

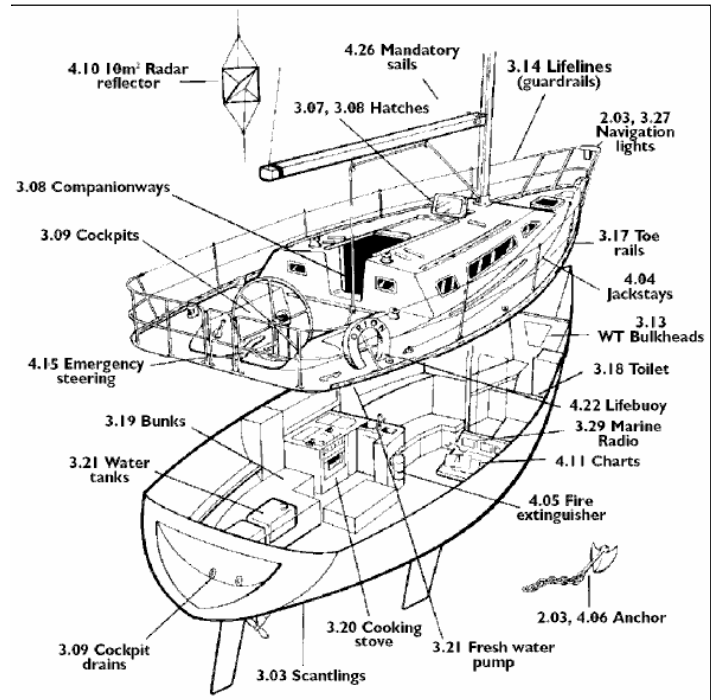
# Annotated ISAF OFFSHORE SPECIAL REGULATIONS

Extract for Race Category 1 Monohulls - JANUARY 2010 - DECEMBER 2011  
**Including US SAILING Prescriptions (US Version 1B - 2010 Prescriptions)  
And 2012 Pacific Cup NOR**

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## Notes

- Because this is an extract not all paragraph numbers will be present
- This document is based on the Offshore Special Regulations, with US Prescriptions, and on the Pacific Cup NOR. Those documents are the "Race Documents," and govern the race.
- Official [OSR] interpretations shall take precedence over these Special Regulations and will be indexed, numbered, dated and displayed on the ISAF web site [www.sailing.org/specialregs](http://www.sailing.org/specialregs)
- THIS FORMAT indicates significant changes in 2010-11 offshore special regulations
- *ISAF Guidance notes and recommendations are in this format*
- **US SAILING prescriptions are noted and printed in this format**
- **Pacific Cup NOR amendments are printed in this format and marked with NOR or N:**
- Emphasis is supplied to other text by the editors in **Bold Face** and/or [in brackets].
- *Unofficial Advice is provided in this format and marked as "Advice."*
- **Checkboxes are provided as a convenience** for the user for items noted as requiring particular attention or affirmative acts.
- Advice, and selection and grouping of checkboxes, does not alter any requirement of the text of the NOR or OSRs
- Gender is nonspecific



## Notes

# SECTION 1 - FUNDAMENTAL AND DEFINITIONS

## 1.01 Purpose and Use

1.01.2 These Special Regulations do not replace, but rather supplement, the requirements of governmental authority, the Racing Rules and the rules of Class Associations and Rating Systems. The attention of persons in charge is called to restrictions in the Rules on the location and movement of equipment.

## 1.02 Responsibility of Person in Charge

- 1.02.1 The safety of a yacht and her crew is the sole and inescapable responsibility of the person in charge who must do his best to ensure that the yacht is fully found, thoroughly seaworthy and manned by an experienced crew who have undergone appropriate training and are physically fit to face bad weather. He must be satisfied as to the soundness of hull, spars, rigging, sails and all gear. He must ensure that all safety equipment is properly maintained and stowed and that the crew know where it is kept and how it is to be used.
- 1.02.2 Neither the establishment of these Special Regulations, their use by race organizers, nor the inspection of a yacht under these Special Regulations in any way limits or reduces the complete and unlimited responsibility of the person in charge.
- 1.02.3 Decision to race -The responsibility for a yacht's decision to participate in a race or to continue racing is hers alone - RRS Fundamental Rule 4.

## 1.03 Definitions, Abbreviations, Word Usage [abridged]

**GPS:** Global Positioning System

**Hatch:** The term hatch includes the entire hatch assembly and also the lid or cover as part of that assembly (the part itself may be described as a hatch).

**Lifeline :** wire line rigged as guardrail / guardline around the deck

**Monohull :** Yacht in which the hull depth in any section does not decrease towards the centre-line.

**Permanently Installed :** Means the item is effectively built-in by eg bolting, welding, glassing etc. and may not be removed for or during racing.

**PLB :** Personal Locator Beacon

**Safety Line:** A tether used to connect a safety harness to a strong point

**Securely Fastened:** Held strongly in place by a method (eg rope lashings, wing-nuts) which will safely retain the fastened object in severe conditions including a 180 degree capsize and allows for the item to be removed and replaced during racing

1.03.2 The words "shall" and "must" are mandatory, and "should" and "may" are permissive.

## Notes

# SECTION 2 - APPLICATION & GENERAL REQUIREMENTS

## 2.01 Categories of Events

### 2.01.2 Category 1 Defined

***US SAILING prescribes that Category 1 races are of long distance, well offshore, in large unprotected bays, and in waters where large waves, strong currents, or conditions leading to rapid onset of hypothermia are possible, where yachts must be completely self-sufficient for extended periods of time, capable of withstanding heavy storms and prepared to meet serious emergencies without the expectation of outside assistance.***

## 2.02 Inspection

- A yacht may be inspected at any time. If she does not comply with these Special Regulations her entry may be rejected, or she will be liable to disqualification or such other penalty as may be prescribed by the national authority or the race organizers. ***NOR: A yacht that fails to complete and pass her inspection prior to starting is not an entrant.***

## 2.03 General Requirements

- 2.03.1 All equipment required by Special Regulations shall:
- a) function properly
  - b) be regularly checked, cleaned and serviced
  - c) when not in use be stowed in conditions in which deterioration is minimised
  - d) be readily accessible
  - e) be of a type, size and capacity suitable and adequate for the intended use and size of the yacht.
- 2.03.2 Heavy items:
- a) ballast, ballast tanks and associated equipment shall be permanently installed
  - b) heavy movable items including e.g. batteries, stoves, gas bottles, tanks, toolboxes and anchors and chain shall be securely fastened
  - c) heavy items for which fixing is not specified in Special Regulations shall be permanently installed or securely fastened, as appropriate
- 2.03.3 When to show navigation lights
- a) navigation lights (OSR 3.27) shall be shown as required by the International Regulations for Preventing Collision at Sea, (Part C and Technical Annex 1). All yachts shall exhibit sidelights and a sternlight at the required times. [Sunset to sunrise and in conditions of restricted visibility]

## Notes

# SECTION 3 - STRUCTURAL FEATURES, STABILITY, FIXED EQUIPMENT

<input type="checkbox"/>	<b>3.01</b>	<b>Strength of Build, Ballast and Rig</b>
<input type="checkbox"/>		Yachts 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 and ballasted, be fully seaworthy and must meet the standards set forth herein. Shrouds shall never be disconnected.
<input type="checkbox"/>	<b>3.02</b>	<b>Watertight Integrity of a Hull</b>
	3.02.1	A hull, including, deck, coach roof, 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.
	3.02.2	Centreboard 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 yacht floating level in normal trim.
	3.02.3	A canting keel pivot shall be completely contained within a watertight enclosure which shall comply with OSR 3.02.2. Access points in the watertight enclosure for control and actuation systems or any other purpose shall comply with OSR 3.02.1.
	3.02.4	Moveable ballast systems shall be fitted with a manual control and actuation secondary system which shall be capable of controlling the full sailing load of the keel in the event of failure of the primary system. Such failures would include electrical and hydraulic failure and mechanical failure of the components and the structure to which it mounts. The system must be capable of being operational quickly and shall be operable at any angle of heel. It would be desirable if this system was capable of securing the keel on the centreline.
	<b>N:3.03</b>	<b><i>Hull Construction Standards (Scantlings) and Stability: The requirements of OSR 3.03.1 are waived except that the Race Committee reserves the right to require that the architect and/or builder of a yacht to which this Section would apply provide a certification that the yacht was designed and built in accordance with the requirements of OSR 3.03 and OSR 3.04. Each owner is ultimately responsible for his/her yacht's compliance with these standards.</i></b>
<input type="checkbox"/>	<b>3.04</b>	<b>Stability - Monohulls</b>
<input type="checkbox"/>	3.04.2	A yacht shall be designed and built to resist capsize.
	<b>N:3.04.3,4,6</b>	<b><i>OSR 3.04.3, 3.04.4, &amp; 3.04.6 are amended to read: A minimum limit of positive stability of 105 degrees is required for all monohulls. For boats with moveable ballast this limit is calculated with the ballast in the least favorable position.</i></b>
<input type="checkbox"/>	<b>N:3.04.7</b>	<b><i>OSR 3.04.7 is amended to read: Tanks for variable ballast shall be permanently installed and shall be provided with a system of isolating valves and pump(s) capable of manual operation at any angle of heel. A</i></b>

***plan of the plumbing system shall be displayed aboard the boat.  
All moveable ballast systems shall be capable of full manual operation from inside the yacht, no matter what her position in the water.  
Yachts with canting keels or other moveable solid ballast must be fitted with a mechanism to fix the ballast on centerline should the shifting mechanism fail.***

	<b>3.06</b>	<b>Exits - Monohulls</b>
<input type="checkbox"/>		<p>Yachts 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. [Applies to: Length: 8.5 m (28 ft) and over; Earliest of Age or Series Date: January 1995 and after.]</p>
	<b>3.08</b>	<b>Hatches &amp; Companionways</b>
<input type="checkbox"/>	3.08.1	<p>No hatch forward of the maximum beam station, other than a hatch in the side of a coachroof, shall open in such a way that the lid or cover moves into the open position towards the interior of the hull (excepting ports having an area of less than 0.071m<sup>2</sup> (110 sq in)).</p>
<input type="checkbox"/>	3.08.2	<p>A hatch fitted forward of the maximum beam station, located on the side of the coachroof, opening into the interior of the boat, and of area greater than 0.071m<sup>2</sup> shall comply with ISO12216 design category A and and be clearly labelled and used in accordance with the following instruction: 'NOT TO BE OPENED AT SEA' Attention is drawn to SR 3.02.1</p>
<input type="checkbox"/>	3.08.3	<p>A hatch shall be:</p> <ul style="list-style-type: none"> <li>a) so arranged as to be above the water when the hull is heeled 90 degrees. Hatches over lockers that open to the interior of the vessel shall be included in this requirement. A yacht may have a maximum of four (two on each side of centerline) hatches that do not conform to this requirement, provided that the opening of each is less than 0.071 sq m (110 sq in). Effective for boats of a series begun after January 1, 2009, a written statement signed by the designer or other person who performed the downflooding analysis shall be carried on board. For purposes of this rule the vessel's displacement condition for the analysis shall be the Light Craft Condition LCC (in conformity with 6.3 of the EN ISO 8666 standard and 3.5.1 of the EN ISO12217-2 standard).</li> </ul> <p><b><i>nor: 3.08 Hatches &amp; Companionways: Vessels that do not comply with OSR 3.08.3 a) may be deemed to comply by securely closing the offending hatches for the entirety of the race.</i></b></p> <ul style="list-style-type: none"> <li>b) permanently attached</li> <li>c) capable of being firmly shut immediately and remaining firmly shut in a 180 degree capsized (inversion)</li> </ul>
<input type="checkbox"/>	3.08.4	<p>A companionway hatch shall:</p> <ul style="list-style-type: none"> <li>a) be fitted with a strong securing arrangement which shall be operable from the exterior and interior including when the yacht is inverted</li> <li>b) have any blocking devices:</li> </ul>

- i. capable of being retained in position with the hatch open or shut
- ii. whether or not in position in the hatchway, secured to the yacht (e.g. by lanyard) for the duration of the race, to prevent their being lost overboard
- iii. permit exit in the event of inversion

*Advice: Methods of retaining hatchboards have been quite varied, and include a doorknob-style latch on both sides, a pin that can be pushed out on either side of the hatchboards or a sliding hatch, and a retaining strap that can be released from either side. Lost hatchboards in a knockdown mean serious risk of in-flooding.*

- 3.08.5 If the companionway extends below the local sheerline and the boat has a cockpit opening aft to the sea the boat shall comply with one of the following:
    - a) the companionway sill shall not extend below the local sheerline. or
    - b) be in full compliance with all aspects of ISO 11812 to design category A
  - 3.08.6 For boats with a cockpit closed aft to the sea where the companionway hatch extends below the local sheerline, the companionway shall be capable of being blocked off up to the level of the local sheerline, provided that the companionway hatch shall continue to give access to the interior with the blocking devices (e.g. washboards) in place
  - 3.09 Cockpits - Attention is Drawn to ISO 11812**
    - 3.09.1 Cockpits shall be structurally strong, self-draining quickly by gravity at all angles of heel and permanently incorporated as an integral part of the hull.
    - 3.09.2 Cockpits must be essentially watertight, that is, all openings to the hull must be capable of being strongly and rigidly secured
    - 3.09.3 A bilge pump outlet pipe shall not be connected to a cockpit drain. See OSR 3.09.8 for cockpit drain minimum sizes.
    - 3.09.4 A cockpit sole shall be at least 2% LWL above LWL (or in IMS yachts first launched before 1/03, at least 2% L above LWL)
    - 3.09.5 A bow, lateral, central or stern well shall be considered a cockpit for the purposes of OSR 3.09
    - 3.09.6 In cockpits opening aft to the sea structural openings aft shall be not less in area than 50% maximum cockpit depth x maximum cockpit width.
    - 3.09.7 Cockpit Volume
      - i. earliest of age or series date before April 1992: the total volume of all cockpits below lowest coamings shall not exceed 6% (LWL x maximum beam x freeboard abreast the cockpit).
      - ii. earliest of age or series date April 1992 and after: as above for the appropriate category except that "lowest coamings" shall not include any aft of the FA station and no extension of a cockpit aft of the working deck shall be included in calculation of cockpit volume
- IMS-rated boats may instead of the terms LWL, maximum beam,

freeboard abreast the cockpit, use the IMS terms L, B and FA.

- 3.09.8 Cockpit Drains  
See OSR 3.09.1. Cockpit drain cross section area (after allowance for screens if fitted) shall be:-
- a) in yachts with earliest of age or series date before 1/72 or in any yacht under 8.5m (28ft) LOA - at least that of 2 x 25mm diameter (one inch) unobstructed openings or equivalent
  - b) in yachts with earliest of age or series date 1/72 and later - at least that of 4 x 20mm diameter (3/4 inch) unobstructed openings or equivalent

***US SAILING prescribes that cockpit drains shall be accessible for cleaning.***

### **3.10 Sea Cocks or Valves**

- Sea cocks or valves shall be permanently installed on all through-hull openings below the waterline except integral deck scuppers, speed indicators, depth finders and the like, however a means of closing such openings shall be provided.

*Advice: You'll want to assure that the seacocks can close. Test them.*

### **3.11 Sheet Winches**

- Sheet winches shall be mounted in such a way that an operator is not required to be substantially below deck.

### **3.12 Mast Step**

- The heel of a **keel stepped mast** shall be securely fastened to the mast step or adjoining structure.

### **3.14 Pulpits, Stanchions, Lifelines**

*Advice: Measure your distances now. If you do not fit the rules below, talk to your inspector or the chief inspector about your options. As to the "uncoated" lifelines, take a knife to your old, coated, lines near the terminals and look at the rust. Don't trust your life to that.*

- 3.14.2 Lifelines required in Special Regulations shall be "taut".
- a) As a guide, when a deflecting force of 50 N (5.1 kgf, 11.2 lbf) is applied to a lifeline midway between supports, the lifeline should not deflect more than 50 mm.

- 3.14.3 The following shall be provided:
- a) a **bow pulpit** with vertical height and openings essentially conforming to Table 7. Bow pulpits may be open but the opening between the pulpit and any part of the boat shall never be greater than 360mm (14.2") (this requirement shall be checked by presenting a 360mm (14.2") circle inside the opening)
  - b) a **stern pulpit**, or lifelines arranged as an adequate substitute, with vertical openings conforming to Table 7
  - c) **lifelines (guardlines) supported on stanchions**, which, with pulpits,

shall form an effectively continuous barrier around a working deck for man-overboard prevention. Lifelines shall be permanently supported at intervals of not more than 2.20m (86.6") and shall not pass outboard of supporting stanchions

d) upper rails of pulpits at **no less height** above the working deck than the upper lifelines as in Table 7.

e) Openable upper rails in bow pulpits shall be **secured shut** whilst racing

f) **Pulpits and stanchions shall be permanently installed.** When there are sockets or studs, these shall be through-bolted, bonded or welded. The pulpit(s) and/or stanchions fitted to these shall be mechanically retained without the help of the life-lines. Without sockets or studs, pulpits and/or stanchions shall be through-bolted, bonded or welded.

g) The bases of pulpits and stanchions shall **not be further inboard** from the edge of the appropriate working deck than 5% of maximum beam or 150 mm (6 in), whichever is greater.

h) Stanchion or pulpit or pushpit bases shall **not be situated outboard of a working deck.** For the purpose of this rule the base shall be taken to include a sleeve or socket into which the tube is fitted but shall exclude a baseplate which carries fixings into the deck or hull.

i) Provided the complete lifeline enclosure is supported by stanchions and pulpit bases effectively within the working deck, lifeline terminals and support struts may be fixed to a hull aft of the working deck

j) Lifelines need not be fixed to a bow pulpit if they terminate at, or pass through, adequately braced stanchions set inside and overlapping the bow pulpit, provided that the gap between the upper lifeline and the bow pulpit does not exceed 150 mm (6 in).

k) **Lifelines shall be continuous and fixed** only at (or near) the bow and stern. However a bona fide gate shall be permitted in the lifelines on each side of a yacht. Except at its end fittings, the movement of a lifeline in a fore-and-aft direction shall not be constrained. Temporary sleeving in 3.14.6 (c) shall not modify tension in the lifeline.

l) **Stanchions shall be straight and vertical** except that:-

i within the first 50 mm (2 in) from the deck, stanchions shall not be displaced horizontally from the point at which they emerge from the deck or stanchion base by more than 10 mm (3/8 in), and

ii stanchions may be angled to not more than 10 degrees from vertical at any point above 50 mm (2 in) from the deck.

m) It is strongly recommended that designs also comply to ISO 15085

3.14.5 Lifeline Height, Vertical Openings, Number of Lifelines

TABLE 7

LOA	earliest of age/seriesdate	minimum requirements
under 8.5 m(28 ft)	before January 1992	taut single lifeline at a height of no less than 450 mm (18 in) above the working deck. No vertical opening shall exceed 560 mm (22 in).
under 8.5 m(28 ft)	January 1992 and after	as for under 8.5 m(28 ft) in table 7 above, except that when an intermediate lifeline is fitted no vertical opening shall exceed 380 mm (15 in).
8.5 m (28 ft) and over	before January 1993	taut double lifeline with upper lifeline at a height of no less than 600 mm (24 in) above the working deck. No vertical opening shall exceed 560 mm (22 in)
8.5 m (28 ft) and over	January 1993 and after	as 8.5 m (28 ft) and over in Table 7 above, except that no vertical opening shall exceed 380 mm (15 in).
all	all	on yachts with intermediate lifelines the intermediate line shall be not less than 230 mm (9 in) above the working deck and shall be of the same construction and general arrangements as required for the upper.

3.14.6 Lifeline Minimum Diameters, Required Materials, Specifications

- a) Lifelines shall be of: stranded stainless steel wire or single-braided Dyneema® rope

***US SAILING note. An article describing the best techniques for using Dyneema line, particularly in the life line application, is posted at <http://offshore.ussailing.org/SAS.htm>***

- b) ***The minimum diameter of all lifelines is specified in table 8 below.***

c) Stainless steel lifelines shall be uncoated and used without close-fitting sleeving, however, temporary sleeving may be fitted provided it is regularly removed for inspection.

d) *When stainless wire is used, Grade 316 is recommended.*

e) *When Dyneema® is used, Grade SK75 or SK78 is recommended.*

- f) A taut lanyard of synthetic rope may be used to secure lifelines provided the gap it closes does not exceed 100 mm (4 in). This lanyard shall be replaced annually at a minimum.

- g) All wire, fittings, anchorage points, fixtures and lanyards shall comprise a lifeline enclosure system which has at all points at least the breaking strength of the required lifeline wire.

TABLE 8 minimum wire or rope diameter by LOA

**LOA under 8.5 m (28ft): 3 mm (1/8 in) dia**

**LOA 8.5m - 13 m:** 4 mm (5/32 in) dia

**LOA over 13 m (43 ft):** 5 mm (3/16 in) dia

3.14.7 Pulpits, Stanchions, Lifelines - Limitations on Materials

**Earliest of Age or Series Date before January 1987** carbon fibre is not recommended in stanchions pulpits and lifelines.

**January 1987 and after** stanchions, pulpits and lifelines shall not be made of carbon fibre.

**3.17 Toe Rail or Foot - Stop**

3.17.1 A toe rail of minimum height 25 mm (1 in) shall be permanently installed around the foredeck from abreast the mast, except in way of fittings and not further inboard from the edge of the working deck than one third of the local half-beam.

3.17.2 The following variations shall apply:-

TABLE 10

LOA	Earliest of Age or Series Date	minimum requirements
any	before January 1981	a toe rail minimum height of 20 mm (3/4 in) is acceptable.
any	before January 1993	an additional lifeline of minimum height 25 mm (1 in) and maximum height 50 mm (2 in) is acceptable in lieu of a toe rail (but shall not count as an intermediate lifeline).
any	January 1994 and after	the toe rail shall be fitted as close as practicable to the vertical axis of stanchion bases but not further inboard than 1/3 the local half-beam.

**3.18 Toilet**

3.18.1 A toilet, permanently installed

***N:3.18 A fitted bucket or other suitable head will meet the toilet requirement.***

**3.19 Bunks**

3.19.2 Bunks, permanently installed

**3.20 Cooking Facilities**

3.20.1 A cooking stove, permanently installed or securely fastened with safe accessible fuel shutoff control and capable of being safely operated in a seaway.

**3.21 Water**

***N:3.21 OSR 3.21.1 & 3.21.3 are amended to read:  
Each yacht shall start with at least 15 gallons of drinking water per person on board. Emergency water required by OSR 3.21.3 (amended below) is included in the required 15 gallon total per person. At least one third of the water shall be stored in properly installed tanks.***

- N:3.21.1 Drinking Water Tanks:** *Water storage shall be arranged so that failure of any component (tank, pump, and hose) will not cause loss of more than half the total supply. The remaining water may be stored in suitable and properly stowed portable containers, such as plastic bottled water. Whether or not there is an onboard water maker, each yacht shall consume its potable water in a prudent and timely fashion, and shall not rely on a water maker as an alternative supply of potable water, except in emergencies.*

- N:3.21.3 Emergency Water:** *OSR 3.21.3 is amended to read: For emergency use, at least one gallon of clearly labeled emergency potable water per crew member in factory sealed containers is required, to be available for inspection at the end of the race. This water is for emergency use only. If the factory seal is broken, the yacht must withdraw from the race for noncompliance with this section, or be subject to disqualification or protest. Note that water stored in a "grab bag" will be counted towards this requirement, but that any water packed in the life raft will not be counted.*

*Advice: If you are down to drinking this water, that we compelled you to take, you'll be alive, but your race is over as surely as if your mast or chute had failed. It's time to put all your attention on getting safely and swiftly to land.*

### **3.22 Hand Holds**

- Adequate hand holds shall be fitted below deck so that crew members may move about safely at sea.

A hand hold should be capable of withstanding without rupture a side force of 1500N - attention is drawn to ISO 15085.

### **3.23 Bilge Pumps and Buckets**

- 3.23.1 No bilge pump may discharge into a cockpit unless that cockpit opens aft to the sea.

- 3.23.2 Bilge pumps shall not be connected to cockpit drains. (OSR 3.09)

*Advice: You need two installed bilge pumps (one inside and one outside) and two buckets. If your bilge is square, consider square buckets.*

- 3.23.3 Bilge pumps and strum boxes shall be readily accessible for maintenance and for clearing out debris

- 3.23.4 Unless permanently installed, each bilge pump handle shall be provided with a lanyard or catch or similar device to prevent accidental loss

3.23.5 The following shall be provided:

- a) two permanently installed manual bilge pumps, one operable from above, the other from below deck. Each pump shall be operable with all cockpit seats, hatches and companionways shut and shall have permanently installed discharge pipe(s) of sufficient capacity to accommodate simultaneously both pumps

- f) two buckets of stout construction each with at least 9 litres (2 UK gallons, 2.4 US gallons) capacity. Each bucket to have a lanyard.

### **3.24 Compass**

3.24.1 The following shall be provided:-

- a) a marine magnetic compass, independent of any power supply, permanently installed and correctly adjusted with deviation card, and
- b) a compass which may be hand-held

**3.25 Halyards.**

- No mast shall have less than two halyards, each capable of hoisting a sail.
- N:3.25** *Halyards: OSR 3.25 is amended to require that each yacht shall have a halyard that may be led to a winch and still be of sufficient length to reach the yacht's waterline. The strength of this halyard and winch shall be more than sufficient to safely hoist the heaviest crew member in water-soaked clothing aboard the yacht.*
- Boom Support. US SAILING prescribes that some means must exist to prevent the boom from dropping if support from the mainsail and/or halyard fails. Topping lifts or supporting vang are acceptable for this purpose.*

**3.27 Navigation Lights (see OSR 2.03.3)**

- N:3.27** *OSR 3.27 Navigation Lights/Reserve (Emergency) Navigation Lights: A masthead tricolor is recommended for the primary navigation lights offshore due to its superior visibility by ships. When used in this manner, the normal bow and stern lights will suffice for reserve (emergency) navigation lights if of suitable power and if coupled with more than one battery and separate wiring. The common battery selection switch does not disqualify this arrangement.*
- 3.27.1 Navigation lights shall be mounted so that they will not be masked by sails or the heeling of the yacht.
- 3.27.2 Navigation lights shall not be mounted below deck level and should be at no less height than immediately under the upper lifeline.
- 3.27.3 Navigation light intensity
- TABLE 11: Guide to required minimum power rating for an electric bulb in a navigation light

**under 12 m (39.4 ft) 10 W**

**12 m (39.4 ft) and above 25 W**

**US SAILING prescribes that in the US compliance with the recommendations of COLREGS shall suffice in satisfying these regulations. COLREGS requirements are as follows;**

Table 14

<b>LOA</b>	<b>Light</b>	<b>Luminous</b>	<b>Minimum Range of Visibility</b>
<b>under 39.4 ft</b>	<b>Side</b>	<b>0.9 candelas</b>	<b>1 mile</b>
	Stern	4.3 candelas	2 miles
<b>39.4 ft and above</b>	<b>Side</b>	<b>4.3 candelas</b>	<b>2 miles</b>
<b>and less than 164 ft</b>	<b>Stern</b>	<b>4.3 candelas</b>	<b>2 miles</b>

3.27.4 Reserve navigation lights shall be carried having the same minimum specifications as the navigation lights above, with a separable power source, and wiring or supply system essentially separate from that used for the normal navigation lights

3.27.5 spare bulbs for navigation lights shall be carried, or for lights not dependent on bulbs, appropriate spares.

### **3.28 Engines, Generators, Fuel**

3.28.1 Propulsion Engines

a) Engines and associated systems shall be installed in accordance with their manufacturers' guidelines and shall be of a type, strength, capacity, and installation suitable for the size and intended use of the yacht.

b) An inboard propulsion engine when fitted shall: be provided with a permanently installed exhaust, coolant, and fuel supply systems and fuel tank(s); be securely covered; and have adequate protection from the effects of heavy weather.

c) A propulsion engine required by Special Regulations shall provide a minimum speed in knots of (1.8 x square root of LWL in metres) or (square root of LWL in feet)

e)[...]

3.28.2 Generator

A separate generator for electricity is optional. [...]

***N:3.28.2 OSR 3.28.2 Separate Optional Generator: 3.28.2 is modified to allow a portable generator when it is securely fastened in both stowed and operating locations. Portable fuel container rules apply as noted above. When in the operating location, a portable generator need not be securely covered, but shall not direct exhaust or fuel fumes below deck. Proper stowed and operating conditions must be demonstrated to the yacht's safety inspector. Sailors are cautioned to be prudent and run an exposed generator only in favorable weather.***

3.28.3 Fuel Systems

Each fuel tank provided with a shutoff valve. Except for permanently installed linings or liners, a flexible tank is not permitted as a fuel tank.

b) The propulsion engine shall have a minimum amount of fuel which may be specified in the Notice of Race but if not, shall be sufficient to be able to meet charging requirements for the duration of the race and to motor at the above minimum speed for at least 8 hours

**N:3.28.1 & 3** **OSR 3.28.1 & 3.28.3 Engine/Fuel: As an alternative to the inboard engine required by 3.28.1, an outboard engine, which may be carried on the transom or securely stowed below decks in such a way that it is available for immediate deployment. The requirements of 3.28.3 apply, except that a sealed and approved portable container may be carried above the working deck or in a vented locker such that there is no possibility of leakage into the bilges or interior of the yacht.**

*Advice: During the first three days of the race the boat will be tossed about quite a bit. This will stir anything on the bottom of your tank, possibly clogging filters and fuel lines. Trial offshore sails and spare filters can improve your success rate.*

#### 3.28.4 Battery Systems

**N:3.28.4 OSR 3.28.4 Battery: If an inboard engine (with a separate starting battery per OSR 3.28.4) is not provided, then a separate battery (fully charged) of at least 50 amp hours capacity shall be provided. The primary purpose for this battery is to act as a reserve for communications systems. If an inboard engine is fitted, then there must be a provision for powering the SSB or Satphone from the separate battery required by OSR 3.28.4. Note that a robust electrical system and radio installation is advisable because there is a severe penalty for every failure to report at daily roll call.**

a) When an electric starter is the only method for starting the engine, the yacht shall have a separate battery, the primary purpose of which is to start the engine

c) It is recommended that consideration be given to the installation of sealed batteries, noting however that a special charging device may be specified by the battery manufacturers

### 3.29 Communications Equipment, EPFS (Electronic Position-Fixing System), Radar, AIS

*Advice: You need short-range comms (handheld and fixed-mount VHF) and you need long-range comms (SSB transceiver OR SSB receiver and a satphone). Details are below. Provided it's set up correctly, the "receiver" option need not be expensive. Decent models can be had for as little as \$100. AIS is like magic, and either a receiver or a transponder will be of great assistance in looking out for shipping and hailing them by name if you wish.*

3.29.1 The following shall be provided:

a) A marine radio transceiver (or if stated in the Notice of Race, an installed satcom terminal), and

i an emergency antenna when the regular antenna depends upon the mast.

b) When the marine radio transceiver is VHF:

i it shall have a rated output power of 25W

ii it shall have a masthead antenna, and co-axial feeder cable with not more than 40% power loss

iii the following types and lengths of co-axial feeder cable will meet the requirements of OSR 3.29.1 (b)(ii): (a) up to 15m (50ft) - type RG8X ("mini 8"); (b) 15-28m (50-90ft) - type RG8U; (c) 28-43m (90-140ft) - type 9913F (uses conventional connectors, available from US supplier Belden); (d) 43-70m 140-230ft - type LMR600 (uses special connectors, available from US supplier Times Microwave).

iv it should include channel 72 (an international ship-ship channel which, by common use, has become widely accepted as primary choice for ocean racing yachts anywhere in the world)

e) A hand-held marine VHF transceiver, watertight or with a waterproof cover. When not in use to be stowed in a grab bag or emergency container (see OSR 4.21)

f) Independent of a main radio transceiver, a radio receiver capable of receiving weather bulletins

i) An EPFS (Electronic Position-Fixing System) (e.g. GPS)

***N:3.29.1 OSR 3.29.1 is amended, per the following:***

***3.29.1nor Each yacht shall be equipped with a fixed Marine VHF as specified in OSR3.29.1b, together with a spare antenna.***

***All yachts must be equipped to send and receive e-mail communications during the race.***

***A.Yachts must carry an installed marine SSB transceiver pre-programmed to receive all relevant weather and race communication channels, with a spare antenna.***

***B Optionally, a yacht may utilize both of the following, in place of a properly installed marine SSB transceiver:***

***i. An installed SSB radio receiver equipped with an external antenna and adequate power sources, furnished with digital tuning, channel memory, and a headphone jack, and demonstrated as installed to be capable of receiving specified transmissions, of a model type to be approved by the Race Committee. AND***

***ii. An Iridium or Inmarsat satellite telephone pre-programmed with race and safety telephone numbers as may be specified in the Communications Plan and/or Sailing Instructions. The telephone shall be powered by or be re-charged by the vessel's electrical system, and be operable below decks using an external antenna. Yachts equipped with a satphone must supply the satphone number to the race committee.***

*It is recommended that satphone users carry 300 minutes at a minimum for the race. Whether this value will meet the race requirements is dependent upon each yacht's use of the satphone.*

**N:3.29** *OSR 3.29.1n AIS Transponder: Any [OSR] requirement for an AIS Transponder is currently waived by the PCYC. This does not supersede requirements by legislation that may be made by local or federal offices prior to commencement of the race. Please note: Although AIS Transponders are not required by PCYC at this time, an amendment to this NOR may be made by PCYC prior to the start of the race to require an AIS transponder or receiver*

3.29.2 *Yachts are reminded that no reflector, active or passive, is a guarantee of detection or tracking by a vessel using radar.*

*a) The attention of persons in charge is drawn to legislation in force or imminent affecting the territorial seas of some countries in which the carriage of an AIS set is or will be mandatory for certain vessels including relatively small craft.*

## Notes

# SECTION 4 - PORTABLE EQUIPMENT & SUPPLIES

## for the yacht (for water & fuel see OSR 3.21 and OSR 3.28)

<b>4.01</b>	<b>Sail Letters &amp; Numbers</b>
<input type="checkbox"/> N:4.01	<i>OSR 4.01 Sail Numbers: The requirements for sail numbers described in OSR 4.01 and in RRS Rule 77 and RRS Appendix G are amended to require as a minimum, that each yacht must have a number of the specified size (but not necessarily style) on her mainsail. The required number does not need to be an officially assigned sail number but shall be unique within the Pacific Cup fleet. In the event of duplicate numbers, priority will be given to (1) officially assigned numbers, and (2) the earliest entry. A subsequent entry with duplicate numbers will be required to change. Also, class insignia and nationality letters (as per RRS G1.1, G1.3) are not required. Contravening nationality letters (as per RRS G3) are allowed.</i>
4.01.1	Yachts which are not in an ISAF International Class or Recognized Class shall comply with RRS 77 and Appendix G as closely as possible, except that sail numbers allotted by a State authority are acceptable .
<input type="checkbox"/> 4.01.2	Sail numbers and letters of the size carried on the mainsail must be displayed by alternative means when none of the numbered sails is set.
<b>4.02</b>	<b>Hull marking (colour blaze)</b>
4.02.1	To assist in SAR location:- <i>b) Each yacht is recommended to show at least 1 m<sup>2</sup> of fluorescent pink or orange or yellow colour as far as possible in a single area on the coachroof and/or deck where it can best be seen</i>
4.02.3	<i>Each yacht is recommended to show on each underwater appendage an area of highly-visible colour</i>
<b>4.03</b>	<b>Soft Wood Plugs</b>
<input type="checkbox"/>	Soft wood plugs, tapered and of the appropriate size, shall be attached or stowed adjacent to the appropriate fitting for every through-hull opening. <i>Advice: These function in part by swelling when they get wet, so putting them in a waterproof bag is a good idea.</i>
<b>4.04</b>	<b>Jackstays, Clipping Points and Static Safety Lines</b>
<input type="checkbox"/> 4.04.1	a) Jackstays: shall be provided- i attached to through-bolted or welded deck plates or other suitable and strong anchorage fitted on deck, port and starboard of the yacht's centre line to provide secure attachments for safety harness:- ii comprising stainless steel 1 x 19 wire of minimum diameter 5 mm (3/16 in), or webbing of equivalent strength; <b><i>US SAILING prescribes that wire jackstays may be of configurations</i></b>

**other than 1 X 19.**

iii which, when made from stainless steel wire shall be uncoated and used without any sleeving;

iv 20kN (2,040 kgf or 4,500 lbf) min breaking strain webbing is recommended;

4.04.2 Clipping Points:- shall be provided-

a) attached to through-bolted or welded deck plates or other suitable and strong anchorage points adjacent to stations such as the helm, sheet winches and masts, where crew members work for long periods:-

b) which, together with jackstays and static safety lines shall enable a crew member-

i to clip on before coming on deck and unclip after going below;

ii whilst continuously clipped on, to move readily between the working areas on deck and the cockpit(s) with the minimum of clipping and unclipping operations.

c) The provision of clipping points shall enable two-thirds of the crew to be simultaneously clipped on without depending on jackstays

e) Warning - U-bolts as clipping points - see OSR 5.02.1(a)

#### **4.05 Fire Extinguishers**

Shall be provided as follows:

Fire extinguishers, at least two, readily accessible in suitable and different parts of the yacht

Fire Extinguishers, at least two, of minimum 2kgs each of dry powder or equivalent

#### **4.06 Anchor(s)**

*Advice: Anchors are safety gear. A loss of rudder or sails near the California or Hawaii coasts may require anchoring to stay off the beach. Post-finish, any boat may need to anchor out safely for a period of time.*

**N:4.06 Anchor(s): Anchor requirement of OSR 4.06 is amended to require, in addition, that the anchors be suitable for anchoring the yacht safely. To be considered "suitable" as used in OSR 4.06, this Amendment and this NOR, gear must meet the criteria [that will be] published for 2011 - 2012 at <http://PacificCup.org>.**

4.06.1 An anchor or anchors shall be carried according to the table below:

a) The following anchors shall be provided

i For yachts of 8.5 m LOA (28 ft) and over there shall be 2 anchors together with a suitable combination of chain and rope, all ready for immediate use

ii For yachts under 8.5 m LOA (28 ft) there shall be 1 anchor together with a suitable combination of chain and rope, all ready for immediate use

## 4.07 Flashlight(s)

4.07.1 The following shall be provided:-

- a) a watertight, high-powered flashlight or spotlight, with spare batteries and bulbs, and
- b) a watertight flashlight with spare batteries and bulb

*Advice: Some boats standardize on a particular battery size, with AA being the most popular. This makes the hunt for spares less challenging.*

## 4.08 First Aid Manual and First Aid Kit

4.08.1 A suitable First Aid Manual shall be provided

In the absence of a National Authority's requirement, the latest edition of one of the following is recommended:-

a) *International Medical Guide for Ships, World Health Organisation, Geneva*

c) *Le Guide de la medecine a distance, by Docteur J Y Chauve, published by Distance Assistance BP33 F-La Baule, cedex, France. An English translation may be available.*

***US SAILING endorses the above and additionally recommends the following manuals: Advanced First Aid Afloat by Peter Eastman, M.D., Cornell Maritime Press and A Comprehensive Guide To Marine Medicine by Eric A. Weiss, M.D. and Michael E. Jacobs, M.D., Adventure Medical Kit.***

4.08.2 A First Aid Kit shall be provided

4.08.3 *The contents and storage of the First Aid Kit should reflect the guidelines of the Manual carried, the likely conditions and duration of the passage, and the number of people aboard the yacht.*

## 4.09 Foghorn

A foghorn shall be provided

## 4.10 Radar Reflector, AIS (Automatic Identification System)

4.10.1 A passive Radar Reflector (that is, a Radar Reflector without any power) shall be provided

a) If a radar reflector is octahedral it must have a minimum diagonal measurement of 456 mm (18in), or if not octahedral must have a documented RCS (radar cross-section) of not less than 10 m<sup>2</sup>. The minimum effective height above water is 4.0 m (13 ft).

***US SAILING prescribes that in the US, radar reflectors shall have a minimum documented "equivalent echoing area" of 6 sq. m. Octahedral reflectors shall have a minimum diameter of 12 inches.***

*Advice: Certain radar reflectors DO NOT MEET these standards, have been shown to be very ineffective, and may not be approved on inspection. These include "radar flags" and Mobri-style tube reflectors. A 2007 report favors the Sea-Me active system (not passive, but good), followed by Tri-Lens, Plastimo 16-inch, and Davis*

*Echomaster (marginal, but praised in other studies).*

*b) The passive and active devices referred to in these notes and in 4.10.1 and 4.10.2 above are primarily intended for use in the X (9GHz) band*

4.10.2 *The most effective radar response from a yacht may be provided by an RTE (Radar Target Enhancer) which may be on board in addition to the required passive reflector. An RTE should conform to Recommendation ITU-R 1176. An RTE is strongly recommended.*

*b) The display of a passive reflector or the operation of an RTE is for the person in charge to decide according to prevailing conditions.*

4.10.3 *A passive reflector in compliance with revised ISO8729 (revision in progress at 1/06) offers improved performance over earlier models and has a size typified by a cylinder of not more than weight 5kg, height 750mm [~2.5 ft] and dia 300mm [~1 ft]. When revised ISO 8729 is published the Special Regulations regarding radar reflectors will be reviewed and may be changed.*

4.10.4 *S (3GHz) band radar is often used by ships to complement X (9GHz) band radar. On S (3GHz) band a conventional reflector or RTE offers about 1/10 the response obtained on the X (9GHz) band.*

## **4.11 Navigation Equipment**

4.11.1 Charts

Navigational charts (not solely electronic), light list and chart plotting equipment shall be provided

***N:4.11.1 Navigation Equipment: OSR 4.11.1 is clarified to require, in addition, that each yacht shall carry on board a current printed paper copy (not solely electronic) of Chart No. 19359 for Kaneohe Bay.***

*As of this writing, the current Kaneohe chart is July 2007. Check this. At least one "print on demand" vendor is using the 2003 chart. A prudent sailor will update the current chart with available updates. This sailor will also carry coastal charts for Hawaiian and California shores which may be nearby in case of unexpected need.*

4.11.2 *Reserve Navigation System*

Navigators are recommended to carry a sextant with suitable tables and a timepiece or an adequate reserve navigation system so that total reliance is not placed on dead-reckoning and a single form of EPFS (Electronic Position-Fixing System) (see Volpe Report at [www.navcen.uscg.gov/archive/2001/Oct/FinalReport-v4.6.pdf](http://www.navcen.uscg.gov/archive/2001/Oct/FinalReport-v4.6.pdf) [link is bad. Bottom line "GPS might fail"])

## **4.12 Safety Equipment Location Chart**

A safety equipment location chart in durable waterproof material shall be displayed in the main accommodation where it can best be seen, clearly marked with the location of principal items of safety equipment.

## **4.13 Echo Sounder or Lead Line**

4.13.1 An echo sounder or lead line shall be provided

<input type="checkbox"/>	<b>4.14</b>	<b>Speedometer or Distance Measuring Instrument (log)</b>
<input type="checkbox"/>		A speedometer or distance measuring instrument (log) shall be provided
<input type="checkbox"/>	<b>4.15</b>	<b>Emergency Steering</b>
<input type="checkbox"/>	4.15.1	Emergency steering shall be provided as follows:
<input type="checkbox"/>		a) except when the principal method of steering is by means of an unbreakable metal tiller, an emergency tiller capable of being fitted to the rudder stock;
<input type="checkbox"/>		b) crews must be aware of alternative methods of steering the yacht in any sea condition in the event of rudder loss. At least one method must have been proven to work on board the yacht. An inspector may require that this method be demonstrated. <u>[See Knowledgebase. This need not be a rudder, but that is most common.]</u>
<input type="checkbox"/>	<b>N:4.15</b>	<b><i>Emergency Steering: OSR 4.15 is amended to require, in addition, that a yacht's skipper and crew shall test the alternative method of steering under sail in no less than 10 knots of wind and demonstrate the ability of the method to steer the yacht both upwind and downwind. Following a successful test and prior to starting the race, the skipper shall submit to his/her inspector a written and signed form that states that this test was performed successfully. This form will be found with other inspection materials at <a href="http://PacificCup.org">http://PacificCup.org</a>.</i></b>
<input type="checkbox"/>	<b>4.16</b>	<b>Tools and Spare Parts</b>
<input type="checkbox"/>		Tools and spare parts, including effective means to quickly disconnect or sever the standing rigging from the hull shall be provided.
<input type="checkbox"/>	<b>N:4.16</b>	<b><i>OSR 4.16 is amended to require, in addition, that each yacht shall carry on board one of the following approved repair tools:</i></b>
		<ul style="list-style-type: none"> <li>• <b><i>Band-It brand clamping tool with suitable supply of steel strap and clips. <a href="http://www.band-it-idex.com">www.band-it-idex.com</a></i></b></li> <li>• <b><i>Similar steel/stainless steel banding tools. Note: "Feedwheel" style tools are not recommended because tension is usually lost when tool is removed.</i></b></li> <li>• <b><i>At least 100' of Spectra or similar lashing with several suitable levers to make Spanish windlass lashings.</i></b></li> <li>• <b><i>For boats under 4000 lbs displacement the following are also acceptable:</i></b></li> <li>• <b><i>Band-It Jr.</i></b></li> <li>• <b><i>ClampTite tool &amp; wire <a href="http://www.clamptitertools.com">www.clamptitertools.com</a></i></b> <b><i>In addition, each yacht shall also carry bolt cutters capable of cutting the yacht's heaviest stay or a minimum of two (2) hacksaws with carbide blades.</i></b></li> </ul>
<input type="checkbox"/>	<b>4.17</b>	<b>Yacht's name</b>
<input type="checkbox"/>		Yacht's name shall be on miscellaneous buoyant equipment, such as lifejackets, cushions, lifebuoys, lifeslings, grab bags etc.
<input type="checkbox"/>	<b>4.18</b>	<b>Marine grade retro-reflective material</b>

- Marine grade retro-reflective material shall be fitted to lifebuoys, lifeslings, liferafts and lifejackets. See OSRs 5.04, 5.08.

## 4.19 EPIRBs

- N:4.19** *EPIRBs: The EPIRB required by OSR 4.19 may not be packed inside a life raft, and must be accessible without opening a life raft canister or valise. If an EPIRB is packed with a life raft, then an additional unit will be required to meet this section. Use of a "G-PIRB," which broadcasts the yacht's position when activated, is preferred and is strongly recommended.*

- 4.19.1 A 406 MHz EPIRB shall be provided

- b) It is recommended that a 406 MHz EPIRB should include an internal GPS, and also a 121.5MHz transmitter for local homing.
- c) Every 406 MHz EPIRB shall be properly registered with the appropriate authority.
- d) EPIRBs should be tested in accordance with manufacturer's instructions when first commissioned and then at least annually.
- e) A list of registration numbers of 406 EPIRBs should be notified to event organizers and kept available for immediate use.
- f) Consideration should be given to the provision of a locator device (eg an "Argos" beacon) operating on non - SAR frequencies, to aid salvage if a yacht is abandoned.
- g) Beacons with only 121.5MHz are no longer recommended for distress alerting. Satellite processing of 121.5 MHz is being phased out. 121.5MHz will continue to be used for local homing by on-board D/F systems and for local homing by SAR units. Type "E" EPIRBs are no longer supported and should be replaced immediately.

***US SAILING requires the use of 406 EPIRBs (with or without GPS input), as USCG advises that rescue efforts will be launched immediately upon receipt of a distress signal from these units. USCG also advises that PLB and INMARSAT "E" transmissions are not monitored by U.S. Rescue Coordination Centers and that slight delays are likely to occur while the commercial ground stations forward an alert to the USCG.***

## 4.20 Liferafts

- 4.20.1 Liferaft Construction and Packed Equipment

- 4.20.2 Liferaft(s) shall be provided capable of carrying the whole crew when each liferaft shall comply with either:-

- a) Liferafts shall comply with SOLAS LSA code 1997 Chapter IV or later version except that they are acceptable with a capacity of 4 persons and may be packed in a valise. A SOLAS liferaft shall contain at least a SOLAS "A" pack or
- b) for liferafts manufactured prior to January 2003 (1/06 in the U.S.) OSR Appendix A part I (ORC), or
- c) OSR Appendix A part II (ISAF) when, unless otherwise specified by a race

organizer, the floor shall include thermal insulation, or

d) ISO 9650 Part I Type I Group A (ISO) when each liferaft shall contain at least a Pack 2 (<24h) and-

i shall have a semi-rigid boarding ramp, and

ii shall be so arranged that any high-pressure hose shall not impede the boarding process, and

iii shall have a topping-up means provided for any inflatable boarding ramp, and

iv when the liferaft is designed with a single ballast pocket this shall be accepted provided the liferaft otherwise complies with ISO 9650 and meets a suitable test of ballast pocket strength devised by the manufacturer and

v compliance with OSR 4.20.2 (d) i-iv shall be indicated on the liferaft certificate.

***US SAILING recommends that liferafts be equipped with insulated floors for events that take place in waters of less than 68 deg F (20deg C).***

***US SAILING prescribes that liferafts shall be equipped with canopies.***

#### 4.20.3 Liferaft Packing and Stowage



A Liferaft shall be either:-

a) packed in a transportable rigid container or canister and stowed on the working deck or in the cockpit, or:-

b) packed in a transportable rigid container or canister or in a valise and stowed in a purpose-built rigid compartment containing liferaft(s) only and opening into or adjacent to the cockpit or working deck, or through a transom, provided that:-

i each compartment is watertight or self-draining (self-draining compartments will be counted as part of the cockpit volume except when entirely above working deck level or when draining independently overboard from a transom stowage - see OSR 3.09) and-

ii the cover of each compartment is capable of being easily opened under water pressure, and-

iii the compartment is designed and built to allow a liferaft to be removed and launched quickly and easily, or-

iv in a yacht with age or series date before June 2001, a liferaft may be packed in a valise not exceeding 40kg securely stowed below deck adjacent to a companionway.

c) The end of each liferaft painter should be permanently made fast to a strong point on board the yacht.



***N:4.20 Liferafts:OSR 4.20.3 is amended to read: A liferaft shall be stowed either on the working deck, in the cockpit, in an adjacent compartment, or below decks. Stowage must be in a secure location and accessible, such that deployment is***

***not obstructed by other gear. Liferafts not stowed on deck or in the cockpit may not exceed 40kg unless deployment does not require lifting. Trigger lanyard must be enclosed but readily accessible for rafts stowed below deck.***

#### 4.20.4 Liferaft Launching



a) Each raft shall be capable of being got to the lifelines or launched within 15 seconds.

*b) Each liferaft of more than 40kg weight should be stowed in such a way that the liferaft can be dragged or slid into the sea without significant lifting*

#### 4.20.5 Liferaft Servicing and Inspection

IMPORTANT NOTICE Recent evidence has shown that packaged liferafts are vulnerable to serious damage when dropped (eg from a boat onto a marina pontoon) or when subjected to the weight of a crew member or heavy object (eg an anchor). Damage can be caused internally by the weight of the heavy steel CO2 bottle abrading or splitting neighbouring layers of buoyancy tube material. ISAF has instituted an investigation into this effect and as an interim measure requires that every valise-packed liferaft shall have an annual certificate of servicing. A liferaft should be taken for servicing if there is any sign of damage or deterioration (including on the underside of the pack). Persons in charge should insist on great care in handling liferafts and apply the rules NO STEP and DO NOT DROP UNLESS LAUNCHING INTO THE SEA.



a) Certificates or copies, of servicing and/or inspection shall be kept on board the yacht. Every SOLAS liferaft and every valise-packed liferaft shall have a valid annual certificate of new or serviced status from the manufacturer or his approved service station.



b) A liferaft built to OSR Appendix A part I ("ORC") packed in a rigid container or canister shall either be serviced annually or may, when the manufacturer so specifies, be inspected annually (not necessarily unpacked) provided the yacht has on board written confirmation from the manufacturer's approved service station stating that the inspection was satisfactory.

***N:Appx A OSR Appendix A, Part 1 Minimum Specifications for Yachtsmen's Liferafts Manufactured Prior to 1/03: Section 3.0 Marking of Liferafts is amended to allow identification attached to the raft (or painter) and container. For example, identification may be by a label written on waterproof tape, with no size requirements, provided that the portable sail numbers are packed with a grab bag containing the rest of the abandon-ship gear (such as flares, water, EPIRB, etc).***



c) A liferaft built to OSR Appendix A part II ("ISAF") packed in a rigid container or canister shall either be serviced annually or may, when the manufacturer so specifies, have its first service no longer than 3 years after commissioning and its second service no longer than 2 years after the first. Subsequent services shall be at intervals of not more than 12 months.



d) Liferaft servicing certificates shall state the specification that the liferaft was built to. See OSR 4.20.2

## 4.21 Grab Bags

#### **4.21.2 Grab Bags to Accompany Liferafts**

a) A yacht is recommended to have for each liferaft, a grab bag with the following minimum contents. A grab bag should have inherent flotation, at least 0.1 m<sup>2</sup> area of fluorescent orange colour on the outside, should be marked with the name of the yacht, and should have a lanyard and clip.

b) Note: it is not intended to duplicate in a grab bag items required by other OSRs to be on board the yacht - these recommendations cover only the stowage of those items

#### **4.21.3 Grab Bag Recommended Contents**

a) **2 red parachute and 2 red hand flares and cyalume-type chemical light sticks (red flares compliant with SOLAS)**

b) **watertight hand-held EPFS (Electronic Position-Fixing System) (eg GPS) in at least one of the grab bags carried by a yacht**

c) **SART (Search and Rescue Transponder) in at least one of the grab bags carried by a yacht**

d) **a combined 406MHz/121.5MHz or type "E" EPIRB (see OSR 4.19.1) in at least one of the grab bags carried by a yacht**

e) **water in re-sealable containers or a hand-operated desalinator plus containers for water**

f) **a watertight hand-held marine VHF transceiver plus a spare set of batteries**

g) **a watertight flashlight with spare batteries and bulb**

h) **dry suits or thermal protective aids or survival bags**

i) **second sea anchor for the liferaft (not required if the liferaft has already a spare sea anchor in its pack) (recommended standard ISO 17339) with swivel and >30m line diameter >9.5 mm**

j) **two safety tin openers (if appropriate)**

k) **first-aid kit including at least 2 tubes of sunscreen. All dressings should be capable of being effectively used in wet conditions. The first-aid kit should be clearly marked and re-sealable.**

l) **signalling mirror**

m) **high-energy food (min 10 000kJ per person recommended for Cat Zero)**

n) **nylon string, polythene bags, seasickness tablets (min 6 per person recommended)**

o) **watertight hand-held aviation VHF transceiver (if race area warrants)**

**Advice: Have a plan to grab your satphone, with a usable antenna and power, and a way to keep it dry**

## **4.22 Lifebuoys**

*Advice: Summarized, you need TWO things, only one of which may be inflatable. 1. A Lifesling with a light and 2. A MOM module or that buoy+pole+light+etc collection described below.*

**4.22.1 The following shall be provided within easy reach of the helmsman and ready for instant use:**

**a) a lifebuoy with a self-igniting light and a drogue or a Lifesling with a self-igniting light and without a drogue. For Categories 0,1,2,3 US SAILING prescribes that the lifebuoy in OSR 4.22.1 a) above shall be a Lifesling (without a drogue), equipped with a self-igniting light within easy reach of the helmsman and ready for instant use. (See Appendix D).**

**b) In addition to a) above, one lifebuoy within easy reach of the helmsman and ready for instant use, equipped with:**

**i a whistle, a drogue, a self-igniting light and**

**ii a pole and flag. The pole shall be either permanently extended or be capable of being fully automatically extended (not extendable by hand) in less than 20 seconds. It shall be attached to the lifebuoy with 3 m (10 ft) of floating line and is to be of a length and so ballasted that the flag will fly at least 1.8 m (6 ft) off the water.**

**When at least two lifebuoys (and/or Lifeslings) are carried, at least one of them shall depend entirely on permanent (eg foam) buoyancy.**

4.22.3 Each inflatable lifebuoy and any automatic device (eg pole and flag extended by compressed gas) shall be tested and serviced at intervals in accordance with its manufacturer's instructions.

4.22.4 Each lifebuoy or lifesling shall be fitted with marine grade retro-reflective material (4.18).

## **4.23 Pyrotechnic and Light Signals**

4.23.1 Pyrotechnic signals shall be provided conforming to SOLAS LSA Code Chapter III Visual Signals and not older than the stamped expiry date (if any) or if no expiry date stamped , not older than 4 years.

6 red parachute flares LSA III 3.1

4 red hand flares LSA III 3.2

2 orange smoke LSA III 3.3

4.23.2 The following lights shall be provided and readily available for the purpose of collision avoidance:

a) a watertight white torch (flashlight) with spare batteries and bulb

b) a watertight, high-powered white spotlight (searchlight) with spare batteries and bulbs

## **4.24 Heaving Line**

a) a heaving line shall be provided 15 m - 25 m (50 ft - 75 ft) length readily accessible to cockpit.

b) the "throwing sock" type is recommended - see Appendix D

***US SAILING prescribes that the heaving line be of 1/4 in. (6 mm) minimum diameter, floating, UV-inhibited and readily accessible to the cockpit.***

#### 4.25 Cockpit Knife

A strong, sharp knife, sheathed and securely restrained shall be provided readily accessible from the deck or a cockpit.

#### 4.26 Storm & Heavy Weather Sails

##### 4.26.1 Design

*a) it is strongly recommended that persons in charge consult their designer and sailmaker to decide the most effective size for storm and heavy weather sails. The purpose of these sails is to provide safe propulsion for the yacht in severe weather -they are not intended as part of the racing inventory. The areas below are maxima. Smaller areas are likely to suit some yachts according to their stability and other characteristics.*

##### 4.26.2 High Visibility

*a) it is strongly recommended that every storm sail should either be of highly-visible coloured material (eg dayglo pink, orange or yellow) or have a highly-visible coloured patch added on each side; and also that a rotating wing mast used in lieu of a trysail should have a highly-visible coloured patch on each side*

##### 4.26.3 Materials

a) aromatic polyamides, carbon and similar fibres shall not be used in a trysail or storm jib but spectra/dyneema and similar materials are permitted.

*b) it is strongly recommended that a heavy-weather jib does not contain aromatic polyamides, carbon and similar fibres other than spectra/dyneema.*

##### 4.26.4 The following shall be provided:-

a) sheeting positions on deck for each storm and heavy-weather sail;

b) for each storm or heavy-weather jib, a means to attach the luff to the stay, independent of any luff-groove device. A heavy weather jib shall have the means of attachment readily available. A storm jib shall have the means of attachment permanently attached;

***c) a storm trysail which shall be capable of being attached to the mast and sheeted independently of the boom with area not greater than 17.5% mainsail luff length x mainsail foot length. The storm trysail shall have neither headboard nor battens, however a storm trysail is not required in a yacht with a rotating wing mast which can adequately substitute for a trysail;***

d) the storm trysail as required by OSR 4.26.4 (c) shall have the yacht's sail number and letter(s) shall be placed on both sides of the trysail (or on a rotating wing mast as substitute for a trysail) in as large a size as practicable;

e) a storm jib of area not greater than 5% height of the foretriangle squared, with luff maximum length 65% height of the foretriangle;

**f) in addition to the storm jib required by OSR 4.26.4 (e), a heavy-weather jib (or heavy-weather sail in a yacht with no forestay) of area not greater than 13.5% height of the foretriangle squared and without reef points;**

h) in the case of a yacht with an in-mast furling mainsail, the storm trysail must be capable of being set while the mainsail is furled.

*i) It is strongly recommended that the heavy-weather jib does not contain aromatic polyamides, carbon fibres and other high modulus fibres.*

*j) A trysail track should allow for the trysail to be hoisted quickly when the mainsail is lowered whether or not the mainsail is stowed on the main boom.*

**N:4.26 Storm & Heavy Weather Sails: OSR 4.26.4 e&f are amended such that a yacht may carry either the storm jib or the heavy weather jib referenced.**

**In addition, US SAILING prescribes mainsail reefing to reduce the luff by at least 10% for sails built after 1 January 1997.**

## **4.27 Drogue, Sea Anchor**

4.27.1 *A drogue for deployment over the stern, or alternatively a sea anchor or parachute anchor for deployment over the bow, complete with all gear needed to rig and deploy the sea anchor or drogue, is strongly recommended to withstand long periods in rough conditions (see Appendix F).*

## **4.28 Man Overboard Alarm**

4.28.2 *A yacht is recommended to be equipped with an EPFS (e.g. GPS) capable of immediately recording a man overboard position from each helm station [REQUIRED now, see below]*

4.28.3 *A yacht shall be equipped with an EPFS (e.g. GPS) capable of immediately recording a man overboard position from each helm station (From January 2012)*

*Advice: Most marine GPS units (and what else would you use?), as well as integrated instrument systems, include an MOB button function, or the ability to add one easily. Usually it's a "press and hold" a button that will record the position, may set an alarm, and will begin navigating toward that position.*

# SECTION 5 - PERSONAL EQUIPMENT

## 5.01 Lifejacket

**N:5.01 Life Jacket: OSR 5.01.1 and 5.01.2 is amended such that yachts which use inflatable PFDs to meet all or part of their lifejacket requirement under OSR section 5.01.1 and 5.01.2 shall carry re-arming kits (including CO2 cartridge, pin, and, if applicable, bobbin) for rearming each type of inflatable PFD on board, in sufficient number to re-arm not less than half of each type of inflatable PFD carried on board. Carrying more than the minimum required number of rearming kits is recommended.**

5.01.1 Each crew member shall have a lifejacket as follows:-

a) In accordance with ISO 12402 "3 (Level 150) or equivalent,

ISO 12402 requires Level 150 lifejackets to be fitted with a mandatory whistle and retro-reflective material. Also, when fitted with a safety harness, ISO 12402 requires that this shall be the full safety harness in accordance with ISO 12401. Any equivalent lifejacket shall have equal requirements.

Note: persons of larger than average build are generally more buoyant than those of average build and so do not require a lifejacket with greater levels of flotation. Wearing a Level 275 lifejacket may hamper entry into liferafts.

**US SAILING prescribes that OSR 5.01.1 (b) shall not apply but recommends that lifejackets have a crotch strap or thigh straps until 1 January 2014 when crotch strap(s)/thigh straps will be required.**

b. Crotch straps or thigh straps together with related fittings and fixtures should be strong enough to lift the wearer from the water.

c) fitted with a lifejacket light in accordance with SOLAS LSA code 2.2.3 (white, >0.75 candelas, >8 hours),

d) if inflatable have a compressed gas inflation system,

e) if inflatable, regularly checked for gas retention,

f) compatible with the wearer's safety harness,

g) clearly marked with the yacht's or wearer's name,

It is strongly recommended that a lifejacket has:

j) a splashguard / sprayhood See ISO 12402 "8,

k) a PLB unit (as with other types of EPIRB, should be properly registered with the appropriate authority)

l) if of a gas inflatable type, a spare cylinder and if appropriate a spare activation head

5.01.4 The person in charge shall personally check each lifejacket at least once annually.

**US SAILING prescribes that for Categories 0, 1, 2, 3 either a Type 1 U.S. Coast Guard approved flotation device or an inflatable personal flotation device meeting the definition in the above paragraph and manufactured to either British National or European Community standards. Each inflatable device should be inflated and inspected annually. Service dates shall be marked on the flotation**

**devices. This inflatable device may be integrated with a safety harness (see OSR 5.02).**

**US SAILING prescribes that all personnel on deck shall wear personal floatation while starting and finishing without exception, and at all other times except when the Captain of the boat directs that it may be set aside.**

**US SAILING note: As is true of all of these regulations, the prescriptions above do not necessarily replace the requirements of other governing authorities.**

## **5.02 Safety Harness and Safety Lines (Tethers)**

- 5.02.1 Each crew member shall have a harness and safety line that complies with ISO 12401 or equivalent with a safety line not more than 2m in length.

Harnesses and safety lines manufactured prior to Jan 2010 shall comply with either ISO 12401 or EN 1095.

**US SAILING prescribes that harnesses and safety lines manufactured prior to Jan 2001 are not recommended in the U.S.**

*a) Warning it is possible for a plain snaphook to disengage from a U bolt if the hook is rotated under load at right-angles to the axis of the U-bolt. For this reason the use of snaphooks with positive locking devices is strongly recommended.*

- 5.02.2 At least 30% of the crew shall each, in addition to the above be provided with either:-

- a) a safety line not more than 1m long, or
- b) a mid-point snaphook on a 2m safety line

- 5.02.3 A safety line purchased in January 2001 or later shall have a coloured flag embedded in the stitching, to indicate an overload. A line which has been overloaded shall be replaced as a matter of urgency.

5.02.4 A crew member's lifejacket and harness shall be compatible

5.02.5 *It is strongly recommended that:-*

- a) static safety lines should be securely fastened at work stations;*
- b) A harness should be fitted with a crotch strap or thigh straps. Crotch straps or thigh straps together with related fittings and fixtures should be strong enough to lift the wearer from the water.*

Note: Before the end of 03/10 ISAF will publish recommended minimum breaking strains which for equipment purchased on or after 01/11 will be mandatory. Effective January 2011, a harness shall be fitted with crotch or thigh straps.

*c) to draw attention to wear and damage, stitching on harness and safety lines should be of a colour contrasting strongly with the surrounding material;*

*d) snaphooks should be of a type which will not self-release from a U-bolt (see OSR 5.02.1(a)) and which can be easily released under load (crew members are reminded that a personal knife may free them from a safety line in emergency);*

*e) a crew member before a race should adjust a harness to fit then retain that harness for the duration of the race.*

***US SAILING prescribes that the safety harness may be integrated with an inflatable personal floatation device (see OSR 5.01) and recommends that such devices be employed whenever conditions warrant, and always in rough weather, on cold water, or at night, or under conditions of reduced visibility or when sailing short-handed.***



***US SAILING prescribes that safety harnesses and PFD's shall be worn on Category 0 and 1 races from sundown to sun up while on deck.***

5.02.6 *Warning - a safety harness is not designed to tow a person in the water and it is important that a harness is used to minimise or eliminate the risk of a person's torso becoming immersed in water outside the boat. The diligent use of a properly adjusted safety harness is regarded as by far the most effective way of preventing man overboard incidents.*

#### **5.04 Foul Weather Suits**

*b) it is recommended that a foul weather suit should be fitted with marine-grade retro-reflective material, and should have high-visibility colours on its upper parts and sleeve cuffs. See OSR 4.18*

#### **5.07 Survival Equipment**

*d) Attention is drawn to the value of keeping on the person a combined 406MHz/121.5MHz PLB when on deck: this may aid location in a man overboard incident independent of the equipment carried by the parent vessel*

*e) All PLB units, as with other types of EPIRB, should be properly registered with the appropriate authority*

#### **5.09 Annual Man-Overboard Practice**



***US SAILING prescribes that the "Quick-Stop" man-overboard procedure shall be practiced aboard the yacht at least once annually. A certificate of such practice shall be signed by participating crew members and kept aboard the yacht.***

#### **5.10 CPR Training**

***US SAILING recommends that at least two members of the crew be currently certified in cardiopulmonary resuscitation.***

#### **5.11 Preventer or Boom Restraining Device**

***US SAILING recommends that a preventer or boom restraining device should be rigged in such a manner that attachment can be easily and quickly made, with the boom fully extended (running) without leaving the deck or leaning overboard. A process and plan for its use should be part of the crew's training and practice. Recommended for all boats in all categories.***

## Notes

## SECTION 6 - TRAINING

- 6.01 At least 30% but not fewer than two members of a crew, including the skipper shall have undertaken training within the five years before the start of the race in both 6.02 topics for theoretical sessions, and 6.03 topics which include practical, hands-on sessions.**

*Advice: Plan on having your whole crew attend these sessions. PCYC is sponsoring an official SAS (Safety at Sea) seminar on May 12, 2012, but if that does work for you, USSailing and other national authorities hold them at other times.*

6.01.3 *It is strongly recommended that all crew members should undertake training as in OSR 6.01 at least once every five years*

6.01.4 Except as otherwise provided in the Notice of Race, an in-date certificate gained at an ISAF Approved Offshore Personal Survival Training course shall be accepted by a race organizing authority as evidence of compliance with Special Regulation 6.01. See Appendix G - Model Training Course, for further details.

### **6.02 Training Topics for Theoretical Sessions**

- 6.02.1 care and maintenance of safety equipment
- 6.02.2 storm sails
- 6.02.3 damage control and repair
- 6.02.4 heavy weather - crew routines, boat handling, drogues
- 6.02.5 man overboard prevention and recovery
- 6.02.6 giving assistance to other craft
- 6.02.7 hypothermia
- 6.02.8 SAR organisation and methods
- 6.02.9 weather forecasting

***US SAILING prescribes that training under this regulation (OSR 6.02) shall take place in a program that is approved by US SAILING and that shall require a minimum of 8 hours. Competitors who are members of other National Governing Bodies may demonstrate that they have completed such training in accordance with the requirements of those organizations.***

### **6.03 Training Topics for Practical, Hands-On Sessions**

- 6.03.1 liferafts and lifejackets
- 6.03.2 fire precautions and use of fire extinguishers
- 6.03.3 communications equipment (VHF, GMDSS, satcomms, etc.)
- 6.03.4 pyrotechnics and EPIRBs

### **6.04 Routine Training On-Board**

6.04.1 *It is recommended that crews should practice safety routines at reasonable intervals including the drill for man-overboard recovery*



***US SAILING prescribes that each skipper in a Category 0, 1 or 2 race shall ensure that a minimum of 30 percent of the crew have been trained in the use of the boat's equipment, including: liferafts and lifejackets; communications; pyrotechnics; EPIRBs; and fire prevention and fire fighting. A record of this training shall be kept aboard the boat in a manner similar to that required for certifying man-overboard training.***

6.05.2 At least two members of the crew shall hold a current Senior First Aid Certificate or equivalent and should be familiar with the management of medical emergencies that may occur at sea including Hypothermia, and radio communications operations for obtaining medical advice by radio. Each of these crew members shall also have undertaken the training required by OSR 6.01.

**NOTE** *Advice: The list above is long, and it is very detailed, making it seem longer than it is. Nonetheless, it represents a minimum set of safety measures, a starting point. The prudent skipper will implement these carefully and in the spirit of seamanship and sportsmanship. Each yacht will have additional measures that should be taken to assure a safe voyage.*