



CHICAGO MACKINAC SAFETY REGULATIONS (“CMSR”)

MULTIHULL

January 15, 2016

General Requirements

1. *Purpose of CMSR* – CMSR - Multihull establishes uniform minimum equipment, accommodation and training standards for multihull boats racing offshore. The CMSR do not replace, but rather supplement, the requirements of governmental authority, the Racing Rules of Sailing (RRS), the rules of Class Associations and all applicable rating rules.
2. *Responsibility of Person-In-Charge* – The safety of a boat and her crew is the sole and inescapable responsibility of the Person-In-Charge. The Person-In-Charge shall ensure that the boat is fully found, thoroughly seaworthy and manned by an experienced crew who have undergone appropriate training and are physically fit to face bad weather. The Person-In-Charge must be satisfied as to the soundness of hull, spars, rigging, sails and gear. The Person-In-Charge must ensure that all safety equipment is properly maintained and stowed and that the crew knows where it is kept and how it is to be used. Neither the CMSR, their use in connection with the Chicago Yacht Club (CYC) Race to Mackinac (“The Race”), nor any inspection under these CMSR in any way limits or reduces the complete and unlimited responsibility of the Person-In-Charge.
3. *Crew eligibility* – Minimum Crew for a multihull is three. At least 50% of the crew must have completed two prior races or two documented non-stop passages under sail, on a multihull of a minimum of one hundred (100) nautical miles and twenty-four (24) hour minimum duration.
4. *Boat Eligibility* - Multihulls shall meet each of the following conditions:
 - 1) Be a minimum of 24 feet *LOA*

- 2) Have a *LOA to BOC* ratio (*LOA/BOC*) of 2.30 or less for catamarans or 3.30 or less for trimarans.

Boats failing to meet condition 2) above may apply for entry conditioned on:

- A) having a proven self-righting system allowing the crew to right the boat when capsized, without outside assistance. Any such system must be demonstrated to successfully function in at least 25 knots of wind; or
- B) Having a luff to BOC ratio (*Luff/BOC*) of 3.2 or less for catamarans or 4.0 or less for trimarans.

Notwithstanding these exceptions (A and B above), all entries are subject to review and acceptance or rejection by the organizing authority

Boat Eligibility Definitions:

LOA – length overall of the longest hull, excluding equipment (bow sprit, outboard engine, etc).

BOC – Beam on Centerline:

- 1) for a catamaran, the perpendicular distance from the centerline of one hull to the centerline of the other hull, measured at deck level.
- 2) for a trimaran, the perpendicular distance between the centerline of the main hull and the centerline of either ama, measured at deck level.

The centerline for 1) and 2) above shall be established at the mid-point between the sides of the hull, excluding hull flares or extensions.

Luff – the luff of the mainsail measured as the distance between two points along a line parallel to the sail luff from which lines drawn at 90 degrees intersect the highest point on the head and the lowest point on the foot respectively.

5. *Functions and maintenance of equipment* – All equipment required by the CMSR shall function properly, be regularly checked, cleaned and serviced, be readily accessible, and be of a type, size and capacity suitable and adequate for the intended use and size of the boat.
6. *Heavy Items* – Ballast, ballast tanks and associated equipment shall be permanently installed. Heavy movable items including e.g., batteries, stoves, gas bottles, toolboxes and anchors and chain shall be permanently installed or securely fastened, as appropriate.

Structural Features and Fixed Equipment

7. *Strength of Build* – Boats shall be strongly built, watertight and, particularly with regard to hulls, decks and cabin trunks capable of withstanding solid water and knockdowns. They must be properly rigged, be fully seaworthy, be built to resist capsize, and must meet the standards set forth in these CMSR.
8. *Stability and Flotation* – Adequate watertight bulkheads and compartments which may include permanently installed floatation material in each hull shall be provided to ensure that a multihull is effectively unsinkable and capable of floating in a stable position with at least half the length of one hull flooded.
9. *Shrouds* – A boat's shrouds shall never be disconnected while racing.
10. *Hulls* – A hull, including decks, coach roofs, windows, hatches and all other parts, shall form an integral, essentially watertight unit, and any openings in it shall be capable of being immediately secured to maintain this integrity.
11. *Centerboard/Daggerboard Trunks* – Centerboard and daggerboard trunks, and the like, shall not open into the interior of a hull, except via a watertight inspection/maintenance hatch, of which the opening shall be entirely above the waterline of the boat floating level in normal trim.
12. *Exits* – Each hull with accommodation shall have at least two exits. At least one exit shall be located forward of the foremost mast except where structural features prevent its installation in this location.
13. *Inverted Escape* – Multihulls shall have either:
 1. an escape hatch for access to and from each hull with accommodation in the event of an inversion or,
 2. appropriate tools for cutting an escape opening stowed securely in a location accessible from outside of the boat in the event of a capsize.
14. *Calamity Pack* – Multihulls shall have either in a pack or compartment accessible from outside of the boat when inverted the following items:
 1. pyrotechnic signals per CMSR 65,
 2. a handheld VHF marine transceiver, in addition to that required by CMSR 41,
 3. a handheld Global Positioning System (GPS) in a waterproof container, in addition to that required by CMSR 38,
 4. a waterproof flashlight,
 5. cutting tools if required per CMSR 13,
 6. an EPIRB per CMSR 61 .
15. *Sea Cocks and Valves* – Sea cocks or valves shall be permanently installed on all through-hull openings below the boat's loaded length of the waterline (LWL) except integral deck scuppers, speed indicators, depth finders, and the like; however a means of closing such openings shall be provided.
16. *Bow Pulpits* – A trimaran shall have a bow pulpit forward of the headstay on the main hull with lifelines supported on stanchions. The lifelines may be interrupted

where there are nets or crossbeam wings outboard of the main hull. Bow pulpits may be open to allow access to a spinnaker pole or a bowsprit.

17. *Stern Pulpits* – Boats shall have a stern pulpit, or lifelines arranged as an adequate substitute. Boats with a cabin structure aft of the aftermost cockpit are exempt from this requirement.
18. *Lifelines/Jackstays* – All crew working areas shall be protected by lifelines or jackstays and safety harness attachment points. Jackstays may be substituted for lifelines or pulpits.
19. *Nets and Trampolines* – Nets and trampolines shall be:
 1. essentially horizontal,
 2. made from durable woven webbing, water permeable fabric or mesh with openings not larger than 2 inches in any dimension. Attachment points shall be planned to avoid chafe. The junction between a net and a yacht shall present no risk of foot trapping,
 3. solidly fixed at regular intervals on transverse and longitudinal support lines and shall be fine stitched to a bolt rope,
 4. able to carry the full weight of the crew either in normal working conditions at sea, or in case of capsize, when the yacht is inverted.

It is recommended that the lines used to tie the nets should be individually tied and not continuously connected to more than four attachment points per connecting line.

Trimarans with double crossbeams shall have nets on each side covering:

1. the rectangles formed by the crossbeams, central hull and outriggers,
2. the triangles formed by the aft end of the central pulpit, the mid-point of each forward crossbeam, and the intersection of the crossbeam and the central hull,
3. the triangles formed by the aftermost part of the cockpit or steering position whichever is furthest aft, the midpoint of each after crossbeam, and the intersection of the crossbeam and the central hull, except when cockpit coamings and/or lifelines are present that adequately protect this area.

Trimarans with single crossbeams shall have nets between the central hull and each outrigger on each side between two straight lines from the intersection of the crossbeam and the outrigger, respectively to the aft end of the pulpit on the central hull, and to the aftermost point of the cockpit or steering position on the central hull whichever is furthest aft.

Catamarans: on a catamaran the total net surface area shall be limited:

1. laterally by the hulls,
2. longitudinally by transverse stations through the forestay base and the aftermost part of the boom lying fore and aft. However, a catamaran with a central nacelle (non-immersed) may satisfy the rules for a trimaran.

20. Intentionally omitted
21. *Toilet* – Boats shall have a permanently installed operable toilet, or a portable toilet, properly secured.
22. *Bunks* – Boats shall have bunks, permanently installed.
23. *Cooking Facilities* – Boats shall have a cooking stove permanently installed or securely fastened with safe accessible fuel shutoff control capable of being safely operated in a seaway.
24. *Hand Holds* – Boats shall have adequate hand holds fitted below deck so that crew members may move about safely while at sea.
25. *Bilge Pumps* – Boats shall have a portable or permanently installed bilge pump or pumps capable of pumping out all compartments in all hulls. Bilge pumps shall not be connected to cockpit drains unless the combined system has sufficient capacity to handle the maximum combined volume. Bilge pumps may not discharge into a cockpit unless that cockpit opens aft to the sea.
26. *Permanently Installed Compass* – Boats shall have a permanently installed marine magnetic compass.
27. *Halyards* – No mast shall have less than two halyards, each capable of hoisting a sail.
28. *Boom Support* – Boats shall have some means to prevent the boom from dropping independent of the mainsail or the main halyard. Topping lifts or supporting vang are acceptable for this purpose.
29. *Navigation Lights* – Boats shall carry navigation lights that are permanently installed, such that they will not be masked by sails or the heeling of the boat.
30. *Reserve Navigation Lights* – Boats must carry reserve navigation lights with a power and/or wiring system separate from that used for the Navigation Lights required by CMSR 29. Boats may, in order to satisfy this requirement, carry portable battery powered navigation lights with sufficient luminosity for the conditions of the race.
31. *Spare Bulbs for Navigation Lights* – Boats shall carry spare bulbs for navigation lights. However, spares are not required for LED navigation lights.
32. *Display of Navigation Lights* – Boats shall display navigation lights between sunset and sunrise, and at any other time deemed appropriate by the Person-in-Charge.
33. *Propulsion Engine and Fuel Tanks* – A propulsion engine shall be provided, capable of powering the boat at a speed in knots equal to the square root of its LWL in feet. Such engines shall be either:
 1. a securely covered inboard engine together with permanently installed exhaust and fuel supply systems and fuel tanks; or

2. an outboard engine with associated tanks and fuel supply systems, all securely fastened. The outboard must be ready for immediate use as a source of propulsion.
34. *Boat Batteries* – When an electric starter is the only method for starting the engine, boats shall carry a separate battery, the primary purpose of which is to start the engine.
35. *Engine Fuel* – Boats shall, at a minimum, finish with fuel sufficient to motor at a speed of five (5) knots for ten (10) hours. Fuel tanks must be provided with shutoff valves or in the case of a portable fuel tank, a quick disconnect of the fuel line.
36. *Permanently Installed Marine Radio Transceiver*– A yacht shall have a permanently installed 25-watt VHF radio connected to a masthead antenna by a co-axial feeder cable with no more than a 40% power loss. The Radio shall have DSC capability, have a suitable antenna, be continuously connected to a functioning external GPS data source, or have an internal GPS, and be programmed with an MMSI number properly registered to the yacht.
37. *Emergency Antenna* – Boats shall carry an emergency antenna that does not depend on the mast.
38. *Global Positioning System (GPS)* – Boats shall carry (2) functioning GPS, at least one shall be battery powered.

Portable Equipment and Supplies for the Boat

39. *Reflective Sailboard* – Boats shall carry a reflective sailboard displaying its sail number. The sailboard shall be constructed to be displayed easily as prescribed by the Sailing Instructions. Each character shall be at least ten (10) inches high and made of contrasting marine-grade reflective material mounted on a black background.
40. *Buckets* – Boats shall have two (2) buckets of stout construction, each with at least two (2) gallons (US) capacity. Each bucket shall have a lanyard.
41. *Portable Marine Radio Transceiver* – In addition to the permanently installed VHF marine radio transceiver required under CMSR 36, boats shall carry a hand-held watertight VHF marine transceiver, or a hand-held VHF marine transceiver with a waterproof cover. While not currently required, it is recommended that the radio have DSC/GPS capability and an assigned MMSI number (unique to the yacht), and that person(s)-in-charge confirm the implementation of this capability when commissioning new equipment.
42. *Cellular Phone* – Boats shall carry a working cellular telephone, and shall provide the cellular number to the Race Committee on the entry form.

43. *Soft Wood Plugs* – Boats shall carry soft wood plugs, tapered and of the appropriate size, to be stowed or attached adjacent to the appropriate fitting for every through-hull opening.
44. *Jackstays* – Boats shall be fitted with jackstays attached to through-bolted or welded deck plates or other suitable and strong anchorage fitted on deck, port and starboard of the boat's center line to provide secure attachments for safety harnesses/tethers. Stainless steel 1x19 wire, webbing or composite line with a minimum breaking strength of 4,500 lbf (foot pounds) is recommended.
45. *Fire Extinguishers* – Boats shall carry at least two (2) operable fire extinguishers, readily accessible in different parts of the boat.
46. *Anchors* – Boats shall carry at least two (2) anchors attached to a suitable combination of chain and rope, assembled and ready for immediate use.
47. *High-Powered Flashlight or Searchlight* – Boats shall carry a watertight, high-powered flashlight or searchlight.
48. *Flashlights* – In addition to the high-powered flashlight or searchlight required by CMSR 47, boats shall carry at least two (2) watertight flashlights.
49. *First Aid Kit* – Boats shall carry a first aid kit suitable for the likely conditions of the passage and the number of crew aboard.
50. *First Aid Manual* – Boats shall carry a suitable first aid manual.
51. *Foghorn* – Boats shall carry a foghorn.
52. *Radar reflector* – Boats shall carry a radar reflector, functioning independent of any power source.
53. *Charts* – – Boats must carry the non-electronic editions of U.S. Chart #14901 - Lake Michigan and either Chart #14880 Straits of Mackinac or #14881 Mackinac Island and surrounding area) or their paper equivalents
54. *Safety Equipment Location Diagram* – A durable waterproof diagram locating the principal items of safety equipment shall be provided and displayed in the main accommodation area where it can best be seen.
55. *Depth Sounder* – Boats shall carry a depth sounder capable of sounding depths up to one hundred (100) feet.
56. *Spare Tiller* – Boats shall carry an emergency tiller, capable of being fitted to the rudder stock. Boats using an unbreakable metal tiller are exempt from this requirement. Boats with two interchangeable tillers attached to a common rudder system are exempt from this requirement.
57. *Emergency Steering Methods* – Crews must be aware of alternative methods of steering the boat in any sea condition in the event of rudder loss. At least one

method must have been proven to work on board the boat. An inspector may require that this method be demonstrated.

58. *Tools and spare parts* – Boats shall carry appropriate tools and spare parts, including effective means to quickly disconnect or sever the standing rigging from the hull.
59. *Boat's Name* – Each boat's name shall be on buoyant safety equipment.
60. *Retro-Reflective Material* – Marine-grade retro-reflective material shall be fitted to buoyant safety equipment.
61. *EPIRBs* – Boats shall carry an EPIRB. The EPIRB shall be a 406 MHz EPIRB that is either:
 1. connected to a continuously functioning *external* GPS or,
 2. fitted with an *internal* GPS.

The EPIRB shall be properly registered with the appropriate authority and should be tested in accordance with the manufacturer's instructions when first commissioned and then at least annually.-A personal locator beacon (PLB), that is registered to the owner with a notation in the registration that it is aboard the yacht, that meets the above criteria, shall satisfy the EPIRB requirement above.

62. *Liferaft(s)* – Boats are strongly recommended to carry a life raft(s) suitable for the number of crew onboard and the conditions of the race.
63. *Lifesling®* – Boats shall carry a Lifesling®, or functional equivalent, ready for instant use. Lifeslings inflated with compressed gas should be tested and serviced at intervals in accordance with manufacturer's instructions.
64. *Man Overboard Pole* – Boats shall carry a man overboard pole and flag, with a lifebuoy, a self-igniting light, a whistle, and a drogue attached. These items shall be stored on deck, and ready for instant use, and affixed in a manner that allows for a "quick release". A boat may carry a self-inflating MOB module to satisfy this requirement. Self –inflating MOB modules shall be tested and serviced in accordance with its manufacturer's specifications.
65. *Pyrotechnic Signals* – Pyrotechnic signals shall be provided conforming to Safety of Life At Sea (SOLAS) LSA Code Chapter III - visual signals shall not be older than the stamped expiry date. Each boat shall carry:
 1. 4 red parachute flares, and
 2. 4 red hand flares

Flares shall be stored in a readily accessible location, such that they can be located and fired within sixty (60) seconds. Flares stored inside of liferafts may not be used to satisfy this requirement.

66. *Heaving Line* – Boats shall carry a heaving line, at least 1/4 inch in diameter and at least fifty (50) feet in length, readily accessible to the cockpit.

67. *Cockpit Knife* – A strong, sharp knife, sheathed and securely restrained shall be provided readily accessible from the deck or cockpit.
68. *Storm Jib* – Boats shall carry a storm jib made of suitable weight sail cloth, and of area not greater than 5% height of the foretriangle squared, with luff maximum length 65% height of the foretriangle. This sail shall have means to attach the luff to the stay independent of any luff-groove device. Boats shall have sheeting positions on the deck for this sail.
69. *Mainsail Reefing Equipment* – Boats shall have mainsail reefing equipment that will allow the luff of the mainsail to be reduced by 25%.

Personal Equipment

70. *Personal Flotation Devices (PFDs)* – Each crew member 16 years of age or older shall have either:
 1. a Type 1 U.S. Coast Guard approved PFD or,
 2. an inflatable PFD having at least thirty-two (32) pounds buoyancy and designed to securely suspend an unconscious person face upwards at approximately forty-five (45) degrees to the water surface. All inflatable PFDs shall have a compressed gas inflation system. Inflatable PFDs need not have a water-activated auto-inflate system in order to satisfy this requirement. Belt pack PFDs are not allowed to satisfy this requirement. PFD shall be appropriately sized to the individual.
 3. If the PFD is inflatable, crotch strap or leg straps shall be fitted and attached.

Each crew member under 16 years of age shall have a U.S. Coast Guard approved PFD appropriate for the crew member's age and weight and suitable for offshore sailing conditions, as determined by the Person-In-Charge.

71. *PFD Equipment* – Each PFD must be equipped with a whistle, a waterproof light, be fitted with marine-grade retro-reflective material, be clearly marked with the boat's or wearer's name, and be compatible with the wearer's safety harness. If the PFD is inflatable, it must be regularly checked for air retention.
72. *Wearing of PFDs* – Each crew member shall wear PFDs complying with CMSR 70 and CMSR 71:
 1. while on deck between sunset and sunrise; and
 2. at all other times, unless the Person-In-Charge directs they may be put aside.

73. *Safety Harnesses and Tethers* – Each crew member shall have a harness, and a safety line (tether) not more than seven (7) feet long with a snap hook at one end and a quick release shackle on the harness end that is releasable under heavy load.
74. *Personal Safety Knife* – A knife, straight blade or, if folding, able to be opened with one hand, to be attached to or carried on each crew member at all times. the *Personal Safety Knife* must be readily accessible at all times including while wearing foul weather gear and PFD/Harnesses.

Training

75. *Annual Man Overboard Practice* – Man-overboard procedures appropriate for the boat's size and speed shall be practiced aboard the boat within six months prior to the race. At least two-thirds of all crew members racing on the boat during the Race must participate in this practice. A Crew Overboard Drill Certificate of such practice shall be signed by participating crew members and kept aboard the boat. The certificate shall be downloaded from the “Race Documents” section of the Mac website, www.cycracetomackinac.com

Practice of the "Quick Stop" man-overboard procedure is strongly recommended.

76. *Safety at Sea and First Aid Training*

1. It is strongly recommended that at least 30% of the crew (including the skipper) have completed a one-day or two-day US Sailing-approved offshore “Safety at Sea Seminar” within the 5 year period preceding the start of the race. The half-day ‘coastal’ Safety at Sea Seminar shall not be deemed to fulfill this recommendation.

2. It is strongly recommended that at least (2) members of the crew sailing on the boat have a current certification for First Aid and CPR. For a list of recognized courses visit - <http://www.ussailing.org/safety/equipment-and-requirements/>

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