major sail change is to be made; (c) Alliance is approaching/approached by a large vessel within four miles at night, or within two miles during the day; (d) at night whenever lights/sound signals are detected and the meaning is not clear; (e) whenever the watch feels it would be helpful or appropriate; (f) whenever one of the emergency plans contained here-in is implemented. Never hesitate to wake up and inform.

Watch Rotation: Watch rotations will be set up to distribute crew member skills across watch sections, help maintain race continuity, and avoid wholesale changes when possible. Weather and phase of the race (beginning, middle, finish sprint) may alter the rotation. Staggered four on and four off with a new par every 2 hrs. The goal in each is for each person to get two 90 minute sleep cycles in a 4 hour off watch status. Eight in crew with 2 sections. 4 crew on deck, on watch in four hour rotation. Option balances available people for skill positions and their ability to conduct simple sail evolutions. Wake ups on the XX45. Off going watch supports required sail evolutions.

Watch rotation starting at 1800 on first day of race.

A 1800 - 2000, 0000 - 0400, 0800 - 1200, 1600 - 2000
B 2000 - 2400*, 0400 - 0800, 1200 - 1600, 2000 - 2400
* B should head below immediately after evening meal on 1st day
C 2200 - 0200, 0600 - 1000, 1400 - 1800, 2200 - 0200
D 1800 - 2200, 0200 - 0600, 1000 - 1400, 1800 - 2200

Meals Hours: Dinner 1730 - 1930, Lunch 1130 - 1330, Breakfast 0530 - 0730

Watch Partners: In general, each has a watch partner to maintain awareness of and to double check watch readiness.

Reefing: A reef should be inserted or taken out in about one minute

1. **Prepare** (Driver focused on driving on the jib, Pit sets up main halyard and reef line, Main Trimmer checks that reef line is located in proper location on boom)
2. **Execute** (Pit blows vang while main is eased off, Pit lowers main to reef mark while Mast pulls down and gets new reef tack locked, Pit raises main halyard to proper tension then pulls out slack on reef line then tensions while the Main Trimmer watches main)
3. **Complete** – (Pit pulls on vang and Main Trimmer adjusts trim. If needed, put on bungies on main reef points)

Bunks:

(Assigned bunk: Main Starboard (MS), Main Port (MP), Aft Starboard (AS), Aft Port (AP) (Navigator's bunk is dedicated in option 1)

A: MS Name
AP Name
AS Name

B: MS Name
AP Name
AS Name

C: MS Name
AP Name
AS Name

D: MS Names
AP Name
AS Name

Personal Gear: Minimize your footprint! Consolidate into one small sea bag and foul weather gear, clearly mark your gear and your bag. Bring your off shore vest, tether, personal AIS/MOB, rigging knife/multi-tool and head lamp with a red night light mode. One labeled zip lock bag with your tooth brush and other small bathroom items and daily medications for the head locker and items for the ditch bag. Bring a refillable water bottle. Personal sleeping bag sheets with pillowcases will be assigned to each crew member, pillows and fleece blankets will be provided for each bunk.

House Keeping: All cabin ports and top opening hatches are to remain closed when underway except for sail evolutions. In moderate weather, ports or hatches may be opened with express permission of the Skipper/Co-Skipper.

1) Foul weather gear will be securely stored either in the hanging locker or on the line/carbineers provided. Sea boots should be secured in a location not to cause trip hazards and prevent access moisture being taken into berthing areas.
2) Tidy berthing area after use by stowing bedrolls, personal pillows and gear bag out of the way
3) The Navigation station is to be kept free from any debris or loose gear while underway. It is intended to be the primary location for conducting safe navigation with immediate access to power and instrument control. USB & 12V outlets are provided throughout the boat for personal device charging.

Alliance Ditch Bag: Upon departing moorings for the start of a off shore race, all crew members will place their Passport/Identification, a sealed envelope with medical history and allergies (as needed), and an emergency supply of any prescription medications into the Alliance ditch bag. A full list of all items contained in the Ditch bag is located in the bag. The Ditch Bag is co-located with the lift raft for easy access while underway. A list of all crew personnel with names, phone numbers and emails for emergency contact personnel will be stored in watertight zip lock bag in the ditch bag. Additional crew manifests with addresses, passport numbers and other information will be included as needed.

Alliance Routine Evolutions

Routine Evolutions: The following sections detail common actions for routine evolutions [TBD – list of checklists for departing moorings/ arriving to moorings/ Securing for heavy weather etc. Check lists to be included on separate pages at back of document]

1) Departing moorings/harbor
2) Approaching harbor/moorings
3) Heavy Weather preparations (See sample attached)
4) Use of the Stove Instructions…
5) Alliance Instruments - Normal Startup and shutdown procedure, Reduced power configurations, Transitioning between day and night modes
6) Rigging the Boom Preventer
7) Use of the Sat Phone for Voice & Data (list of emergency numbers should be on readily accessible laminated card or sticker posted by sat phone)
8) Reduced visibility procedures

Entering harbor for mooring / slip (reverse for departing):

1. Prepping required gear such as lines, fenders, and boat hook.
2. Assign crew duties such as bow, midship, and stern line handlers, and order for stepping off boat onto pier or handing lines to shore.
3. Assign a bow watch - day and night watching for marks, obstructions, buoys, and traffic (especially in tight maneuvering locations
4. Make clear to all the lines of communication - skipper makes the calls, skipper communicates with bow watch and line handlers.

Checklist of possible foul weather preparations steps:

1. Shorten sail and prepare to rig storm sails
2. Check jack lines
3. Check crew status as to foul weather gear, pfd and clipping in
4. Check that all ports and hatches are secure.
5. Identify location of backing plates for closure
6. Walk through below and secure objects that may come adrift, confirm sink drains are sealed
7. Check bilges and establish a base line for water
8. Check all wooden plugs are present and tied to through hull location
9. Close off unnecessary seacocks

Insert companion way wash boards

Prepare hot water and easy food

Consider energizing radar and running lights

Check area for hazards to navigation and nearby vessels

Alliance Emergency Evolutions

Emergency Evolutions: The following sections detail common and non-common responses to at sea emergencies. Each page will identify the situation, immediate actions and follow up actions required of watch standers and then the entire crew. In addition to the core positions listed above, some crew members may be assigned an additional role during emergencies such as spotter, communications, fire fighter, life raft coordinator. In all cases crew members shall know and understand the immediate and follow up actions to these emergencies and be prepared to step into each other's roles when required.

1) Mayday Calls
2) Pan-Pan Calls
3) Person Overboard
4) Fire
5) Flooding
6) Abandon Ship
7) Loss of Steering
8) Broken Stay
9) Broken Mast
10) Dismasting

MAYDAY CALLS

Situation: Alliance or a crew member is in grave distress and requires immediate assistance.

Initiated by: Skipper, Co-Skipper or remaining Person in Charge.

Immediate Actions

Step 1. On one radio, transmit an automatic DSC alert by opening the red cover plate and pressing and holding the distress button for 2 seconds. Radio tuned to the DSC distress channel, i.e. channel 70 on VHF.

Step 2. Prepare for the subsequent distress traffic by tuning a radio to the distress traffic channel in the same band, i.e. channel 16 on VHF, while waiting for the DSC distress acknowledgment. The DSC alert will automatically repeat approximately every 4 minutes until an acknowledgment is received. [double check, it should]

Follow-up Actions

Step 3. Make the following radio call on VHF CH16

> "Mayday, Mayday, Mayday"
>
> "This is sailing vessel Alliance 52770, sailing vessel Alliance 52770, sailing vessel Alliance 52770"
>
> "Position_____Latitude _____Longitude"
>
> Nature of Distress (sinking, fire, personnel injury)
>
> Number of persons onboard
>
> Assistance required
>
> Any other information which might facilitate rescue, such as number of persons needing medical attention, color of hull, Satellite phone number, MSSI number, etc.
>
> "Over"

Step 4. Release microphone button and listen for response, repeat call periodically.

Step 5. Log time of call, time of response, responding station if practicable

Step 6. Cancel Mayday when directed

Mayday Call procedure:

The radio procedure should be updated to reflect the capabilities of your Standard Horizon GX2150 with remote. Specifically

1. DSC Mayday may be initiated from remote at helm or the main unit at Nav station

2. There is no need to manually shift channels, the DSC broadcasts automatically go out on channel 70 (which is continuously monitored on receive) and the radio is automatically monitors it and channel 16

3. The Standard Horizon radio has the ability to transmit the type of Mayday (flooding, fire, mob, etc.) in the DSC signal. This is done via a menu and described on pages 49 & 50 in the manual posted on the Alliance links page. It is not required, but taking a few seconds to do this provides clear information to all ships that get the DSC mayday call.

Tuning the radio to channel 16 should be automatic. Pressing the DSC button automatically transmits the DSC. Pressing the 16/9 button stops another periodic transmission of the distress call.

PAN-PAN CALLS

Situation: Alliance or a crew member is at risk and requires serious help but there isn't a grave and imminent danger to the boat or anyone on board.

Initiated by: Skipper, Co-Skipper or remaining Person in Charge.

Immediate Actions

Step 1. On one radio, tuning to the appropriate distress traffic channel, i.e., channel 16 on VHF. For Urgency calls a (a Pan-Pan call) the red DSC Alert button should not be activated.

Step 2. Make the following call on VHF CH16.

"Pan-Pan, Pan-Pan, Pan-Pan" (pronounced "PAHN-PAHN")

"This is sailing vessel Alliance 52770, sailing vessel Alliance 52770, sailing vessel Alliance 52770"

"Position_____Latitude _____Longitude"

Nature of Urgency (i.e. loss of steering, Broken or dismasted etc.)

Number of persons onboard

Assistance required

Any other information which might facilitate assistance if required, such as tools, supplies, medical supplies, towing, Satellite phone number, MSSI number, etc.

"Standing by on VFH CH16 and [MF XXXX.XX if applicable], out"

Follow-up Actions

Step 3. Log time of call, time of response, responding station if practicable

Step 4. Repeat Pan-Pan at 15 minute intervals until Cancel Pan Pan issued "Mayday, Mayday, Mayday."

Step 5. Cancel Pan-Pan when directed.

Note: An Urgency call of 'Pan-Pan' can be subsequently upgraded to a 'Mayday' call if the situation worsens and lives become endangered.

PERSON OVERBOARD

Immediate Actions

- Mark positon by pressing 'MOB' button on chart plotter at helm and on the GPS at the Nav desk
- Release MOM8
- Throw additional floatation into the water as near the person as possible
- Turn into Wind (Heave to OR perform Quick Stop maneuver with jib or spinnaker)
- Designate someone to keep eye on person in water
- Direct someone to announce MAYDAY man overboard on radio
- Verify lines are clear and then start engine and maintain in neutral until needed

Decision Point

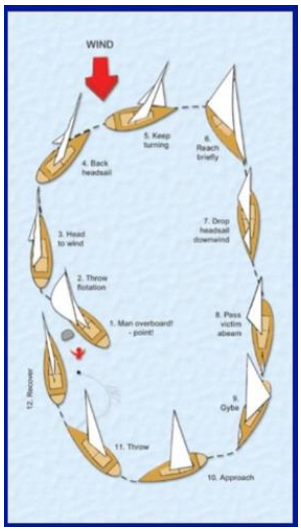
Is person in water close enough to throw heaving line to?

Is person attached to boat with tether?

YES: Heave to and stop the boat

- Do not release jib sheets or do quick drop on spinnaker
- As winds starts to backwind jib, shift rudder to keep boat headed into wind
- Boat will steady out
- Throw heaving line; if person in water is too far away go to next step

NO: Execute Quick Stop Man Overboard Recovery Maneuver



1. Person Overboard
2. Head into wind
3. Throw floatation (Dan Buoy // Cushion)
4. Back headsail
5. Keep Turning
6. Brief Reach
7. Pass a beam of person in water
8. Deploy Life Sling
9. Gybe
10. Approach person in water to windward
11. Try to stop boat next to person in water if not continue turn until person in water has contact with Life Sling line
12. Soon as contact made STOP Boat by heading into wind and heaving to (see directions above)

Follow-up Actions

- Select side for recovery and pull out portable ladder
- Attach topping lift to Man Overboard Lift tackle
- Pull person in water to midships on selected recovery side
- Have person in water attach lift tackle (snap shackle) to life sling and winch aboard
- Issue PAN-PAN notice on radio stating person in water recovered
- Render First Aid as needed, treat for hypothermia

FIRE

Immediate Actions

- Yell FIRE FIRE ensure off watch acknowledges
- Grab extinguisher and deploy fire retardant on fire, use fire blanket as needed
    - Extinguisher in lockers below deck (x 3)
- Shut off fire fuel
    - If Engine Fire (Black Smoke) stop engine close fuel shut-off valve under port center cabin
    - If Electric Fire (Blue Smoke) on electrical panel (at Nav Station) turn power knob to off under Nav Station or Engine port side aft berth
    - If Propane (Black Smoke) open propane locker port side aft and turn knob on top of propane cylinder to off and turn off power to propane
- Direct someone to announce MAYDAY Fire on radio (use handheld if power is off)
- Verify fire out
- Assign a fire watch with means to extinguish if re-flash

Follow-up Actions

- Determine if any crew injured
- Render medical help to injured crew
- Determine extent of damage
- If boat can be sailed safely Cancel MAYDAY on radio state fire is out and boat can be sailed safely
- If boat cannot be sailed safely
    - Prepare to abandon
    - Activate EPIRB
    - Prepare to be towed

FLOODING

Immediate Actions

- Yell FLOODING FLOODING ensure off watch acknowledges
- Determine source of water
    - Check through hull valves (most likely source)
        - Transducer just forward of mast
        - Head Sink and toilet under seat in head or STBD side V berth
        - Galley sink vertical door under sink to starboard
        - Engine intake under engine port side
    - Rudder post open hatch STBD side aft in aft cabin
- Release sheets (slow/stop boat)
- Block hole in boat objective is to slow / stop water entering boat
- Start electrical pumps (don't wait for float switches) and rig back up electrical pump
    - One pump starts on electrical panel
    - Second pump needs to be clipped on batter post
- Use two manual pumps as needed

Decision Point – Can Flooding be controlled?

NO:

- Issue MAYDAY uncontrolled flooding call on radio before batteries short out
- Prepare to Abandon Ship
- Activate EPIRB
- Continue to try and stop flooding

YES:

- Develop and execute plan to further slow or stop water ingress
- Determine extent of damage
- Dewater boat to maximum extent possible
- Head to nearest port for repairs

ABANDON SHIP ACTION

Situation: Alliance is in distress with loss/sinking possible and requires immediate assistance.

Initiated by: Skipper, Co-Skipper or remaining Person in Charge.

Immediate Actions

- Get life raft on deck from locker (DO NOT DEPLOY)
- All hands in life jackets
- Get Emergency Grab bag topside next to lift raft and hook both together
- Get emergency water topside next to raft
- Make MAYDAY radio call
- Activate EPIRB and assemble crew with lift raft and ditch bag
- Take anti-nausea medications

Decision Point – Is sinking imminent?

YES:

- Tie life raft painter to stern
- Deploy life raft
- Send strongest person to life raft
- Load life raft with supplies
- Get all hands into life raft
- Stay connected to boat until boat sinks then cut life raft free with knife on life raft next to where painter is attached

NO:

- DO NOT DEPLOY LIFE RAFT
- Continue to keep boat afloat
- Advise rescue teams of status and maintain communications schedule
- If possible, get food into crew
- Keep hydrated

LOSS OF STEERING

Immediate Actions

- Check rudder post for flooding
    - If flooding stop flooding then worry about steering
- Release sheets
- Reduce sail
    - or Lower main sail
    - If Regular Jib up, lower spin
- Make PAN-PAN radio call stating loss of steering

Follow-up Actions

- Check rudder intact
- Check for snagged lines/gear
- Check steering cables & hydraulics mounts
- Remove wheel if needed
- Rig emergency tiller
- Rig heavy weather jib
- Rig main for second reef

Decision Point – Can you move rudder with emergency tiller?

YES:

- Raise sails
- Sail boat with emergency tiller
- Make PAN-PAN radio call stating steering regained with emergency tiller
- Investigate steering system to determine cause of steering failure
- Fix if possible
- Add more sail area if comfortable

NO:

- Rig emergency rudder
    - Gale rider attached to spinnaker sheets
    - Spinnaker sheets rigged amidships
- Raise sails
- Make PAN-PAN radio call stating steering regained with emergency rudder
- Investigate steering system to determine cause of steering failure
- Fix if possible
- Add more sail area if comfortable

BROKEN STAY

Immediate Actions

- Release all sheets
- Put pressure on remaining stays
    - If Forestay breaks head down wind
    - If Backstay breaks head up wind
    - If Port Side Stay breaks put boat on starboard tack
    - If Starboard Stay break put boat on port tack
- Get all hands on deck
- Consider reducing sail if practicable i.e., spin, shift to smaller jib…

Follow-up Actions

- Use Halyards for emergency stay replacement
    - Use second jib or spinnaker halyards for forestay replacement
    - Use any available halyard for port / starboard stay replacement
- Pull in sheets and determine if replacement stay needs further tightening
- Sail gently

BROKEN MAST

Immediate Actions

- Release all sheets
- Turn boat into wind
- Wake up off watch
- Use hand held radio for PAN PAN call to advise of situation
- Verify all hands aboard
- Verify no injuries to crew

DO NOT START ENGINE until verifying no lines will get tangled with prop

 **Decision Point – Is the top part of mast still attached and a catastrophic danger to the boat?**

YES: Cut the entire mast away and discard

NO: Secure broken section on deck to prevent further damage to boat, and for analysis once in port

Follow-up Actions

- Get remaining sails off of mast
- Clear lines and stays out of the water
- Use engine as needed to maintain a stable work platform when lines and stays are clear
- Use lines to create stays for what remains of mast, Or
- Create a jury-rig mast
    - Options include:
    - Boom
    - Spinnaker pole
    - Spliced dingy oars
    - Sailboard Rig
    - Mast remnants
- Rig sails to mast and sail to nearest port

DEMASTING

Immediate Actions

- Release all sheets
- Turn boat into wind
- Wake up off watch
- Use hand held radio for PAN PAN call to advise of situation
- Verify all hands aboard
- Verify no injuries to crew

DO NOT START ENGINE until verifying no lines will get tangled with prop

Decision Point – Is the mast a danger to boat?

YES: Cut the entire mast away and discard

NO: Secure remaining mast on deck to prevent further damage to boat, and for analysis once in port

Follow-up Actions

- Get sails off of mast
- Clear lines and stays out of the water
- Use engine as needed to maintain a stable work platform when lines and stays are clear
- Create a jury-rig mast
    - Options include:
        - Boom
        - Spinnaker pole
        - Spliced dingy oars
        - Sailboard Rig
        - Mast remnants
- Rig sails to jury mast and sail to nearest port

Alliance Sail Crossover Plan

The Alliance sail cross over plan provides a notional plan as guidance for making sail selection decisions based on expected conditions for a steady wind state.

J122 Alliance USA 52770 Sail Crossover Chart

SAIL CROSSOVER

True Wind Angle	True Wind Speed 4	6	7	8	10	12	14	16	18	20	22	24	26	28	30
35	L/M	L/M	L/M	L/M	L/M	M/H	M/H	M/H	M/H R1	M/H R1	J4 R1	J4 R1	J4 R1	J4 R2	J4 R2
40	L/M	L/M	L/M	L/M	L/M	M/H	M/H	M/H	M/H R1	M/H R1	J4 R1	J4 R1	J4 R1	J4 R2	J4 R2
45	L/M	L/M	L/M	L/M	L/M	L/M	M/H	M/H	M/H	M/H R1	J4	J4 R1	J4 R1	J4 R2	J4 R2
50	L/M	L/M	L/M	L/M	L/M	L/M	M/H	M/H	M/H	M/H	J4	J4	J4 R1	J4 R2	J4 R2
55	L/M	L/M	L/M	L/M	L/M	L/M	L/M	M/H	M/H	M/H	J4	J4	J4 R1	J4 R2	J4 R2
60	L/M	L/M	L/M	L/M	L/M	L/M	L/M	M/H	M/H	M/H	M/H	J4	J4 R1	J4 R1	J4 R2
65	C55	L/M	L/M	L/M	L/M	L/M	L/M	M/H	M/H	M/H	M/H	J4	J4	J4 R1	J4 R1
70	C55	C55	L/M	L/M	L/M	L/M	L/M	M/H	M/H	M/H	M/H	J4	J4	J4 R1	J4 R1
75	C55	C55	C55	L/M	L/M	L/M	L/M	L/M	M/H	M/H	M/H	J4	J4	J4 R1	J4 R1
80	C55	C55	C55	C55	C55	L/M	L/M	L/M	M/H	M/H	M/H	M/H	J4	J4 R1	J4 R1
85	C0G	C0G	C55	C55	C55	C0N	L/M	L/M	M/H	M/H	M/H	M/H	J4	J4 R1	J4 R1
90	C0G	C0G	C0G	C55	C55	C0N	C0N	L/M	M/H	M/H	M/H	M/H	J4	J4 R1	J4 R1
95	A1	C0G	C0G	C0G	C0G	C0N	C0N	C0N	M/H	M/H	M/H	M/H	J4	J4	J4 R1
100	A1	A1	C0G	C0G	C0G	C0N	C0N	C0N	M/H	M/H	M/H	M/H	J4	J4	J4 R1
105	A1	A1	A1	C0G	C0G	C0N	C0N	C0N	C0N	M/H	M/H	M/H	J4	J4	J4 R1
110	A1	A1	A1	A1	C0G	A3	C0N	C0N	C0N	C0N	M/H	M/H	M/H	J4	J4 R1
115	A1	A1	A1	A1	A1	A3	A3	C0N	C0N	C0N	M/H	M/H	M/H	J4	J4 R1
120	A1.5	A1	A1	A1	A1	A3	A3	A3	A3	A3	A3	M/H	M/H	J4	J4
125	A1.5	A1.5	A1.5	A1.5	A1	A3	A3	A3	A3	A3	A3	M/H	M/H	J4	J4
130	A1.5	A1.5	A1.5	A1.5	A1.5	A2	A3	A3	A3	A3	A3	M/H	M/H	M/H	J4
135	A1.5	A1.5	A1.5	A1.5	A1.5	A2	A2	A2	A2	A3	A3	A3	M/H	M/H	J4
140		A1.5	A1.5	A1.5	A1.5	A1.5	A2	A2	A2	A2	A2	A3	A3	M/H	J4
145				A1.5	A1.5	A1.5	A2	A2	A2	A2	A2	A3	A3	A3	J4
150					A1.5	A1.5	A2	A2	A2	A2	A2	A2	A3	A3	J4
155							A2	A2	A2	A2	A2	A2	A3	A3	J4
160															
165															
170															
175															
180															

Upwind Sails

Code	Description	Battens	TWS	TWA
L/M	Lite Doyle	H/V ROLLE	0 - 12	35 - 105
M/H	M/H Carbon Stratis Doyle	H/Roller	13 - 24	35 - 140
MN	Medium North	H		35 - 140
LM MH	North Zig Zag L and MH	H	0-20	35 - 130
J4	J4 Gleason	V/Roller	18 - 30	35 - 155
SJ	Storm Jib	No	30 - 45	50-130
CJ	Cruising Jib	No	6 to 18	45-130

Downwind Sails

Code	Description	Color	TWS	TWA
C55	Code 55 Gleason	Silver	0 - 10	65 - 90
C0G	Code 0 Gleason	Silver	0 - 10	85 - 110
C0N	Code 0 North	Silver	0 - 14	85 - 115
A1	A1 North	White	0 - 10	95 - 115
A1.5	A1.5 Doyle	Gray	4 - 14	120 - 150
A2N	A2 North	White	10 - 20	125 - 155
A2D	A2 Doyle	Blue	10 - 22	125 - 155
A3	A3 Doyle	Red	16 - 25	110 - 155