ST. FRANCIS YACHT CLUB RACE COMMITTEE

Markset Boat Manual

Version 1.01
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1 Preface

It is a great honor to have you as a participant on the Race Committee of the St. Francis Yacht Club. It is our aim to provide the best possible experience to our customer — the racer. This manual is a step toward helping to achieve that goal.

We do this to have fun. We aim to treat each of our colleagues with respect no matter their level of experience. As we all learn together the on-the-water experience becomes ever more fun.

Please read, understand, and practice the contents of this manual. The intention is to help all participants be safe and engaged while on the water of the San Francisco Bay. The manual describes standard operating procedures that serve as a template to train new markset operators and to help elevate the skill levels of those already experienced. Following standard operating procedures will help all markset boat operators perform uniformly and consistently throughout the racing season.

These procedures are not etched in stone but will continue to evolve over time. Your input as to “best practices” is encouraged would be welcomed.

Your contribution of time, skill and effort is appreciated by the Executive Race Committee. You are the front line in providing the best possible experience to the “racer” and helping to make the St. Francis Yacht Club a leader, both nationally and internationally, in the promotion of sailboat racing.

This Manual was produced by the members of the St. Francis Yacht Club Race Committee at the direction of Gerard Sheridan, the Chair of the Executive Race Committee. The editor was Tony Chargin; copy editor: Nancy Houston; text contributors: Mitch Cihomsky, Alan Laflin, Mike Mahoney, Greg Meagher, Linda Ratterman, Gerard Sheridan, Bill Vandervoort, Dick Watts, and Lawson Willard; guest contributor: Dave Corbin; artwork: Graham Biehl, Tony Chargin and Dave Corbin; photography: Mitch Cihomsky, Chris Ray and others. The initial source document was *Whaler and RIB Basic Operations Handbook, 2013*, edited by Ed Bennett, from which some material was retained.

Lastly please remember to HAVE FUN!!

Executive Race Committee

2 Introduction to Markset

Welcome to the exalted world of Markset drivers and crew! People may tell you that the main Race Committee (RC) action is on the Signal Boat (SB) but those people just wave flags, make noises and write things down. We are out on the racecourse, where the real action is!

All kidding aside, successful races depend on hard work and close cooperation at both positions. Together, the RC mission is to make racing safe, fair and fun for all the racers. We aim to give them the best races that conditions and time permit, as measured by:

- **Safety:** We anticipate problems, communicate clearly and rescue racers if needed.
- **Fairness:** We set courses that are consistent with the Racing Rules of Sailing (RRS), the Sailing Instructions (SI), and wind and tide conditions; we keep out of the racers' way.
- **Fun:** We run races on time and as many as planned; we make intelligent trade-offs between adjusting courses to make them "perfect," versus keeping the action going; we treat racers courteously and don't get defensive when they criticize our actions.

The Principal Race Officer (PRO) is responsible for the overall success of the race and is in command of the RC team. A lot depends on having a good relationship between markset and the PRO, so get to know your PRO and learn as much as possible about how he or she likes to run races. The best markset operators anticipate likely decisions the PRO will make; at the same time, they remain flexible to respond quickly to unexpected instructions.

The key is to always be thinking ahead. Be prepared for whatever next steps one may have to take; whether that is moving a mark to respond to a wind shift, adjusting a starting pin to get the racers to spread out evenly along the line, rescuing an exhausted windsurfer from the middle of the bay, or simply reporting on conditions at your location to help the PRO make the next call. When you are prepared, it is easier to execute each task without rushing, taking the time to make sure it is done right.

Whatever you do, don't countermand PRO instructions! If you don't understand them, ask for clarification. If necessary (and if time allows), clarify instructions via a cell phone call, so that racers can't listen in. And remember, the PRO is the **only** RC person to communicate directly with racers.

Keeping all this in mind, and with practice developing the procedural skills explained in this manual, one would be able to handle anything that the PRO, the racers, or the weather can throw at you. And you will enjoy the satisfaction and camaraderie of running world-class races on our beautiful yet demanding bay.

3 Roles on the Boat

3.1 Crew Configurations

The optimal and usual crew configuration is a three-person markset boat; however, there will be cases of one-person, two-person and four-person crews. A one-person boat is not practical and can be dangerous. It is not recommended practice by Race Committee and is usually reserved for junior "around the buoy" practice races in the cove by the sailing coaches. A two-person boat usually has experienced personnel in a smaller Rigid-hulled Inflatable Boat (RIB) where more personnel would be inefficient (i.e. people stepping on each

other) or if there is a shortage of personnel. A three-person markset boat is optimal for safety, fatigue and efficient markset operations. It is the most often used configuration that has served our club well over the years. On occasion, four persons may be assigned to a boat. This occurs when training a new person in markset operations.

3.2 Boat Captain/Driver/Operator

A captain is in charge of boat operations and in responding to the instruction of the PRO. This person is usually, but not necessarily, the boat driver. The responsibilities include:

- 3.2.1 Sign off on the boat "Checkoff List" found in the orange box under the console and be sure the boat is safe and functional. (See 5.3 and 5.8)
- 3.2.2 Check markset gear inventory
- 3.2.3 Dock and undock
- 3.2.4 Drive the boat in a safe and efficient manner
- 3.2.5 Conduct radio check and communicate via radio
- 3.2.6 Communicate clearly to direct crew and assist as necessary
- 3.2.7 Communicate with the PRO
- 3.2.8 Complete tasks requested by the PRO
- 3.2.9 Refuel boat as necessary
- 3.2.10 Keep constant lookout over racecourse and surrounding waters for potential problems; anticipate problems and be flexible and ready to respond.
- 3.2.11 Conduct hands-on training of less experienced crew in markset operation
- 3.2.12 Put safety first

3.3 Experienced Crew Member

This person assists the captain/driver/operator in all markset boat operations. Duties include:

- 3.3.1 Select and move markset gear on and off the boat
- 3.3.2 Ensure adequate gear is on board for required tasks
- 3.3.3 Store and rig lines and marks in a seamanlike manner
- 3.3.4 Assist in wind readings, interpreting tides and weather
- 3.3.5 Deploy, move and pickup marks as requested by the boat captain
- 3.3.6 Assist in docking and undocking
- 3.3.7 Assist boat captain in any manner possible
- 3.3.8 Drive the boat if requested to do so by the captain
- 3.3.9 Keep constant lookout over racecourse and surrounding waters for potential problems
- 3.3.10 Conduct hands-on training for less experienced crew in markset operation
- 3.3.11 Put safety first

3.4 Inexperienced Crew Member

This person is usually a new or infrequent volunteer. This person's duties may include:

- 3.4.1 Be willing to learn and have interest in supporting the "mission"
- 3.4.2 Assist both boat captain and experienced crew member(s) as directed
- 3.4.3 Assist in moving gear onto and off the boat in a safe manner

3.4.4 Assist in docking and undocking

3.4.5 Assist in deploying, moving and retrieving markset gear

3.4.6 Keep constant lookout over racecourse and surrounding waters for potential problems

3.4.7 Ask questions to better understand what is going on

3.4.8 Put safety first

4 Typical Boat Assignments

In large fleet racing, markset boats will have specific assignments either to set windward mark and offset, leeward mark, starting pin and finish line, or leeward gate marks. Markset boats are responsible for anchoring and maintaining the assigned marks in position described by the PRO. During the race, markset boats will operate near the vicinity of their assigned mark unless requested to move elsewhere by the PRO.

4.1 Windward Mark and Offset

4.1.1 Ping the Signal Boat location as soon as it anchors to get its position on GPS.

4.1.2 Proceed upwind the distance and compass direction requested by the PRO and report on wind direction and speed every five minutes or as requested. Prepare the mark for set and be ready to move based on the PRO's final decision on range and bearing. Always use the same length rode on mark and offset to help maintain relative positions in changing wind and tides.

4.1.3 Confirm final range and bearing with the PRO and promptly set the mark. (See 8.1).

4.1.4 Confirm rounding direction with the PRO and set the offset on the appropriate side of the windward mark, bearing approximately 90 degrees to the wind direction and 7 or 8 boat lengths from the mark (7 or 8 times the length of the longest boat racing).

4.1.5 Monitor the position of both marks by taking bearings between them and against the land. If either anchor is not holding, report to the PRO before taking corrective action. It is also a good idea to mark the position of anchored marks in your GPS so you can monitor their movement throughout the race.

4.1.6 Anticipate tide changes that may temporarily alter the angle and distance to the offset. Bear in mind that moving either mark to correct for current flow changes may be more disruptive to racing than leaving them with less than perfect angles. Never move a mark without the PRO's permission.

4.1.7 Send regular wind direction and speed reports to PRO.

4.1.8 If possible to discern, send current flow reports to the PRO.

4.1.9 Record the rounding sequence of each boat (useful for redress requests).

4.1.10 Report first and last boat's rounding times to PRO (helps manage race length).

4.2 Leeward Gate

4.2.1 Prepare two marks of same size and color with the same length of anchor rode. Always use the same length rode on mark pair to help maintain relative positions in changing wind and tides.

4.2.2 Set the leeward mark or first gate mark at range and bearing from the Signal Boat per PRO instructions, typically a few hundred yards upwind of the start line. (See 8.1)

4.2.3 Confirm width of the gate with the PRO (always at least 7 or 8 boat lengths to ensure that the three-boat-length zones do not overlap).

4.2.4 Set the second gate mark such that neither mark is heavily favored given wind, current, direction to next mark, etc. Always confirm what bearing and distance the PRO wants.

4.2.5 Monitor the position of both marks by taking bearings between them and against the land. If either anchor is not holding, report to the PRO before taking corrective action.

4.2.6 Anticipate tide changes that may temporarily alter the angle and distance between the gate marks. Bear in mind that moving either mark to correct for tide changes may be more disruptive to racing than continuing with less than perfect angles. Never move a mark without the PRO's permission.

4.2.7 Record the rounding sequence of each boat (useful for redress requests).

4.2.8 Note the proportion of fleet rounding each gate mark. The PRO may request adjustment if a preponderance of the fleet is rounding one mark versus the other.

4.2.9 While doing all the above, anticipate the PRO's needs and be prepared to respond promptly to any request, whether it is to move a mark, effect a rescue, shorten the course or any other task.

4.3 Start Line – Buoy at the Pin End

4.3.1 Ping the location of the Signal Boat as soon as it anchors to get its GPS position. Discuss provisional start line length and bearing with the PRO.

4.3.2 Drive to the approximate position for the starting pin, such that neither end of the start line would be significantly favored based on wind, current or course layout. Report range to PRO and adjust line length per instructions.

4.3.3 Prepare the buoy and ground tackle but hold off the drop until instructed by the PRO, as conditions may change up until the last few minutes. Be prepared to provide input on local conditions as the PRO determines pin location to give the fairest possible start line to the racers.

4.3.4 Upon instruction from the PRO, set the mark using either the drag-and-drop or streaming method. (See 8.2 and 8.3)

4.3.5 Confirm start line length and bearing with the PRO. Adjust as necessary.

4.3.6 Await further instructions from the PRO, which may include standing by to note sail numbers of boats crossing the line near the pin and On Course Side (OCS) boats.

4.4 Start Line – RIB at the Pin End

4.4.1 Ping the location of the Signal Boat as soon as it anchors to get its GPS position. Discuss desired start line length and bearing with the PRO (to be confirmed later).

4.4.2 Drive to the approximate position for the starting pin, such that neither end of the start line would be significantly favored based on wind, current and course layout. Report range to PRO and adjust line length per instructions.

4.4.3 Prepare ground tackle but hold off the drop until instructed by the PRO, as conditions may change up until the last few minutes. Be prepared to provide input on local conditions as the PRO determines pin location to give the fairest possible start line to the racers.

4.4.4 Upon the PRO's instruction, set the anchor such that the boat ends up in the position requested by the PRO. Use a longer rode than normally required so that the boat can be moved forward or back without resetting the anchor. Adjust the boat's position per instructions from the PRO. Two coils of line 200 feet each is not too much at the City Front and Alcatraz locations.

4.4.5 Attach a deadman to the rode to reduce the likelihood of a racer snagging it.

4.4.6 When instructed, hoist a line flag and be prepared to observe the start. If requested, call in boats that are On Course Side (OCS) to the PRO.

4.4.7 Observe how the fleet lines up at the start and be prepared to discuss possible changes with the PRO, if one end seems particularly favored over the other.

4.4.8 Lower the line flag four minutes after the start, unless more fleets are starting.

4.5 Downwind Finish Line

4.5.1 As with the start, the finish line can be between the Signal Boat and either a buoy or a RIB, so the procedure is similar to either 4.3 or 4.4, above, except that the line is usually set on the opposite side to the start line and is shorter to make it easy for the recorder on the Signal Boat to identify finishers.

4.5.2 Be prepared to back up the recorder(s) on the Signal Boat by writing down the finishing order, as seen from your perspective.

4.6 Reach Mark

4.6.1 If the PRO specifies a location for the reach mark, proceed as for the windward mark, setting the buoy as close as practical to the target spot. (See 8.2 and 8.3)

4.6.2 Alternatively, the PRO may provide general guidance and rely on the markset team to determine the ideal spot. In general, the objective is to set the reach mark so that the two reaching legs are equal in length and wind angle (on opposite jibes), resulting in exciting, high-speed legs.

4.6.3 Determining the optimal reaching angle calls for experience with the fleet and the wind conditions, so don't be shy about asking top sailors in the fleet for their opinion (off-line, not on the water).

4.6.4 A reasonable approach is to form a right-angle triangle between the windward and leeward marks and the reach mark, creating reaches at 135 degrees true wind angle, with a 90 degree turn at the reach mark. For tighter, higher-speed reaches, move the reach mark further out. Strong wind conditions may require deeper reaching angles, in which case, move the reach mark in, closer to the line between windward and leeward marks.

4.6.5 If the current is with the wind direction, make the angle shallower (it is a header on both jibes). If the current is in opposite direction to the wind, make the angle steeper (it is a lift on both jibes).

4.6.6 Keep in mind that a reach mark can significantly widen the racecourse and may make interference with commercial traffic more likely. Be ready to shepherd the fleet if necessary.

4.7 Upwind Finish Line

4.7.1 Proceed to the location designated by the SI's (usually to windward of the windward mark or windward of the leeward mark). Take and report wind and current

readings.

4.7.2 Anchor the finish-line pin buoy.

4.7.3 Anchor the finish-line boat opposite the pin buoy. Set line length at 4 to 6 lengths of the longest boat racing. Racers cross the finish line from the direction of the previous mark, generally leaving the pin to port. The bearing to the buoy should be 90 degrees to the wind. Fly the blue finish-line flag.

4.7.4 Record sail numbers as boats finish and, if required for handicap racing, record finishing times by class. With large fleets use a voice recorder or the one on your phone and also keep a written record. If available, use multiple people to sight and record sail numbers to ensure accuracy.

4.7.5 Even in one design racing when times are not required to calculate finishes, do record times for the first and last finisher.

4.7.6 Text photos of your recording sheets to the race office via cell phone camera.

4.8 Rover (Safety)

4.8.1 Safety is of primary concern and any markset boat may be called upon to assist racers in need. At major events a RIB may be specifically designated as safety boat, with or without medical expertise on board.

4.8.2 The safety boat should take up position where it can quickly get to likely trouble spots and render assistance. Check with the competitor if they want assistance before approaching them. Standby until you feel they have things under control and are safe. Watch for fatigue and keep the PRO informed of the situation.

4.8.3 Be on the lookout for capsizes, collisions or other incidents, staying out of racers' way as much as possible. Also be watching for large commercial traffic that may require an escort.

4.8.4 The PRO, or, in some cases, the Race Office will direct the safety boat's actions and coordinate with emergency services as necessary.

4.8.5 In emergency situations only RC boats involved in the incident should use the radio. Others are to minimize or eliminate all radio communications.

4.8.6 Always keep the PRO informed of safety actions.

5 Gear

The StFYC provides sufficient excellent gear to successfully conduct races. Please bring your own personal gear (See 5.1). Boat drivers should review the Boat Orange Box checklist described in 5.8.1 before leaving the dock. A crew member should obtain the Race Committee Orange Box (See 5.4 and 5.8.1) from the Race Office and check contents. All markset crew should help load the boat with the needed gear for their specific assignments. It is recommended to load a spare anchor, extra lines, and a deadman. It is also good to take ice (may be needed for first aid) and a towel to wipe the windshield in bad weather.

5.1 Personal Gear

5.1.1 Life jacket or Coast Guard approved PFD is required and must always be worn on all boats. (Signal Boat has one if you do not.)

5.1.2 Foul weather gear is almost always needed.

5.1.3 Warm Clothes (layers)

5.1.4 Sunscreen
5.1.5 Hat
5.1.6 Gloves
5.1.7 Boat shoes or boots
5.1.8 Alcohol is not allowed on board Club boats

5.2 Boat Keys

Boats keys should be in the ignition. If not, find the Dockmaster or the Dockmaster's assistant to get you the keys. You should not go into Dockmaster's office and take keys without permission.

5.3 Boat Orange Box w/Boat Name (Safety Box)

This box will be on the RIB and contains:

5.3.1 Inventory List
5.3.2 Emergency Plan
5.3.3 Flares
5.3.4 First aid kit
5.3.5 Sound-making device

5.4 Race Committee Orange Box

Pick up the RC Orange Box for your boat outside the Race Office. Confirm all required equipment is in the box before your leave the Race Office.

5.4.1 Pens/pencils
5.4.2 Paper sheets - finish, start, tablet
5.4.3 Clipboard
5.4.4 Handheld compass and whistle
5.4.5 Air horn
5.4.6 Wind speed meter
5.4.7 Knife
5.4.8 Wind wand
5.4.9 Radio, handheld
5.4.10 GPS, not shown (get extra batteries)
5.4.11 Binoculars

5.5 Gear Assigned at Race Committee Meeting

5.5.1 Boat assignment and specific gear needed will be addressed at the RC meeting.
5.5.2 Marks needed
5.5.3 Anchors suggested in RC meeting

5.5.4 Anchor rodes (lines) suggested in RC meeting

LINE COLOR CODES	
RED	200 FT
BLUE	150 FT
YELLOW	125 FT
BLACK	100 FT
WHITE	75 FT
GREEN	50 FT

5.5.5 Anchor yanker

5.5.6 Digital board or white board with markers

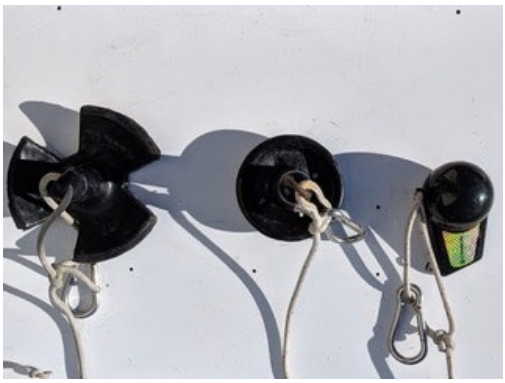
5.5.7 Course change board, +/- board

5.6 Standard Anchors

Pictured below (left to right):

- River anchor, 33 lbs.
- Danforth anchor
- Medium Navy anchor, 28 lbs.

Deadman anchors (pictured below) There are several models – all perform the same function of pulling the rode down from the mark so boats can pass without catching the rode on their keels.



5.7 Other Standard Boat Equipment

5.7.1 Boat hook

5.7.2 Rescue Safety Ladder - located under the console (See 9.4)

5.7.3 Rescue throw line

5.7.4 Anchor yanker

5.7.5 Flag Quiver

The following will be in the quiver:

C – change course
M – missing mark
N – abandon race
S – shorten course
V – fleet shepherding flag

5.8 Handy Checklists

Load the marks, anchors, rodes, flag quiver, flagpole, blue flag (if you are the finish boat), anchor yanker and other equipment needed to perform boat assignment. Then use the checklists below before you leave the dock to confirm that you have all necessary gear.

5.8.1 The standard checklist for every RIB used in a race is shown below.

Boat Key			
Boat Orange Box (boat name)	1. First aid kit 2. Flares	3. Inventory List 4. Emergency Plan	5. Sound-making device
RC Orange Box	1. Pens/pencils 2. Paper–start, finish sheets etc. 3. Compass	4. Air horn 5. Whistle 6. Knife 7. GPS 8. Binoculars	9. Clipboard 10. Wind speed meter 11. Wind wand 12. Radio, handheld 13. Extra batteries
Additional Equipment	1. Flag quiver 2. Boat hook	3. Anchor yanker 4. Rescue throw line	5. Rescue safety ladder 6. Flag pole (optional)

5.8.2 The checklist for a RIB requiring specific gear based on assignment is below. The checklist content will be displayed at the RC meeting and should be recorded on the checklist by a markset crewmember.

Boat Name:			
Assigned Position:			
	Description	Description	Description
1. Anchors			
2. Deadman anchors			
3. Anchor rodes			
4. Marks			
5. Anchor yanker			
6. Start flag, yes/no			
7. Finish flag, yes/no			
8. Tow line, yes/no			
9. Course change board, +/- boards			
10. White board & markers			

5.8.3 StFYC boat assets:

- Signal boats – Wilhite, Cressey, W.L. Stewart (retired)
- RC Markset – Barrows, Harron, Leon, White
- Juniors/RC/Umpire – Dinning, Ford, Reid, Hurst
- Not in service – Johnson, Punnett

6 Protocols for Getting Boats on and off the Racecourse

6.1 Docking Out to the Racecourse

6.1.1 The PRO will state the "dock out time" at the Race Committee Meeting. Once all the correct gear is loaded and crew is wearing their PFDs the boat may leave the dock.

6.1.2 Boats should proceed slowly down the alley respecting the "no wake" zone. Boats should conduct radio check to either the Signal Boat or another markset boat.

6.1.3 Boats should be on the lookout for something unusual like swimmers or rowers and report back to the PRO should they be in danger from the boats leaving the yacht basin.

6.1.4 When in open water, be ready to do wind checks and ping the SB once it anchors.

6.2 After the Last Race While on the Racecourse

6.2.1 After all marks and ground tackle have been recovered and safely secured within the boat or in proper towing position all crew members undertake a slow 360-degree visual search of the racecourse starting at the horizon and working back to the boat to check for competitors and/or Race Committee boats still within proximity of the racing area.

6.2.2 Report to PRO your boat status. Include:

- All marks and ground tackle recovered.
- Any items unrecoverable.
- Fuel state.

6.2.3 Report to PRO your intentions and request permission to undertake. Examples:

- Will proceed to yacht harbor.
- Will proceed to fuel dock and then yacht harbor.
- Will escort competitors to yacht harbor.
- Will remain in the racing area to assist other RC boats as requested.

6.2.4 After this transmission is completed, other Race Committee boats may advise the transmitting boat of any assistance required or that no assistance is required.

6.2.5 PRO confirms plan or requests modification.

6.2.6 Agree on plan with PRO and execute.

6.3 Back at the Dock

At the end of the day leave the markset boats and equipment in the same condition as they were found (i.e. neat and laid out in a seamanlike order). Assist your fellow marksetters in readying their boats and equipment for the next day's activities.

6.4 Each Day, Racing to Continue the Following Day

6.4.1 Remove all personal gear.

6.4.2 Return any marks and/or ground tackle recovered for or borrowed from another Race Committee boat to that boat.

6.4.3 Flake out or make up any lines remaining on board for next day's activities.

6.4.4 Any lines that are damaged and/or have been cut during the day should not remain on the boat. These lines should be reported to the Dockmaster or Race Manager and replaced with undamaged lines.

6.4.5 Clean out cooler.

- Remove all empty bottles, uneaten food items and garbage from cooler.
- Open cooler drain plug. If drain plug is missing its keeper, place it inside cooler to prevent its loss.
- To prevent mold build up, prop cooler lid open with empty water bottle, cooler fastener or similar.

6.4.6 Remove and properly dispose of any garbage.

6.4.7 Dead GPS batteries are not trash and should be returned to the Race Office (southeast corner of Race Deck) for recycling.

6.4.8 Recheck fuel status. If fuel is required, plan time for fueling before the next race day and advise PRO.

6.4.9 Remind PRO if fuel is needed prior to start of the next day's Race Committee briefing so that adequate time is budgeted by the PRO for markset boat(s) to replenish fuel.

6.4.10 Position helm at "full port" position.

6.4.11 Raise motor. At some events (e.g. Big Boat Series), the docking area is densely populated with moving boats. Do not raise the engine in that situation since it is a potential hazard to other boats. Inform the Dockmaster or Assistant that the engine was not raised.

6.4.12 Secure electronics.

6.4.13 Turn all switches to "off" position.

6.4.14 Turn off all batteries.

6.4.15 Replace instrument covers.

6.4.16 Secure inflatable marks in boat in such a manner that most of the mark is not touching the water.

6.4.17 Remove any finish sheets, course rounding order sheets and/or other written or verbal (via voice recorder) notes from the day and deliver to PRO or Race Office.

6.4.18 Report/confirm problems, lost anchors, damage or shortages to the Dockmaster, Race Manager or PRO.

6.4.19 Be especially watchful of and communicative about inflatable marks that have lost air during the day. Leaking marks need to be repaired or removed from service prior to the next day's racing activities.

6.4.20 If deck of the boat is slick (mud, crushed potato chips, mayonnaise, etc.) hose the boat and ground tackle down until safe deck adhesion is regained.

6.4.21 Bear a hand to assist your fellow marksetters in readying their boats for the next day's activities. Don't leave the Race Committee dock area until all markset boats and gear are ready for the next day's activities.

6.4.22 If the First Aid kit was opened, report this fact and any contents needing replacement to the Dockmaster, Race Manager or PRO.

6.4.23 Place boat's ignition key in the key return box.

6.4.24 If boat was fueled during the day, place fuel receipt in the key return box as well.

6.4.25 Deliver Race Committee Boat box to proper storage location by Race Office (southeast corner of Race Deck).

6.4.26 Place handheld VHF radios in appropriate charger and confirm that the unit is charging (charging light glowing).

6.4.27 Ensure adequate supplies for next day's activities (e.g. batteries, paper, pens) are contained in the Race Committee Boat Box. (See 5.4 and 5.8.1)

6.5 On the Last Day of the Event

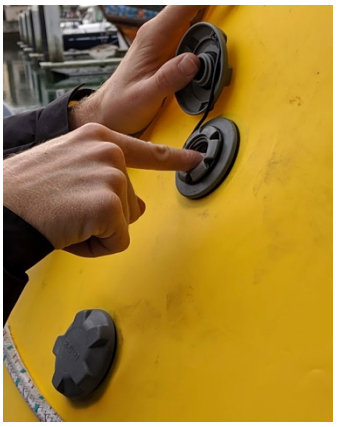
In addition to the activities listed above:

6.5.1 Deflate inflatable marks.

6.5.2 Loosen inflation port(s) protective cap.

6.5.3 Open the inflation port valve and secure in open position by pressing valve stem in and turning counterclockwise.

6.5.4 Use shop vacuum cleaner to assist in deflation of inflatable marks.



6.5.5 Hang inflatable marks in the Race Committee shed.

6.5.6 Return non-deflatable marks to their proper storage area in the Race Committee shed.

6.5.7 Return anchor yanker to its proper storage location in the RC shed.

6.5.8 Make up anchor lines for storage.

6.5.9 Anchor lines should be made up in a secured loop and left with at least a twelve (12) inch “hanging tail”.

6.5.10 Any lines that are damaged or were cut during the day should not be restowed. These lines should be reported to the Dockmaster or Race Manager.

6.5.11 Hang anchor lines by their color code in the proper color-coded storage location in the Race Committee shed. (See photo in 5.5.4)

6.5.12 Confirm appropriate number of flags and flag designations in flag quiver. (see 5.75) Stow signal flag quiver in Race Committee shed on shelf designated for that purpose.

6.5.13 Ask dock attendants if they wish the boats to be hosed down. If so, hose boats down.

6.5.14 Boat hook, first aid kit, boat-stored PFDs and “boat box” (flares, etc.) remain on board the boat.

7 Basic RIB Operation

7.1 The Boats

Effective and safe operation of our Race Committee boats is essential to ensuring the competitors and Race Committee have enjoyable experiences on the water. Protect yourself, your crew, the competitors, our boats and equipment.

7.1.1 RIBs – primarily used for Markset, Start, Finish and Safety/Rescue.

7.1.2 Names of RIBs used in radio calls: Barrows - Leon – Harron – White

7.1.3 Controls

Battery Master Switch – Turn to “BOTH” or “ALL”.

- Grey RIBS (Harron & White) – Located in aft starboard hatch. Follow instructions posted in battery compartment.
- Black RIBs (Barrows & Leon) – located on lower portion of console below the radio.

Console Layout – RIBs vary in their layouts, but the equipment is similar.

Electric Switch Panel – These are different on each boat and are labeled. Only turn on the switches that you need (VHF, Instruments). The bilge pump is automatic, and the switch controls a secondary pump that should only be switched on when there is an excessive amount of water in the boat. Note: Boat operators should always check navigation lights prior to leaving the dock. Navigation lights must be displayed: (1) When away from dock between sunset and sunrise and (2) During periods of restricted visibility such as fog or heavy rain.

7.1.4 RIB Console

1. **Steering Wheel –** Turns the engine back and forth. If you notice the steering feels loose, please inform a StFYC Waterfront Staff Member.
2. **Gear Selector/Throttle --** Controls forward and reverse shifting and throttle. Must be in neutral to start engine.
3. **Power Trim/Engine Tilt –** Check placard on each RIB as to whether the engine needs to be turned to port or centered before raising or lowering. During operation the engines should remain trimmed all the way down.
4. **Key --** Insert and rotate to the right to "ON" (one click).
5. **Engine Kill Switch –** SAFETY FEATURE – The engine will not start or run unless the key lock plate is inserted correctly. For single crew member operation, attach lanyard to a secure place on clothing. Power is disabled when the operator leaves the helm.
6. **Battery Master Switch –** Arrow should point up in "OFF" position. Rotate 180 degrees to point down for "ON" position.
7. **Speedometer –** Shows speed of the boat in NMPH.
8. **Tachometer –** Shows RPMs of the engine.
9. **Fuel Gauge –** Displayed on the right hand side of the speedometer display, shown as small rectangular bars. A full column of bars from bottom to top is a full tank. If you have less than one-half a tank you should fuel up prior to beginning the race day. If you have one blinking bar you are nearly out of fuel.

10. **Engine Trim Meter –** Shows the position of the engine vertically. Should always be operated in full down position.
11. **VHF Radio –** Used to transmit and receive messages (See Appendix 2 for instructions).
12. **Furuno Display –** Only available on Black RIBs (Harron and White). Displays charts, depth, wind, etc. Only to be used by qualified operators.
13. **Electrical Switch Panel –** See photo in 7.1.4.

7.1.5 Secure dock lines - Aft dock lines can wash overboard and foul the prop if not secured.

7.1.6 RIB tubes - Check inflation. Ask Dockmaster if you are not sure.

7.1.7 Fuel level - Check fuel gauge. Fuel if required. Be sure to sign the gas receipt legibly.

7.2 Starting Procedures

7.2.1 Pre-Operation Checks

- Check that the battery switch is in the “BOTH” or “ALL” position
- Check that engine is trimmed down and propeller is clear
- Check fuel level
- Check throttle control lever is in neutral position
- Check engine kill switch is correctly installed

7.2.2 Starting the Engine

- Start Engine – Rotate key to “START”. Hold for a maximum of 5 seconds. When engine starts, release key. Do not turn the key to “START” when the engine is running.
- Warm Up Engine – Allow engine to run at idle speed for 3 minutes before operating.
- Check for steady flow of water -- Water should be running out of the back or side of the engine.

7.2.3 If Engine will not Start

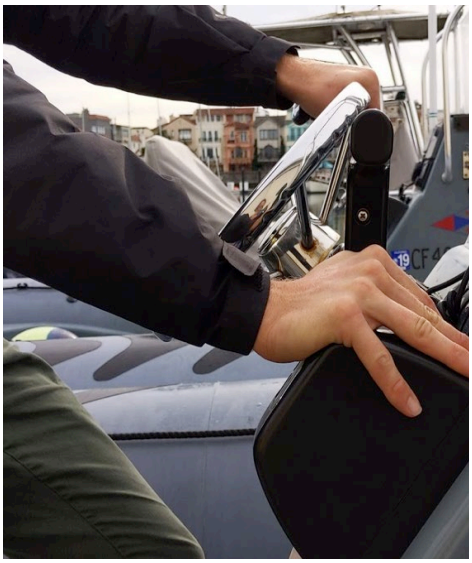
- Ensure the engine is in neutral before starting.
- Do not run the starter motor for more than 5 seconds. The battery will rapidly exhaust.
- Rerun all PRE-OPERATION checks.
- Return key to “ON” position, wait 10 seconds and restart.
- Shifting and Throttle – Before shifting, check for obstacles. All lines including anchor rode must be clear of the propeller. Shift to Forward by moving control lever from Neutral to Forward. Shift to Reverse by moving control lever crisply from Neutral to Reverse. Reduce engine speed by moving lever toward Neutral. DO NOT SHIFT FROM FORWARD TO REVERSE WITHOUT STOPPING BRIEFLY IN NEUTRAL.

7.2.4 Stopping the Engine **–** Turn key counterclockwise to “OFF”.

7.2.5 If the engine dies:

- Check for fouled propeller
- Check for kill switch

7.2.6 Operating the engine



Reverse Speed – SLOW! Open throttle no more than half to prevent loss of control or flooding the cockpit through the transom.

Forward Speed – How fast to go? Generally, there is no need for top speed. Let crew comfort dictate speed. Travel only as fast as you need to in order to complete your assignment. Leave no wake in the harbor.

Relaxed Right Arm – Experienced operators drive with a "relaxed" right arm and hand low on the throttle to prevent accidental acceleration or deceleration when hitting a wave.

Thumb Off the Engine Lift Switch – Avoid accidental engine lift by keeping right thumb off the engine trim switch especially when at speed in rough water.

7.3 Fueling

7.3.1 Always check fuel level before leaving the dock and before returning to dock at the end of the day. If fuel is needed, tell the PRO and proceed to the fuel dock in Gashouse Cove, next to Fort Mason.

7.3.1 The fuel dock attendant will know where the fill points on each RIB are. Take care when adding fuel to avoid spillage. The fuel dock attendant will have a rag to wipe up any excess fuel.

7.3.2 StFYC has an account with the fuel dock; so, after refueling, sign the credit card form and take a copy to the Race Office or deposit in key box.

8 Basic Mark Handling

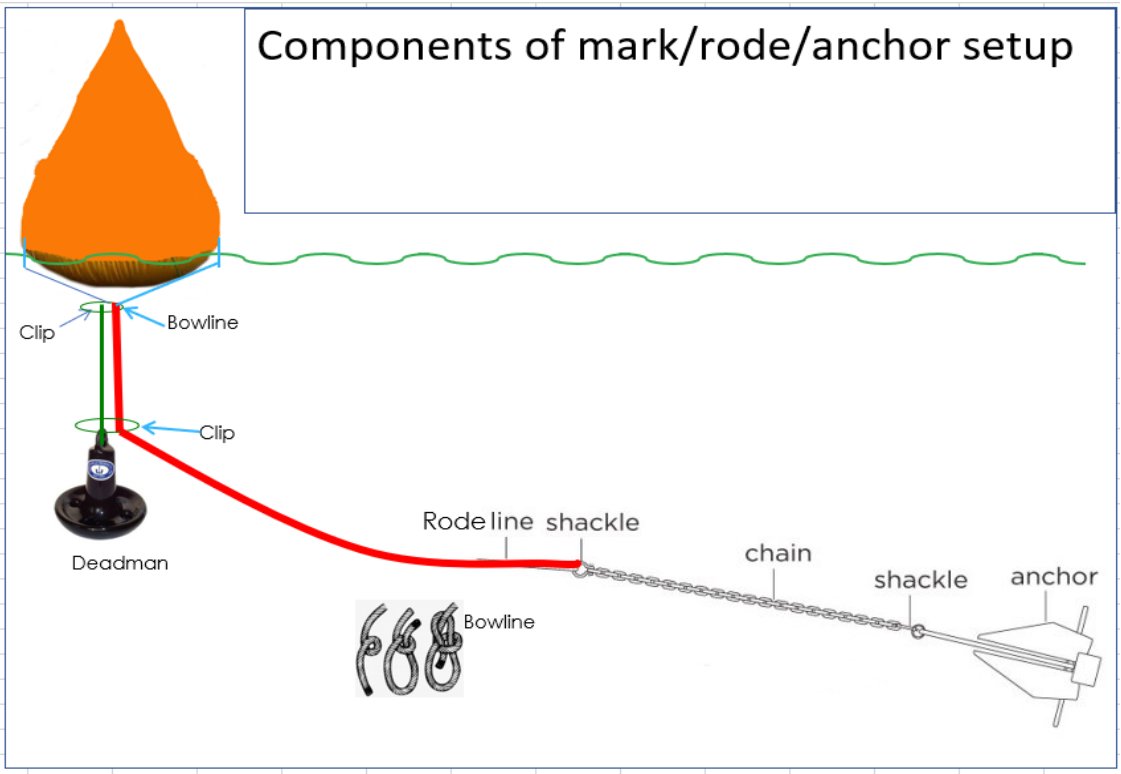
The most fundamental work of the mark set crew is the anchor and mark set up. The right way to set an anchor depends on how precisely it needs to be positioned as determined by PRO. Two methods are typically used to set racecourse marks: "Drop and Go" and "Drag and Drop".

The "Drop and Go", sometimes called "Anchor Drop" is when an anchor is lowered over the side of the RIB with rode and mark to follow. "Drop and Go" is most likely used for the windward mark and its offset, the leeward mark and the primary gate mark.

For "Drag and Drop", sometimes called "Streaming", the mark is streamed aft of the moving markset boat with the anchor remaining on board until released after receiving command from PRO. This is most often used for the starting line pin, finish pin and the second leeward gate.

Before examining each method, it is important to understand the components of anchor setup.

8.1 Anatomy of a Mark



8.1.1 The markset team will load anchors and deadman usually into the stern area to avoid sliding when the RIB is operated with speed. The anchor rodes should be tied to available rails on the RIB. Often the markset team will flake and tie the anchors to the rodes prior to leaving the dock.

8.1.2 Generally Navy anchors are best in soft mud found on most of the Bay's bottom. Danforth anchors work best in hard sand ground found in areas off the north end of Treasure Island. Markset crews are currently experimenting with river anchors and are finding them superior to Navy anchors in holding to the bottom in strong currents.

8.1.3 Choosing the right rode length is critical. Once you know the water depth use a rode that is 1½ to 2 times depth. In strong current the length can be increased to 3 times depth for maximum anchor holding power.

8.1.4 A safe choice is the 125-foot length for the city front and water depth of 50 to 70 feet. If setting up off the seawall, the 75 or 100-foot lengths are good choices. The 150 and 200-foot lengths generally are the best choice for Alcatraz Island setup areas. Several rodes can be tied together with bowlines for use in deeper water found toward the Golden Gate Bridge.

8.1.5 The markset team will tie a bowline with a half hitch onto the anchor chain shackling and tie the other end to the metallic "D" ring or swivel device on the bottom of the mark. Tie the bowline with a big loop and generous tail and follow with a half hitch. You do not need to cinch the bowline up tight as the current will tighten up the knots.

8.1.6 Prior to launching the mark, the team will clip a deadman to the ring or swivel on the bottom of the mark and to the anchor rode. This is done for all marks with the

finishing pin perhaps the only exception. The deadman keeps the anchor rode angled steep in the water to prevent snagging the keels of the racing boats as they move past the mark.

8.2 "Drop and Go" (aka "Anchor Drop")

8.2.1 This method is used for windward, leeward and reaching marks that are a relatively long way from the start. The mark can be set by simply driving to the assigned spot, dropping the anchor to the bottom, and letting the rode and mark settle in. In strong current the markset team should advance the placement of the drop; that is, go past the assigned spot, drop the anchor to the bottom and let the rode and mark settle in. Often, in very strong current, the markset driver will advance the anchor drop approximately 0.3 NM to allow the mark to settle in at the desired location.

8.2.2 To prepare for "drop and go", first secure the anchor rode to the forward Barney post leaving a generous tail free. Then flake out the rode and tie the end onto the anchor shackle with a bowline and a half hitch. Place the anchor on top of the flaked out rode. This can be done well in advance.

8.2.3 When in the vicinity of where the mark should be launched, tie the loose end of the rode to the "D" ring or swivel with a bowline and half hitch. Clip the long end of the deadman to the ring or swivel and clip the shorter end onto the anchor rode. Note: This step can be done after dropping the anchor and the boat settles in on the rode secured to the Barney post.

8.2.4 Maneuver the boat into position for splash – verify your distance and bearing with the PRO and cross-reference with compass bearing or GPS.

8.2.5 Check that the prop is clear.

8.2.6 Check all crew's feet are clear.

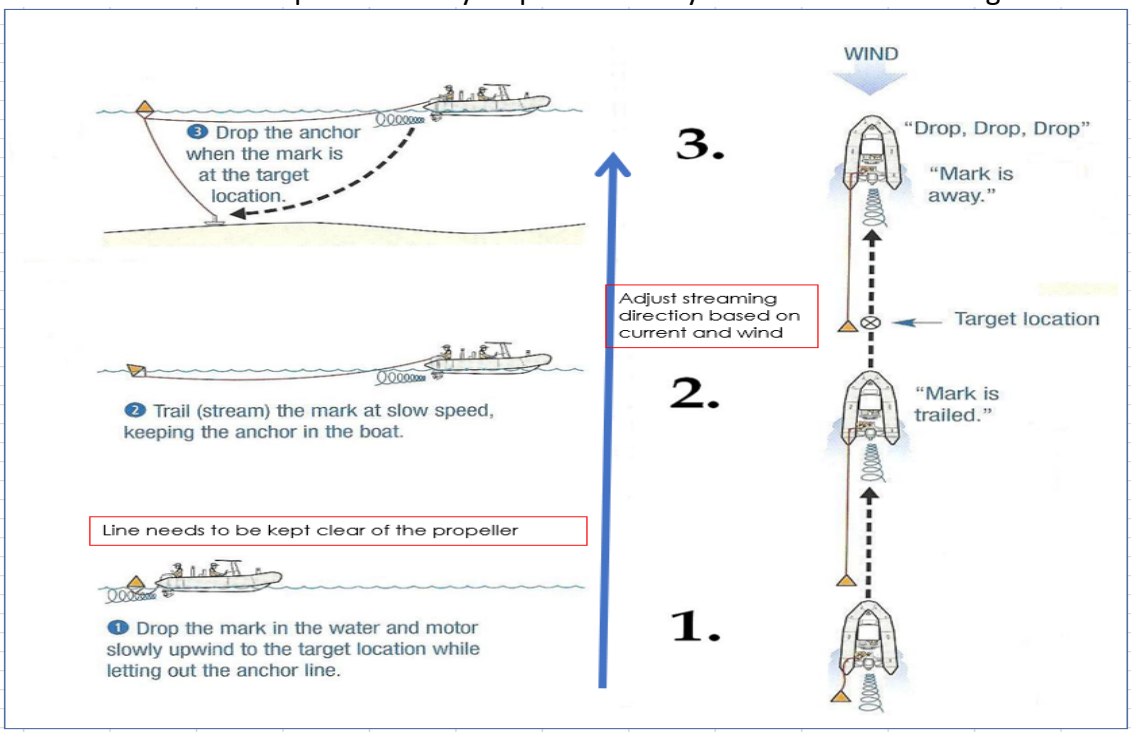
8.2.7 Lower the anchor over the side, ensuring that the chain streams behind it as it falls. Avoid throwing anchor and chain out together as they may tangle on the bottom and/or foul the prop.

8.2.8 When the anchor is on the bottom, pay out the remaining anchor rode, making sure it is secured to the Barney post. If time permits let the boat settle on the anchor and check your position. The boat will settle very close to the final position of the mark. Verify position with the PRO and drag the anchor into position as required.

8.2.9 Free the rode from the Barney post and drop the deadman over the side, then drop the mark. Move the boat slowly away from the mark. Take bearings as necessary to ensure the anchor is holding. Notify PRO that the mark is in the water and holding.

8.3 "Drag and Drop" (aka "Streaming")

8.3.1 Gates, offsets, and start/finish line marks need to be set at precise bearing and distance. The "drag and drop" method is effective to achieve pinpoint accuracy to make the racecourse true to the wind or to "bias" the course at the instruction of the PRO. Inform the PRO of length of line intending to be used and water depth at position and again at the start of the run and advise, "*mark streaming, chain in the boat*". The call to "drop" is made by a spotter usually from the anchored Signal Boat.



8.3.2 Starting from the desired position where the mark will end up, drive down current or downwind (whichever dominates) a distance at least the length of the anchor rode.

8.3.3 Put the buoy and deadman over the stern and pay out rode as you drive slowly back toward the line. This is called streaming the mark.

8.3.4 Pay out rode until the anchor chain is over the stern and proceed slowly up-current or upwind, dragging the buoy and rode, until the PRO gives the command “Drop, Drop, Drop”.

8.3.5 Release the anchor. The buoy should stay in place as the anchor settles on the bottom.

8.3.6 Confirm start line length and bearing with the PRO. Adjust as necessary. Most likely, the PRO called the “Drop” right on where the buoy needed to be or may have left some room for adjustment.

8.3.7 If adjustment is needed, try pulling the mark if in the direction of current. If you need to go against the current, the usual procedure is to pick up the anchor and start over. Pulling a mark against the current is usually unsuccessful and a waste of valuable time.

8.3.8 The “Drag and Drop” is also effective to set marks without a spotter. If the wind and current allow, one can “self-mark” by revving the motor to create prop wash at the desired position as the boat makes its downwind or down-current leg. As the boat turns on its final leg the crew will look for the prop wash in the water. The markset team will aim for the spot and release the anchor as the mark drags over the prop wash.

8.4 Capturing and Securing a Mark, Conical

8.4.1 Teamwork – The forward crew and boat driver work as a team to get a mark on board. Distinct hand signals and voice communication make it easier. Usually the driver will approach the mark going into the prevailing tide and wind.

8.4.2 Move the anchor yanker forward.

8.4.3 Go for the girth line tail then follow the girth line to the rode.

8.4.4 Crew uses a definitive straight-arm signal to direct the driver in the direction of the anchor rode to free slack. Point in the direction of the rode.

8.4.5 Gather 10 feet or more of rode slack and securely belay to the Barney post. The mark and deadman can trail in the water during this process.

8.4.6 Pull the mark and deadman aboard.

8.4.7 Remove the deadman and mark from the line. Place deadman in stern of the boat so it will not bounce on anyone's feet.

8.4.8 Move a cone mark to the stern and tie the top lanyard to a cleat with 9 to 12 inches of slack.

8.5 Capturing and Securing a Mark, Ball Type

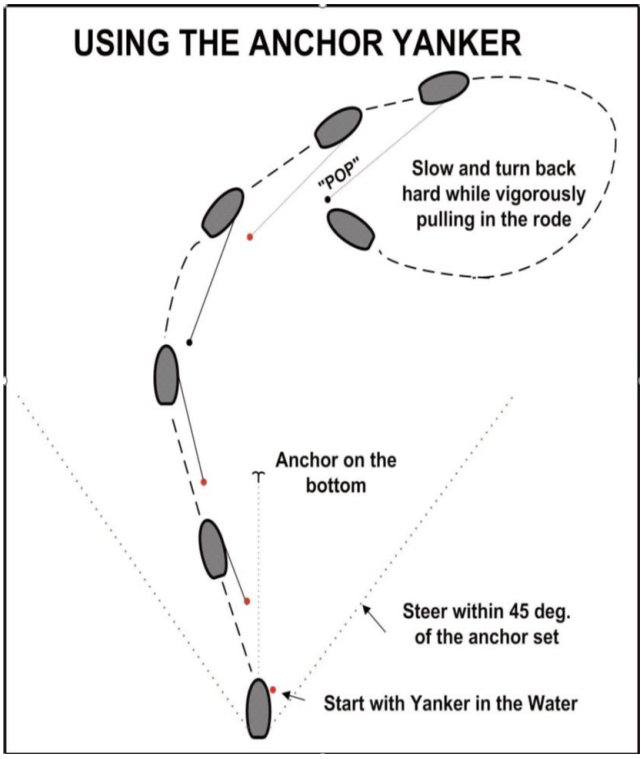
8.5.1 Use either a "lasso" (throw the bow line around the mark) or a boat hook to capture the mark.

8.6 Pulling Up the Anchor and Getting It Aboard

8.6.1 Use the anchor yanker to get the anchor aboard. Place the anchor yanker ring over rode and close by attaching the anchor yanker carabineer. Once the anchor yanker is secured on the rode, cast it overboard.

8.6.2 Driver keeps the prop clear throughout the process.

8.6.3 Driver checks racecourse to verify no traffic conflicts with this maneuver.



8.6.4 Gradually accelerate the boat in the direction opposite the anchor "set" and on a slightly curved course (upwind in flood and westerly, sometimes downwind in a light westerly and ebb). Remain at speed until the anchor yanker ball sinks then "pops" to the surface. The "pop" indicates the anchor is clear of the bottom and chain is through the yanker ring.

8.6.5 Slow down and turn back sharply toward the ball while the forward crew energetically gathers the anchor rode. Travel no faster than the rode is pulled aboard.

8.6.6 Pull the anchor aboard. Untie.

8.6.7 Move anchor and deadman to stern.

8.7 Running the Race

8.7.1 **The mission**: Always be "transparent" to the racers. Marks are where they should be, lines are appropriate, races start on time and are as perfect as we can make them. RC boats minimize interference with racers via wake or wind shadow or that otherwise impede the racers except for safety reasons. Smaller boats require greater consideration. Always stay in the vicinity of your mark unless PRO pulls you off for duty elsewhere. Ask permission of PRO if you need to go off station.

8.7.2 If you are trailing a spare mark behind your RIB, pay attention to the fact that this mark could confuse the competitors from a distance as to the location of the real mark. Position yourself accordingly. Often markset crew will place a spare mark upside down in the boat or place the mark alongside the rib and position the boat in a manner that shields the mark from view of the approaching fleet.

8.7.3 Taking readings of wind and current

Stop the boat. Eliminate the wind vector associated with a moving boat. Always be at a complete stop before checking wind direction with the compass.

8.7.4 Holding the compass

- All hand-bearing compasses have a lanyard to put around your neck, so you always have the compass handy. Just tuck it under your PFD when not in use.
- There are many ways to hold the compass. Find a technique that keeps the compass steady so that the numbers on the compass dial are easy to read. The farther away you hold the compass the smaller the numbers on the dial are. Find the bearing by looking through the window on the compass.
- The compass needs sunlight to illuminate the dial. Hats and the sunshades on some of the RIBs can make it difficult to see the reading.
- Do not hold the compass near any magnetic part of the boat or on your person, (e.g. engine, radio, console, Bimini cover supports, cell phone, etc.).

8.7.5 Reading the Wind Direction

Stand at the windward end of the boat to minimize error caused by the wind being buffeted by the steering console, superstructure and antennas. Make sure you are away from other crew members.

Method A: Every RC box should have a wind stick. This is a small diameter wooden dowel with some yard tied on the end. Hold the wind stick at arm's length. Turn your body so that the yarn is pointing directly at you. If possible, take notice of a land reference. Position the compass and align it with the yarn or the land reference and get the bearing.

Method B: With practice one can do without the wind stick very reliably. Close your eyes and gently turn your head left and right until the wind pressure on both ears and cheeks is the same. Position the compass and get the bearing.

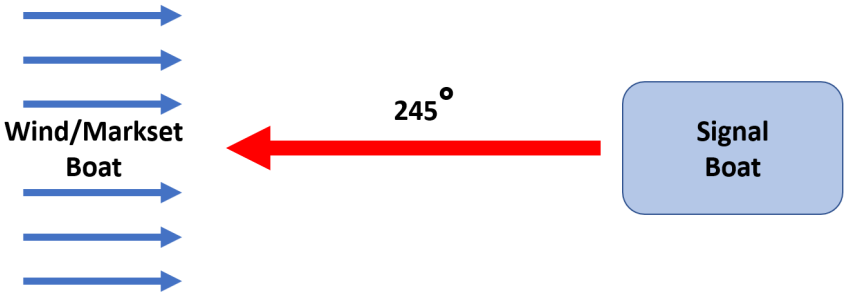
8.7.6 Ask other crew members to read the wind direction to reach a consensus. This is a good learning opportunity for new crew.

8.7.7 Checking wind speed

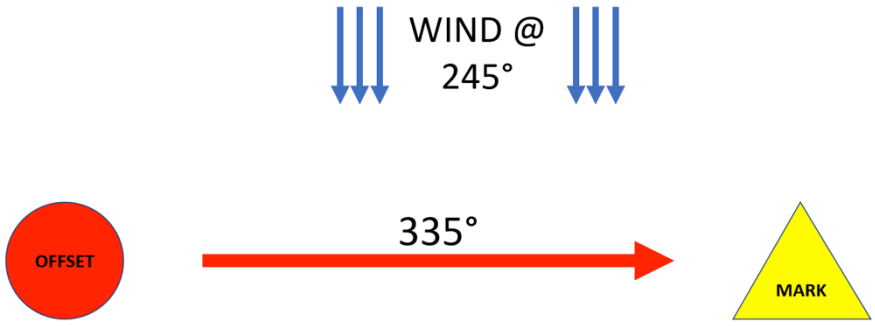
Use the anemometer found in the RC box. Be sure the scale is in knots. Report either an average wind speed or the average with highest gust you may read.

8.7.8 Reciprocal and Line Bearings

Add or subtract 180 degrees from the wind direction to establish the reciprocal bearing. If the wind direction is 180 degrees or more, subtract 180. If the wind direction is less than 180 degrees, add 180. (245 degree wind – 180 = 65 degree reciprocal).



Add 90 degrees from the wind direction to find the "square" line bearing (245 degree wind + 90 = 335 degree square line).



8.7.9 Frequent readings

During the pre-start and during the race continue to take wind and current readings. Report a change to the PRO. It is good practice to periodically report wind and current readings; it ensures that the radio contact is active and did not accidentally get disrupted. Try not to report when a fleet is starting unless asked for a report.

8.7.10 Current Speed and Direction

One knot of current is approximately 100 feet per minute. Drop a current stick near a mark and estimate distance traveled during a minute (or 30 seconds if fast current). An apple can be used as alternative to a current stick. Use the hand-bearing compass to estimate current direction. Retrieve current stick.

8.7.11 Repositioning a mark - dragging

- For small changes in mark location it is preferable to drag the anchor, but only if it is Navy type. Danforth type can be dragged, but it does not reset. Anchor can be dragged only in the direction that the anchor rode is set. Do not try to drag toward the anchor and over it. It will not reset.
- Grab the mark as though you are about to pull it. Tie the anchor line to the post, either the bow or the stern. Depending upon the sea condition, it is up to the boat captain to decide whether to tow driving forward or in reverse.
- When initially setting the mark, it is a good idea to err in its placement up from the direction in which the mark can be dragged. Judging the combination of the current and wind effect on the final mark gives the amount of correction needed in the initial anchor drop location.

8.7.12 Action Required After Wind Shift

- Depending on time available pull and reset or drag the old mark to a new position. Alternatively, a new mark may be set, and the old mark pulled later. Confirm the plan with the PRO.
- Proceed to new location. For new mark, prepare anchor, rode, mark and deadman in transit.
- Upon arrival, check and report wind direction. If a new mark is placed, check reciprocal to the leeward mark/gates. Confirm position with the PRO.
- Set new mark.
- Return to old mark and pick it up.

8.7.13 Signaling Course Change

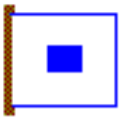
- Proceed to designated mark.
- If time allows anchor (preferable) or use engine to maintain station.
- Position the boat approximately 4 times the length of the longest boat racing to leeward of a leeward mark or to windward of a windward mark.
- Fly code flag “C”.

- Use the digital board to display new course heading. Add plus or minus sign below heading if distance is also changed.

- Make repeated sound signals as boats approach (horn or whistle).

8.7.14 Shortening Course and Finishing at a Mark

- Proceed to designated mark; this mark will become the finish line pin.
- Anchor following instructions in 8.2 and 8.3 as applicable.
- Fly code flag “S”.



- Record results (sail number as boats finish and if required for handicap racing, record finishing times by class).
- Make sound signal for each finisher. (This is good practice, although not required.)

8.7.15 Replacing a Missing Mark

If for some reason a mark is pulled out of position (e.g. by heavy current or dragged out by a competitor), the markset boat may have to "become the mark". Either the PRO will make that call or the markset team will move in notifying the PRO of their intentions. Time is of the essence and the following protocol should be followed:

- Proceed to original location of the missing mark while informing Signal Boat.
- If time allows anchor (preferable) or use engine to maintain station.
- Be sure you have the attention of the first boat going to the missing mark as all others will usually follow. Hold "M" flag up making it visible to all competitors. The "M" flag should remain up until all boats round the mark.

- Make repetitive sound signals – the whistle from Race Committee Orange Box is fine for smaller one-design boats; use the air horn for larger boats.
- Boat driver should maintain the boat on position making the rounding fair to all competitors.
- The markset boat bow should face the competitors to keep engine components away from the fleet, which would be a potential hazard.
- Have an escape route planned for safety reasons should the markset boat have to abandon the position.

8.8 Shepherding the Fleet

8.8.1 Escorting commercial ship traffic

Part of the Race Committee's job is to help keep racing safe. Our bay has a high volume of commercial traffic, including large container ships with limited maneuverability and limited line of sight angles.

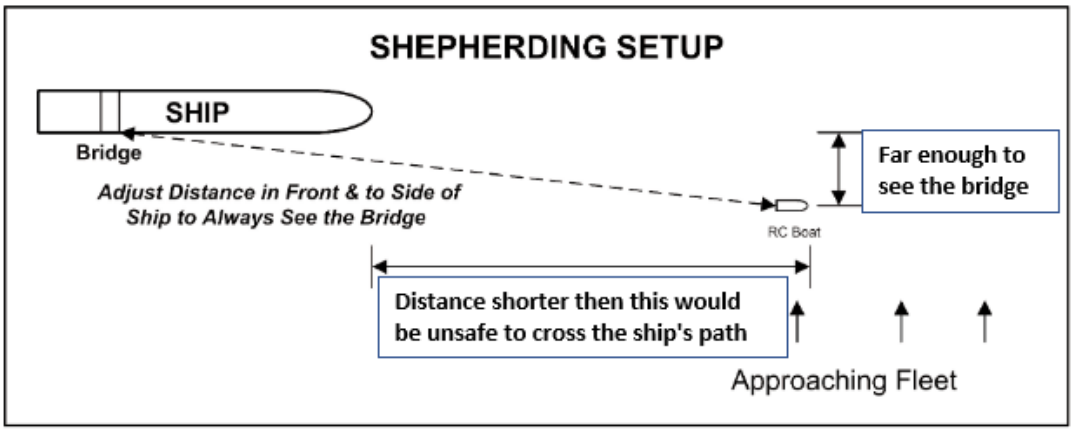
Racers must not impede the passage of commercial vessels. Doing so is not only dangerous, it is against the law and can result in significant fines. While it is the responsibility of the racers to observe Inland Navigation Rules, in the heat of the moment they might not pay attention to commercial traffic, or mistakenly think that a ship is far away and moving slowly enough for them to cut in front. The result can range from five horn blasts from an irritated bay pilot to a serious accident.

The Race Committee can help by setting up a moving "no sail" zone in front of a ship. Escorting a ship or, as it is sometimes called, "shepherding the fleet," keeps racing safe and fair, while maintaining a cordial relationship between StFYC and the bay pilots. During the escort process, the PRO maintains contact with the ship's bridge and Vessel Traffic; other RC boats should not do so, unless specifically instructed otherwise by the PRO.

8.8.2 Escort Position and Speed

When called upon by the PRO to escort a ship, leave your normal station, and before the ship enters the racing area position your boat ahead of, and slightly off to the side of its bow. You must be able to see the bridge, so that the pilot can see you. Choose the side where most of the fleet is, such that a racer would have to cross your path before getting in front of the ship. Match the ship's speed (typically around 15 knots - faster than you might think!) and **always be able to see a window on the ship's bridge.** That way, the pilot can see you. He needs to be convinced visually that you are working with him to keep his path clear.

If you can't see the bridge behind stacked containers, you are too close! Accelerate and move further ahead of the ship and to the side of the ship per diagram. The minimum distance depends on the cargo configuration (larger for fully loaded container ships, for example). It may be appropriate to shoot further ahead to intercept approaching racers in time for them to respond, but otherwise keep a steady distance, matching ship's speed, to reduce confusion by all parties.



If racers are on both sides of the ship's course that might interfere, report that fact to the PRO. If RC assets are available, the PRO may assign a second escort. If not, increase your speed so you can safely move from one side to the other as racers approach the ship's course. Inform our radio operator, in contact with the ship's pilot, of your intention to cross the ship's path. Be deliberate with your movements, so that the pilot will see them as consistent with the racing fleet's layout on either side of the ship's course.

8.8.3 Signaling a Racer

Have a loud whistle and code flag V in your hand. If a racer attempts to pass between you and the commercial vessel, or is headed too close to the ship, intersect and instruct the racer as they approach to change course. Blow the whistle loudly to attract attention, then point the V flag in the direction you wish them to move. The racer must then change course (usually by tacking or jibing) to get clear away from the ship's path.

If the racer seems confused, repeat the signal by making a sound signal clearly pointing the V flag. If the racer fails to take appropriate action, note their number and at the next opportunity make a report to the PRO. The racer may be subject to protest if they do not follow your instructions, even if they successfully cross in front of the ship. This authority is granted by the standard StFYC Sailing Instructions.

8.8.4 Ending the escort

When it is clear that no other racers are at risk of interfering with the ship's passage, check in with the PRO before returning to your normal station.

9 Appendix 1 – Safety on Board

The safety of Race Committee members, racers and others sharing San Francisco Bay is the first concern of the St. Francis Yacht Club. The points below are very brief and intended only as guides and reminders. They will not replace certified training, good sense and experience.

9.1 Emergency First Response to Some Injuries

- Concussion - have the person sit. Keep them warm.
- Hypothermia – have the person sit. Lend them a hat and foul weather jacket.
- Laceration – stop the bleeding. Apply compress from first aid kit.
- Contusion – apply ice. Consider if there might be a broken bone before moving the limb.
- Seizure – lay the person down. Check for breathing and pulse. If you know how, apply CPR.

9.2 Commonly Encountered Situations

- **Capsized dinghy, crew with the boat** – if crew is uninjured, this condition often will clear itself. Advise the PRO of sail number and monitor the situation.
- **Capsized dinghy with no crew present** - look upwind and down. The crew may have become separated from the boat by 100 yards or more. Get them aboard and back with their boat. If turtled (upside down) check if a crew member is under the boat by pounding on hull and hailing or attempting to right the hull.
- **Injured person in the water -** get the victim out of the water by approaching slowly to capture her/him forward of mid-ship (as far from the prop as possible). Kill the engine after capture, put it in gear or remove the key to avoid accidental start. Slide the person aft to lower freeboard and help the person aboard. If there appears to be a neck injury, get advice before proceeding.

9.3 Other Safety Guidelines

- **Speed -** generally there is no need for high speed -- let crew comfort dictate speed most of the time. Travel only as fast as needed to complete your assignment. Leave no wake in the harbor unless a medical emergency.
- **Fouled propeller –** when an anchor line fouls the propeller, the engine will automatically cut off. Nevertheless, THE PERSON WHO DEALS WITH THE FOULED PROP MUST ENSURE THE ENGINE IS OFF. REMOVE KEY FROM IGNITION. If anchor rode is slack, center and lift engine, and attempt to clear the foul with the boat hook. If anchor rode is under tensile stress, do not lift the engine as it may cause damage. Attempt to put slack in the anchor rode using the boat hook. If this does not work, call for assistance by a nearby markset boat.

- **Engine cutoff lanyard** – All boat drivers are expected to wear the engine cutoff lanyard by attaching it to their belt or other part of clothing when operating the boat.

9.4 Using the Rescue Safety Ladder

- Shut down the engine.
- Capture the overboard person on a side of the boat.
- Clip safety ladder to a secure point and move the person to the stern.
- If person is capable, have the person climb the ladder.

10 Appendix 2 – Basic Radio/GPS Operation

Clear and concise radio communication is key to providing good racing for the competitors and is essential in the case of an emergency. All the RC boats are equipped with a VHF radio. A handheld backup radio should be carried as well.

10.1 VHF Radio Controls

1. **Power Switch** – Press and hold to turn on the transceiver and again to turn off.
2. **Volume Contro**l – Rotate to adjust volume.
3. **Squelch Control** – Adjusts the sensitivity of received transmissions to avoid unwanted noise.
4. **Channel Selector Knob** – Rotary knob used to select channels. Can easily be knocked and rotated to an undesired channel.
5. **High/Low Transmission Wattage** – Press button to cycle through High, Med, Low levels. High level should only be used when needing to transmit over a long distance (greater than 3 miles).
6. **Distress Key** – Use only in the event of emergency and after exhausting boat support. Lift red cover, press button.
7. **Hail** – Use to operate the PA function on some boats.
8. **PTT (Push-To-Talk) Switch** – Push and hold to transmit a message. Wait one second after pushing before beginning to speak.
9. **Channel Selector Keys** – Functions the same as the channel selector knob but allows the operator to change channels through the microphone.

10.2 Basic Radio Operation

Usually mariners and the USCG monitor channel 16. Channel 16 is for hailing a boat and is designated as the national distress, safety and calling frequency. The Signal Boat monitors channel 16. On markset boats there is no need to monitor channel 16. Use the working channels 68, 69, 71, or 72. Typically, the Race Committee uses 69 on the city front and 72 on the Olympic Circle area.

10.2.1 To Receive

- Press and hold the PWR switch (#1 above) to turn the radio ON.
- Turn the SQL knob (#3 above) fully counterclockwise.
- Turn up the volume (#2 above) until noise or audio from the speaker is at a comfortable level.
- Turn the SQL knob slowly clockwise until random noise disappears.
- Turn the Channel Selector knob (#4 above) to select the desired channel.

10.2.2 To Transmit

- Perform "Receive" steps.
- Before transmitting, monitor the channel to ensure it is clear.
- Press and hold the PTT switch (#8 above). The TX indicator on the LCD is displayed.
- Speak slowly and clearly into the microphone.
- Shield the radio from the wind noise. With microphone pointed upwind, it is impossible to hear spoken words. Duck behind a windshield or use a cupped hand or put a baggie over the microphone (best for wet conditions).
- When the transmission is finished, release the PTT switch.

10.2.3 VHF Radio Protocols

1. Prior to leaving the harbor perform a radio check with the SB as follows:
   - "*Name of Signal Boat, this is the (Name of your boat) radio check 69.*"
   - *"(Name of your boat) this is the "Signal Boat" you are coming in loud and clear. Do you copy?"*
   - *"Signal Boat this is the (Name of your boat) you are coming in loud and clear.*"
2. At this point you have checked in and can proceed to the racing area.
3. Once on the racecourse:
   A. Go to your assigned area and alert the SB you are on station and ready.
   B. Instruction (e.g. by SB) or an Advice is given:

      Example:

      Respond if in the affirmative:

      "I will/can ... " - followed by the instruction or advice in full.

      Respond if in the negative:

      "I cannot ... " - followed by the instruction or advice in full.

   C. Numbers: Spoken in separate digits:

      Example:

      "One-five-zero" for 150 "Two decimal five" for 2.5

D. Positions: When the position is related to the SB, the bearing shall be in the 360 degrees notation from magnetic north and shall be that of the position from the Signal Boat.

Example:

"Your position bearing 137 degrees from SB with a distance of 2.4 nautical miles."

E. Report: Every 2-5 minutes until instructed otherwise. Report clear and concise wind and current velocity and direction.

Example:

- *"Signal Boat, this is the (Name of your boat). I am situated just north of "B" marker and I see 10 knots of breeze at 245 degrees and 2 knots of flood."*
- *"(Name of your boat) this is the Signal Boat. Thank you for that, could you work your way towards Anita Rock and advise current there as well?"*
- *"Signal Boat, this is (Name of your boat) moving to Anita Rock."*

F. Line of Sight: Limit VHF talk with a wave if you are in line of sight with the other boat and have understood the transmission.

Example:

- *"(Name of your boat) this is the Signal Boat could you move the leeward mark to the south 100 yards?"*
- Wave at the SB
- *(Name of your boat) this is the Signal Boat, thanks for the wave.*

10.3 Using the Radio During Emergencies

In the case of emergencies, the PRO should be your first call. Be clear and concise describing the nature of the emergency. With good understanding of the emergency the PRO will advise best course of action and marshal assistance.

Should you hear MAYDAY, PAN-PAN, or SECURITE monitor the radio closely. You may have to assist.

- MAYDAY is distress call
- PAN-PAN is urgency call
- SECURITE is a navigational hazard call.

10.4 GPS Instruction Reference

https://www.youtube.com/watch?v=j5SqJpV_ep8&list=PLiye8CVn8LJopP9HDHfiVt5BxuVzvCX1X&index=2

11 Appendix 3 – Knots to Use, Coiling and Hanging Anchor Lines

11.1 How to Tie a Bowline Knot

The bowline is our standard knot for connecting rode to marks and anchors. An incorrectly tied bowline can result in a lost anchor and perhaps an abandoned race. U.S. Navy research has determined adding a half hitch to a bowline reduces the frequency of knot failure. If you have doubts about your ability to tie a bowline follow the step-by-step procedure outlined here.

Through the ring to left.

With the rode end in your left hand form a small loop extending to the left as shown.

Important-- the rode load end is on the bottom.

Insert the free end up through and out of the small loop. On exit from the loop keep the free end parallel with the load end and on the left.

Pass the free end UNDER the load end and back down through the small loop.

It should look like this.

Pull the bowline tight.

Form a half hitch.

Pull the half hitch tight.

11.2 How to Coil a Line

Neatly coil anchor rode after use. Make longer coils with longer rode. To finish leave about 6 feet free, make 3 or 4 wraps around the coil, pull a loop through and over the coil top. Use the tail of the loop to hang the line.

Use the clove hitch to attach coiled lines to the line bar.

Wrap the coil

Loop through and over

Ready to hang

Clove hitch

12 Appendix 4 – Mark Tie Examples

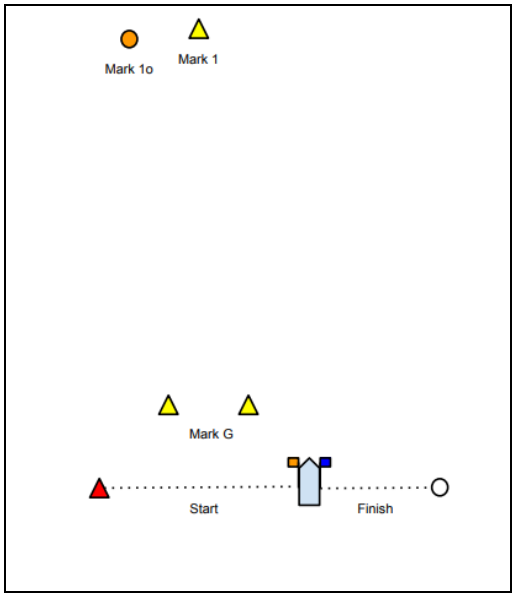
Example of towing marks behind markset boat (lines routed through engine rope guard).

Example of tethering marks together. One mark is anchored; both have deadman to stay upright.

13 Appendix 5 - Typical Course Setups

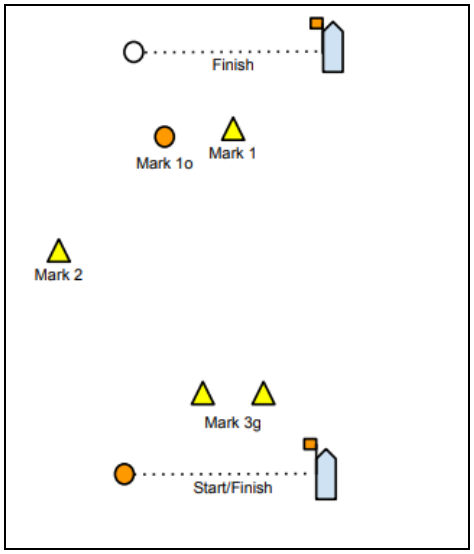
13.1 Basic Windward/Leeward

This works for single fleet or multiple fleets of similar speeds.

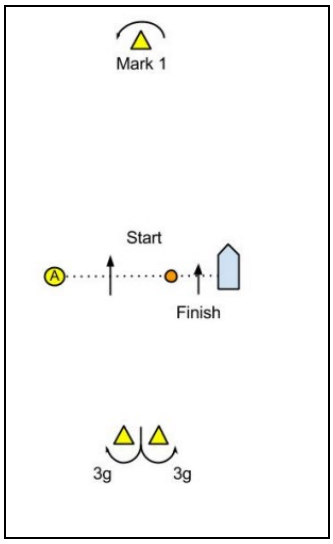


13.2 Triangle/Windward/Leeward

May be used in a national championship for a single fleet.

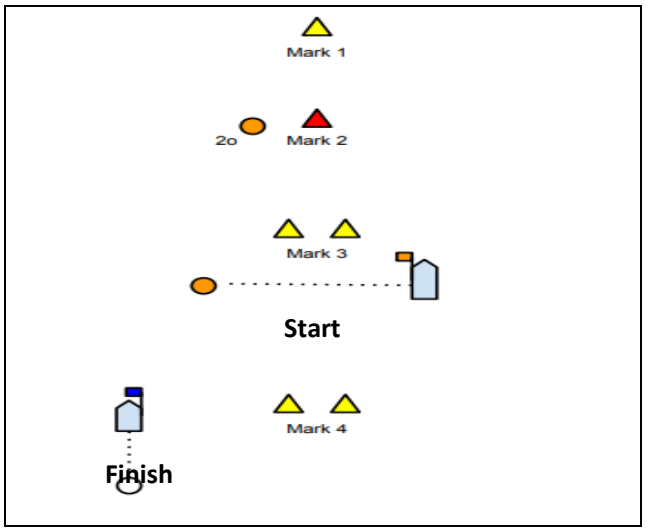


13.3 Kite Course Example



13.4 Complex Course Setup for Multiple Fleets

This one may be used with up to six fleets where some may be fast and others slower. In this example there were not many boats in any of the fast fleets, so no offset was used at Mark 1.



14 Appendix 6 - Compass Bearings

14.1 Introduction to Compass Bearings

14.1.1 The Bearing is the direction of the wind. For the purposes of markset, Bearing is where the wind is coming from.

14.1.2 The Axis is the compass reference for course setup. The PRO will *declare* the Axis for course setup.

14.1.3 All Bearings are relative to the wind. The Axis is not. The Axis may or may not be the Bearing.

14.1.4 Back Bearing is the reciprocal of the Bearing, often the compass reading from the markset boat to the Signal Boat.

14.1.5 Cross Bearing is the compass reading from mark to mark.

14.1.6 Cross Bearing is to the left or right of the Bearing (used for aligning offsets or gates).

- To get Cross Bearing with the base reference on your right (relative to the wind), you will subtract 90 degrees from the Bearing.
- To get Cross Bearing with the base reference on your left (relative to the wind), you will add 90 degrees to the Bearing.

14.2 Wind

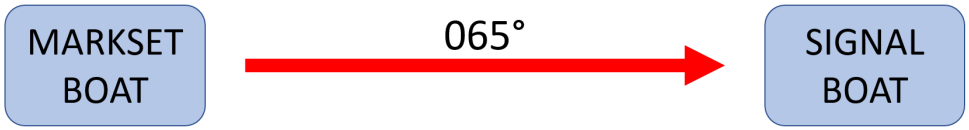
14.3 Bearing

14.4 Back Bearing

14.4.1 If the Bearing is more than 180 degrees, subtract 180 to get the Back Bearing.

14.4.2 If the Bearing is 180 degrees or less, add 180 to get the Back Bearing.

14.4.3 This is the GPS reading you will be using the most!



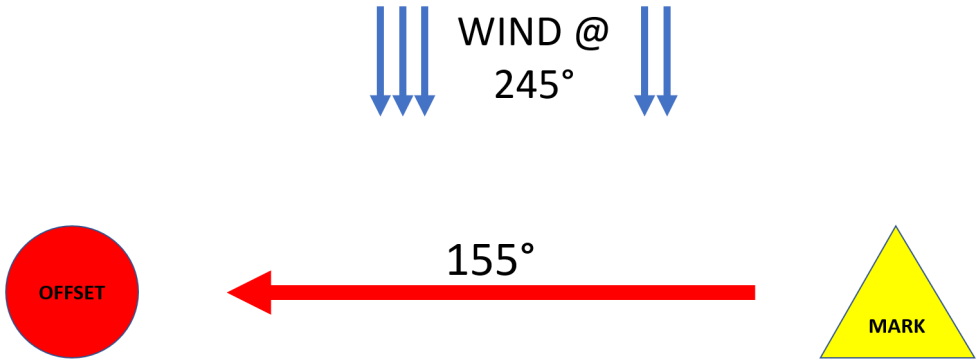
14.5 Cross Bearing

14.5.1 To get a Cross Bearing to an object (the offset, for example) that is to the right of the reference object (the mark, for example), subtract 90 degrees.

14.5.2 Course is set to 245 degrees; windward mark and offset are deployed.

14.5.3 With the Signal Boat on your right, you will add 90 degrees to the Bearing to get the Cross Bearing.

14.5.4 With the Signal Boat on your left, you will subtract 90 degrees from the Bearing to get the Cross Bearing.



14.5.5 For windward mark offset or South gate use GPS Cross Bearing sighting before anchor drop.

14.5.6 Use the hockey puck for Cross Bearing sighting after anchor drop.

14.5.7 Observe land references.

15 Acronyms

CPR	Cardiopulmonary resuscitation
ERC	Executive Race Committee
GPS	Global Positioning System
MOB	Man overboard
NMPH	Nautical miles per hour
OCS	On Course Side
PFD	Personal floatation device
PRO	Principal Race Officer
RC	Race Committee
RIB	Rigid-hulled inflatable boat
RPM	Revolutions per minute
RRS	Racing Rules of Sailing
SB	Signal Boat
SI	Sailing instructions

