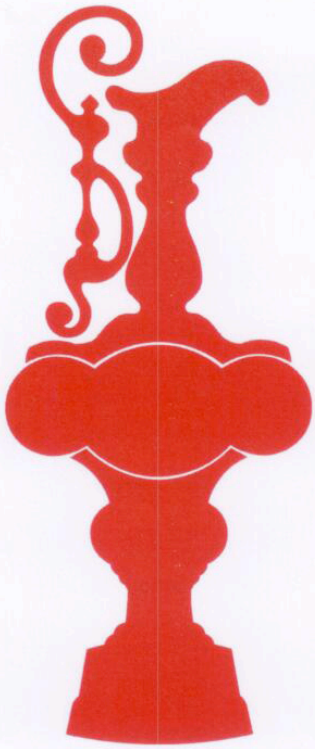

AC72 Class Rule Version 1.1

Pursuant to **AC72 Class Rule** 4(b), this **AC72 Class Rule** Version 1.1 was approved on 22nd February 2011

Nick Nicholson, for the Measurement Committee

Measurement Committee

Regatta Director

The **Regatta Director** certifies this **AC72 Class Rule** Version 1.1 has been approved by a majority of **Competitors**

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INTRODUCTION

Competitors are responsible for the structural integrity of their **AC72 Yachts,** and compliance with the **Class Rule** does not necessarily assure structural integrity nor otherwise relieve the **Competitor** of this responsibility.

Competitors shall ensure that their **AC72 Yachts** comply with the **AC72 Class Rule** at all times while racing and, unless permitted under the **Rules**, that any alterations, replacements and repairs do not invalidate the measurement certificate once issued.

SECTION A

1. LANGUAGE AND DEFINITIONS

1.1 The official language of the **AC72 Class Rule** is English. If translated into another language, the English text shall prevail. Except for words defined herein, the meaning of any word shall be determined by reference to the Oxford English Dictionary, Second Revised Edition (2009) – CD Rom Version 4.0 (Oxford University Press 21 May 2009) or any later published version. When there is more than one definition in the Dictionary, the Measurement Committee shall determine the appropriate definition.

1.2 When a term is used in its defined sense, it is printed in bold type.

1.3 The words "shall" and "must” are mandatory. The words "can" and "may" are permissive. The word "should" is advisory.

1.4 In interpreting this **AC72 Class Rule** the definitions in Article 1 of the **Protocol** shall apply, and:

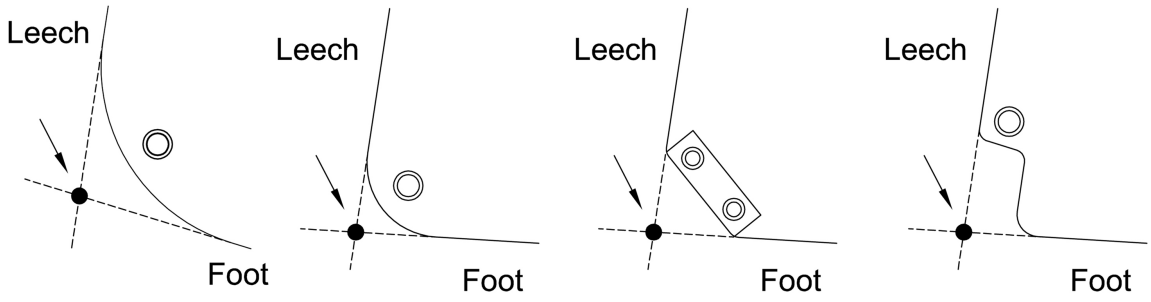
(a) **appendage** means any component that is outside the **hull**, excluding **wing** and **cross structure, daggerboard** bearings and **daggerboard** fairings (providing these bearings and fairings comply with 1.4(a)(ii)) , but including integral components that extend from outside the **hull** into the **hull**, (e.g., **daggerboard** head or **rudder** stock) that is:

i. wholly or partially submerged at any time during racing; and

ii. used to affect stability, leeway, steerage, directional stability, motion damping, trim, or displaced volume.

(b) **clew** means the area within 1.000 m of the **clew point**;

(c) **clew point** means the intersection of the **leech** and **foot**, projected as necessary;



(d) **cross structure** means structure used to connect the **hulls** or to support the **wing**, **rigging** or **soft sails**, including any part of this structure which extends into the **hull,** is removed from the **hull** when the **AC72 Yacht** is disassembled , and excluding trampolines. **Wing, rigging** or **soft sails** may also be supported from fittings attached to the **hulls**;

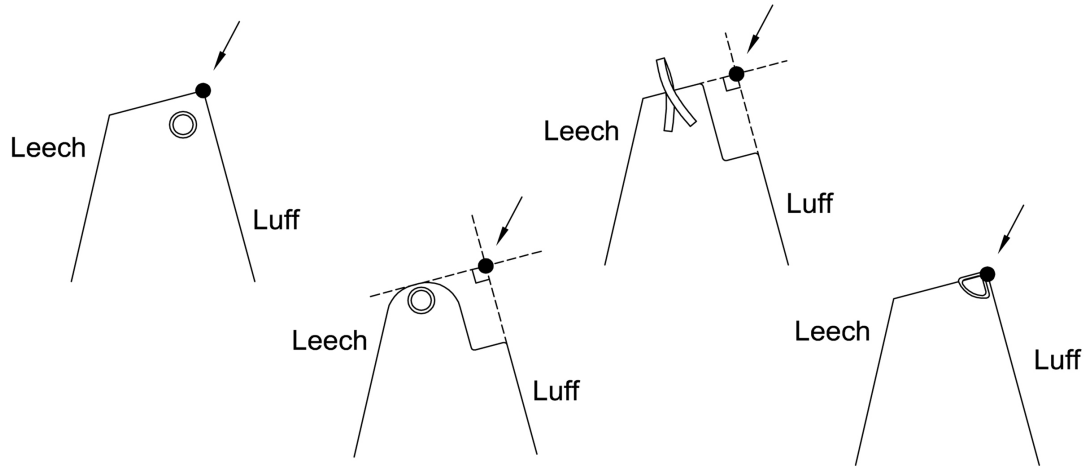
(e) **daggerboard** means a retractable **appendage** primarily used to affect leeway. The term **daggerboard** is synonymous with bilge board, centerboard, lifting keel and sliding keel;

(f) **fiber modulus** means the batch-nominal elastic modulus of the fibers in an **FRP** laminate with the modulus measured with impregnated tows, by extensometers, between 1000 and 6000 microstrains; the **Measurement Committee** will accept the following testing methods (and may accept other similar methods): SACMA-SRM16, ASTM D 4018, or JIS R 7601;

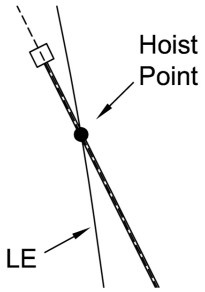
(g) **foot** means the bottom edge of the **soft sail** in its normal configuration when in use;

(h) **FRP** means fiber-reinforced polymer matrix composites;

(i) **head** means the intersection of the **luff** or the extension of the **luff** and a line perpendicular to the **luff** and coincident with the uppermost point on the **soft sail**;



(j) **hoist point** (or **Hoist Points A,** and **B** as defined herein) means a 30mm-wide painted band on the leading edge of the **wing**, whose lower edge is established per appendix D with the **wing** in **wing measurement position**, below which **soft sails** are to be flown;



(k) **hull** means a canoe body, part of which displaces 45% or more of the **AC72 Yacht's** displaced volume when floating in **measurement condition**;

(l) **hull centerplane** means the longitudinal plane of symmetry of a **hull**;

(m) **inboard beam waterline** means the shortest distance between the **hulls** at **MWP**;

(n) **interpretation** means an interpretation issued in writing by the **Measurement Committee** in accordance with rule 3;

(o) **luff** means the forward edge of the **soft sail**;

(p) **leech** means the aft edge of the **soft sail**;

(q) **LP** means the distance, measured perpendicular to the **luff**, from the **luff** to the **clew point** of a **soft sail**.

(r) **Measurement Committee** means the committee appointed under Article 4.4 of the **Protocol**;

(s) **measurement condition** means the condition of the **AC72 Yacht** as specified in rule 25;

(t) **measurement weight** means the weight of the **AC72 Yacht** in **measurement condition;**

(u) **measurer** means a person appointed by the **Measurement Committee** to perform measurement services or compliance checks; a **measurer** may or may not be a member of the **Measurement Committee**;

(v) **MWP** is the flotation plane in **measurement condition;**

(w) **rigging** means ropes, cables or rods that are primarily loaded in tension and are essentially ineffective in compression;

(x) **rudder** means a movable **appendage** primarily used to affect steerage.

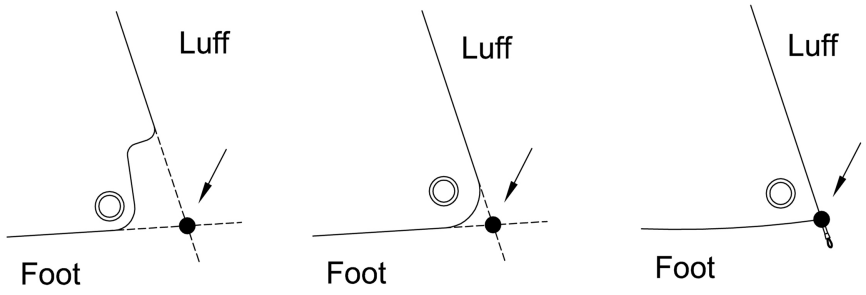
(y) **sailing weight** means the sum of the **measurement weight** and the weight of the **wing** when the **wing** is in **wing measurement condition**;

(z) **soft sail** means a sail that is not a **wing**;

(aa) **stem plane** means the vertical transverse plane that passes through the forward-most point of the **hulls** including fittings attached to **hulls**;

(bb) **stern plane** means the vertical transverse plane that passes through the aft-most point of the **hulls** including fittings attached to **hulls;**

(cc) **tack** means the point where the **luff** and **foot** meet, projected as necessary;



(dd) **tack point** (or **Tack Point A** and **Tack Point B** as further defined herein) means the point on the **cross structure** where the **rigging** or fitting that supports the **soft sail** tack is attached, per rule 12.2;

(ee) **wing** means a rigid or semi-rigid structure (encompassing a traditional yacht's mast and mainsail structures), similar to an aircraft wing fixed approximately vertically to provide propulsion from the wind;

(ff) **wing base plane** means the plane at the base of the wing grid in Appendix D perpendicular to the **wing centerplane**;

(gg) **wing centerplane** means the **wing**'s plane of symmetry parallel to the measurement grid when the wing is in **wing measurement position**;

(hh) **wing measurement condition** means the condition used to measure the weight and center of gravity of the **wing** per rule 25.3;

(ii) **wing measurement position** means the position of the **wing** used to determine its area per rule 10;

(jj) **wing rotation point** means the point about which the lowest compressive load-bearing component of the **wing** rotates relative to the **AC72 Yacht**; and

(kk) **yacht centerplane** means the vertical longitudinal plane of symmetry of the **AC72 Yacht** that is perpendicular to **MWP**.

2. UNITS OF MEASUREMENT

2.1 The Metric System shall be used for all measurements, with:

(a) length measured in meters to three decimal places, except that **soft sails** shall be measured to two decimal places;

(b) **sailing weight** and **wing** weight measured in kilograms to the nearest 10 kg;

(c) areas related to the measurement of the wing measured in square meters to two decimal places;

(d) volumes measured in cubic meters or liters, as specified herein, to two decimal places;

(e) angles measured to the nearest 0.5 degree; and

(f) any other measurement taken to a degree of precision determined by the **Measurement Committee** as they deem appropriate.

2.2 Herein, the three major orthogonal axes of the **AC72 Yacht** are vertical, longitudinal, and transverse (vertical being normal to **MWP**, longitudinal being the intersection of the **yacht centerplane** and **MWP**, and transverse being the third).

2.3 For establishing continuing compliance with rule weight limits, the **Measurement Committee** shall determine and record the weight of any other components, modifications, repairs, additions, subtractions, and/or replacements to a degree of precision and using methodology they determine to be practical and appropriate for that purpose (including re-weighing). **Competitors** shall provide all assistance to the **Measurement Committee** required by them in tracking these changes.

2.4 The measuring equipment used by the **Measurement Committee** shall be the reference device for determining compliance with the **AC72 Class Rule**.

2.5 Herein, "between" two points or numbers means inclusive of those points or numbers, *i.e.*, "between 1.000 m and 2.000 m" means "between 1.000 m and 2.000 m inclusive."

3. INTERPRETATIONS

3.1 A **Competitor** may seek an **interpretation** by submitting a request in writing to the **Measurement Committee**, or the **Measurement Committee** may initiate an **interpretation**. The **Measurement Committee** shall issue **interpretations** publically within 30 days of the request or may request a longer period subject to agreement of the **Competitor** seeking the **interpretation**.

3.2 A **Competitor** shall not rely on any advice or opinion from a member of the **Measurement Committee** other than through an **interpretation**.

3.3 If a **Competitor** fails to obtain an **interpretation** regarding a characteristic of design or construction**,** the **Measurement Committee** with the approval of the **Regatta Director** may refuse to issue, or may withdraw, the **AC72 Yacht's** measurement certificate until such design or construction characteristic is the subject of an **interpretation** which permits it.

4. AMENDMENTS

The **AC72 Class Rule** may be amended at any time by unanimous consent of **Competitors** still competing and the Regatta Director, except that:

(a) at any time the **Measurement Committee**, with the approval of the **Regatta Director**, may amend the **AC72 Class Rule** with respect to media requirements; and

(b) prior to March 1, 2011, the **Measurement Committee**, with the approval of the **Regatta Director** and a majority of the **Competitors,** may amend the **AC72 Class Rule** in any respect.

SECTION B

5. GENERAL

5.1 The **AC72 Yacht** shall be a vessel, generally known as a catamaran, with two **hulls** connected by **cross structure** that are arranged symmetrically about the **yacht centerplane,** and that has two **rudders**, two **daggerboards,** and no other **appendages.**

5.2 The **AC72 Yacht** shall have one **wing** and the only permitted **soft sails** are jibs, code zeros and gennakers as defined herein.

5.3 The overall length between the **stem plane** and **stern plane**, not including equipment required or provided by **ACRM,** shall not be more than 22.000 m.

5.4 The **cross structure**, including fittings, shall not extend more than 26.200 m forward of the **stern plane**.

5.5 The overall beam of the **AC72 Yacht,** in **measurement condition** and with all components in the position that yields the maximum beam measurement, shall not exceed 14.000 m. **Appendages**, in any and all positions, shall not exceed the maximum permitted overall beam. Conventional tillers, tiller extensions and winch handles may exceed the maximum overall beam. Beam shall be measured between vertical planes at the transverse extents of the **AC72 Yacht** parallel to the **yacht centerplane**.

5.6 Excluding the **wing**, **soft sails** (and associated hardware), **rigging**, **rudders**, **daggerboards**, instrumentation, and ACRM-mandated equipment, an **AC72 Yacht** shall have no component that is more than 2.600 m above **MWP** that:

(a) has a chord length/thickness ratio greater than 3:1; and

(b) makes an angle of greater than 10 degrees to **MWP.**

5.7 The **inboard beam waterline** shall be not less than 11.500 m.

5.8 With **rudders**, **daggerboards** and any other component in their lowest possible positions, no part of an **AC72 yacht** in **measurement condition** shall extend more than 4.400 m below **MWP** (“draft”).

5.9 The sum of the distance from **MWP** to the **wing rotation point**, and the distance from the **wing rotation point** to C12 (per appendix D) measured parallel to the **wing** datum, shall not be greater than 40.000 m.

5.10 The **sailing weight** shall be between 5700 kg and 5900 kg.

5.11 The **sailing weight** in rule 5.10 includes an estimated weight for permanently mounted ACRM equipment of 180 kg, not including ACRM equipment in the **wing**. If the weight of this ACRM equipment exceeds or is less than 180 kg, the **Measurement Committee** may adjust the permitted **sailing weight** range as permitted by rule 4(a) to correct for the difference.

5.12 An **AC72 Yacht** shall be capable of being assembled and disassembled by a **Competitor** as follows:

(a) within 24 hours, **wings** shall be disassembled and packed in shipping boxes of the

following outside dimensions:

(i) one box of 20.000 m x 5.000 m x 2.500 m;

(ii) additional boxes that will collectively fit within 5.000 m x 1.500 m x 19.000 m no one of which shall be larger than 5.000 m x 1.500 m x 9.500 m;

(b) within the same 24 hours, **hulls** and **cross structure** shall be disassembled and packed in shipping boxes of the following outside dimensions:

(i) two of 22.500 m x 2.500 m x 2.000 m;

(ii) two of 14.500 m x 1.500 m x 1.250 m;

(c) within 48 hours**,** from packed in the foregoing shipping boxes to assembled and ready to sail.

Competitors shall satisfy the **Measurement Committee** that they are capable of meeting these requirements. If the **Measurement Committee** has doubt as to the ability of a **Competitor** to comply with the time constraints of this rule, they may require the **Competitor** to demonstrate compliance by disassembling and reassembling the **AC72 Yacht.**

5.13 When in **measurement condition**, **AC72 Yachts** shall be capable of being weighed by a single load cell and, when lifted, shall be approximately horizontal.

5.14 Devices in, on or near the surface of any **hull**, **rudder** or **daggerboard**, the purpose or effect of which is or could be to bleed off or alter the water or air flow of the boundary layer, are prohibited, including (but not limited to) holes in surfaces, textured surfaces, riblets, Large Eddy Break-Up Devices (LEBUs), and compliant surfaces. Normal through-**hull** fittings (such as self-bailers, drains, boatspeed transducers, weed-removal devices) are permitted. Attention is drawn to rule 9.10.

5.15 Electric, magnetic, sonic, thermal, chemical and other methods, the purpose or effect of which is to reduce the surface drag of the water or air in the boundary layer of any **hull**, **daggerboard**, **rudder, soft sail** or **wing**, are prohibited. See the specific exception for the surface treatment of **daggerboards** in rule 17.3.

5.16 Gases with a density less than standard atmosphere air shall not be used to reduce the weight of an **AC72 Yacht.**

6. HULLS

6.1 Other than **soft sails** and **rigging**, no component shall extend forward of the **stem plane** within 1.000 m of the **hull centerplane**.

6.2 Water, the weight of which could increase performance, shall not be retained in the bilge, any recess, or other volume. Any recess in the **hull** capable of retaining water at any heel angle less than 25 degrees or at any trim angle less than 10 degrees relative to **MWP** must be self draining with the size of the drain at least 0.006 m^2 per 1.0 m^3 of the recess volume that could contain water in **measurement condition**.

6.3 No part of a **hull** shall be adjusted or trimmed.

6.4 **Hulls** and/or **cross structure** shall not move relative to each other. This rule does not limit

normal movement or deflections caused by sailing loads but prohibits devices that allow non-linear movement.

6.5 The intersection of any **hull**, **cross structure** or **rigging** shall be at least 1.000 m forward of the **stern plane,** and shall be no further forward than the forward watertight bulkheads required under rule 6.12.

6.6 The intersection of the **hull centerplane** and the **stern plane** shall be no greater than 10 degrees from vertical.

6.7 Each **hull** shall be designed to be symmetrical and shall be symmetrical, within +/- 0.005 m, about its **hull centerplane** except **hull** surface that is:

(a) between transverse planes 1.000 m forward and 13.000 m forward of the **stern plane** that is also 0.400 m or more above **MWP** as shown in Appendix C;

(b) within 0.250 m radius from the axis of rotation of the rudder and

(c) an area on the surface of the hull not exceeding 1.000 m longitudinally by 0.400 m transverse girth within which a **daggerboard** opening is wholly contained and

(d) for local reinforcement necessary for fittings.

6.8 Between 1.000 m forward of the stern plane and 13.000 m forward of the stern plane the highest point of any transverse section through the **hull** surface, outboard of the **hull centerplane**, shall be no lower than a line joining a point 0.950 m above **MWP** at 1.000 m forward of the **stern plane**, to a point 1.100 m above **MWP** at 13.000 m forward of the **stern plane**.
See Appendix C.

6.9 The enclosed volume of the outside surface of each **hull** shall be not less than:

(a) 5.5 m^3 forward of a plane 13.000 m forward of the **stern plane**; and

(b) 8.5 m^3 aft of a plane 13.000 m forward of the **stern plane**.

For the purposes of this rule, "outside surface" refers to the watertight boundary of the **hull** bridging any hatches or permitted openings other than the **daggerboard** cases.

6.10 The **hull** between the **stem plane** and a plane between 0.900 m and 1.000 m aft of the **stem plane**, and the **hull** between the **stern plane** and a plane between 0.900 m and 1.000 m forward of the **stern plane,** shall be replaceable by “replacement sections” as follows:

(a) each **Competitor** shall have at least one forward replacement section and at least one aft replacement section available for use at the start of a regatta;

(b) the **Competitor** shall notify the **Measurement Committee** before any replacement section is installed; and

(c) an **AC72 Yacht** fitted with a replacement section must still comply with the **AC72 Class Rule**.

6.11 **Hull** surfaces that the crew operate from in their normal sailing positions, including cockpit

soles, shall be no lower than a plane 0.300 m above **MWP**.

6.12 Two watertight bulkheads shall be located in each **hull**, and they shall fall entirely between:

(a) 1.000 m and 1.500 m aft of the **stem plane,** and

(b) 1.000 m and 1.500 m forward of the **stern plane**.

6.13 Hatches are permitted in the **hull** provided they shall:

(a) be closed by a cover permanently attached to the **hull** by hinges, slides or similar arrangement;

(b) be watertight, meaning a closed hatch shall prevent the ingress of water from a garden hose applied from any direction;

(c) meet the **hull** construction requirements in rule 14 or shall be compliant with ISO 12216, Area II, Design Category C; and

(d) be at least 0.600 m above **MWP**.

6.14 Ports for hand access are permitted, provided each does not exceed 0.100 m^2 and is secured by a watertight cover.

6.15 Small openings in **hulls** for **rigging** to pass through, and for attachments, are permitted provided they shall:

(a) be no larger than required for their specific task;

(b) have a rubber gaiter boot or other means of closing the opening if the area exceeds 0.005 m^2;

(c) shall be no further forward than 13.000 m forward of the **stern plane**; and

(d) be at least 0.700 m above **MWP**.

6.16 **AC72 Yachts** shall have one media bay fixed in each **hull** to accommodate the ACRM-provided media equipment per Appendix E. The media bays shall be located between 8.000 m and 13.000 m forward of the **stern plane** and shall be easily accessible between races.

7. CROSS STRUCTURE

7.1 **Cross structure** or fittings attached to **cross structure** shall be no further aft than 1.000 m forward of the **stern plane,** except non-structural aerodynamic beam fairings that serve only as such and comply with rule 7 provided they extend no further aft than the **stern plane**. For purposes of this rule, a beam fairing is considered non-structural if its addition adds less than 1% to the strength and/or stiffness of the beam.

7.2 No part of **cross structure,** including fairings or other surfaces, shall move (translate or rotate about any axis) or be adjusted relative to any other part of the **cross structure**, except for normal deflections caused by sailing loads.

7.3 Any recess in the **cross structure** capable of retaining water at any heel angle less than 25 degrees or at any trim angle less than 10 degrees must be self draining, with the size of

the drain at least 0.006 m^2 per 1.00 m^3 of the recess volume that could contain water in **measurement condition**.

7.4 No part of the **cross structure** shall be laminated or bonded to the **hulls**;

7.5 No part of **cross structure** or its fittings, external to any **hull,** shall be less than 0.150 m above **MWP** or greater than 2.400 m above **MWP**.

8. RUDDERS

8.1 Each **hull** shall have one **rudder**. The **rudder** or **rudder** stock shall penetrate the **hull**.

8.2 No part of a **rudder**, through its entire range of motion, shall be less than 1.000 m or greater than 3.000 m forward of the **stern plane.**

8.3 **Rudders** shall rotate only, and that rotation shall be about a single axis which is within 10 degrees of vertical. This rule does not prohibit the use of self-aligning **rudder** bearings.

8.4 **Rudders** shall not translate in any direction.

8.5 **Rudders** (including **rudder** stocks) shall not exceed 5.000 m in any direction, measured along a straight line.

8.6 **Rudders** shall not have components such as trim tabs or moveable winglets, that can be adjusted while racing. However, a movable or retractable device whose sole purpose is the removal of weed or debris is permitted.

8.7 While an **AC72 Yacht** is moored, **rudders** shall be capable of:

(a) freely rotating through 360 degrees; or

(b) being removed. Only equipment that is intended to be aboard the **AC72 Yacht** while racing, or other equipment that is capable of being lifted aboard the **AC72 Yacht**, and operated, by no more than two crew, shall be considered in determining compliance with this requirement.

9. DAGGERBOARDS

9.1 Each **hull** shall have one **daggerboard**.

9.2 **Daggerboards** shall penetrate the **hull** forward of the **rudder** and aft of the forward watertight bulkhead per rule 6.11.

9.3 The maximum dimension of any **daggerboard** shall be 7.000 m in any direction, measured along a straight line.

9.4 The lowest load-transferring bearing shall not translate relative to the hull.

9.5 A **daggerboard** shall not translate longitudinally more than 0.020 m within the bearing referred to in 9.4 above.

9.6 **Daggerboards** shall not have components such as trim tabs or moveable winglets that can be adjusted while racing; however, a movable or retractable device the sole purpose of which is the removal of weed or debris is permitted.

9.7 At all times when racing, **daggerboard** cases or trunks shall effectively drain within ten seconds of the hull being lifted above the water level, and shall not be designed to retain water when not immersed.

9.8 Fairings are allowed within the area defined in 6.7(c); they shall not be controllable and shall move only passively as the result of the permitted movement of **daggerboards** and their bearings. Attention is drawn to rule 5.14.

9.9 **Daggerboards** shall not be designed or used to generate force for the purpose or effect of increasing righting moment when used on the windward side of an **AC72 Yacht**.

9.10 When fully retracted, **daggerboards** shall extend no more than 0.500 m below **MWP**.

10. WING

10.1 The **wing** shall be designed to be symmetrical about the **wing centreplane** in **wing measurement position** and shall be symmetrical about the **wing centerplane** within a tolerance of 0.020 m in **wing measurement position**.

10.2 If shrouds are adjusted while racing, the port and starboard shrouds shall be connected in a master-slave relationship so they always have the same extension. For the avoidance of doubt, the **wing** shall not be canted to windward.

10.3 Further to Protocol Article 29.6, the **Wing Spar** shall be capable of being disassembled into two separate sections. The lower **Wing Spar** section shall be at least 18.000 m, and no more than 19.900 m in length. For the purposes of this rule, fittings shall not be considered part of the **Wing Spar**.

10.4 The **AC72 yacht** shall have a single **wing rotation point** that shall be:

(a) within 0.020 m of the **yacht centerplane**;

(b) located on the plane of symmetry of the **wing** in **wing measurement position**; and

(c) between 1.900 m and 2.400 m above **MWP.**

10.5 A **wing** measurement grid shall be established per Appendix D. The **wing**, with all movable measured **wing** surfaces oriented symmetrically about the **wing centerplane**, shall be placed over the grid with its leading edge facing "forward" as shown in appendix D, with the **wing centerplane** parallel to the grid surface. The top of the **wing** shall be positioned at C12, and the perimeter line of the **wing** shall lie between the **wing** outline inner and outer extents.

10.6 The total area enclosed within the perimeter line of the **wing** in **wing measurement position** shall not be greater than 260.00 m^2 nor less than 255.00 m^2.

10.7 The total enclosed area shall be calculated using the chord length measured at the reference chords between Appendix D C1 and C11 and integrated using Simpson's rule. **Wing** areas above C11 and below C1 shall be measured and included in the total **wing** area (see Appendix D). The perimeter line shall:

(a) be taken as a line drawn around the largest extent of the measured area of the **wing**;

(b) not have hollows (except for hollows created by fittings and local reinforcements) in its forward-most edge, and hollows elsewhere shall be bridged by the perimeter line; and

(c) not include **wing** components used to connect the **wing** to the **wing rotation point** provided the components do not have a chord length/thickness ratio greater than 3:1 and do not provide unmeasured **wing** area; and

(d) elements with a measured girth of less than 0.150 m shall not be included in the area calculation provided such elements do not increase the effective **wing** area.

10.8 If, in the opinion of the **Measurement Committee**, the **wing** area is not accurately measured by this method, they may devise and use another method.

10.9 The half-girth of the convex side of the **wing** in any chordwise plane, parallel to the **wing base plane**, shall not increase more than 1.85% in any cambered orientation from its half-girth in **wing measurement position** (see Appendix D). The maximum measured girths shall be limited by a mechanical system to the satisfaction of the **Measurement Committee**.

10.10 When the **wing** is in **wing measurement position**, and when viewed perpendicular to the **wing base plane,** the projected area of the wing, taken as the projected silhouette of all components, excluding rigging:

(a) above C10**,** shall not exceed 2.25 m^2; and

(b) below 2.000 m above the **wing base plane,** shall not exceed 5.50 m^2.

10.11 The leading edge of the **wing** shall be straight (within a tolerance of 0.003 m) below grid C3.

10.12 The weight of the **wing** in **wing measurement condition** shall be not less than 1325 kg, and the center of gravity shall be not less than 17.000 m above the **wing base plane**.

10.13 **Wing** weight and center of gravity in rule 10.12 includes a weight allowance for permanently-mounted ACRM media equipment of 21.5 kg at 22.000 m above the **wing base plane**. If the weight and center of gravity of ACRM media equipment varies from this, the **Measurement Committee** may adjust the required **wing** weight and center of gravity.

11. RIGGING

11.1 **Rigging**, including any **rigging** fairings shall have a girth no greater than 0.150 m, and a chord length/thickness ratio no greater than 3:1

12. SOFT SAILS

12.1 **Hoist Points**:

(a) **Hoist Point A** shall be between 36.000 m and 37.000 m above the wing base plane; and

(b) **Hoist Point B** shall be between 34.000 m and 35.500 m above the wing base plane.

(c) At all times when racing, the intersection of the **wing** and the **luff** of the **soft sail** (or extension thereof), and/or the centerline of a stay used to support the **luff** of a **soft sail**, (or extension thereof) shall fall between the limits of the relevant **Hoist Point**.

(d) Multiple halyards are permitted at each **hoist point**, provided they fall below the permitted **hoist point** and the requirements of 12.1(c) above are met.

12.2 **Tack points** shall be:

(a) for **Tack Point A,** not forward of 26.000 m from the **stern plane**, and not forward of a point that would result in a JA measurement, per rule 12.4, greater than 13.000 m;

(b) for **Tack Point B,** not forward of 22.000 m from the **stern plane**, and not forward of a point that would result in a JB measurement, per rule 12.4, greater than 9.000 m;

(c) defined at each **tack point** as the forwardmost of the attachment point of the **tack** to the top of the **cross structure**; or the centerline of a stay (if used to support the **luff** of the **soft sail**) where it intersects the top of the **cross structure**.

(d) between 1.900 m and 2.200 m above **MWP**; and

(e) within 0.030 m of the **yacht centerplane.**

12.3 No **soft sail** shall be set so that its **head** is above its **hoist point** or so that its **tack** is below its **tack point**.

12.4 In determining **JA** and **JB**, the measurer shall transfer the point defined by the intersection of C1 and the leading edge of the **wing** (excluding any fitting), in **wing measurement position**, to the **cross structure** (using the **wing rotation point** as a reference and aligning **MWP** and the **wing base plane**). The horizontal distance between that point and **Tack Point A** is **JA**, and between that point and **Tack Point B** is **JB**.

12.5 Jibs:

(a) shall not be tacked forward of **Tack Point B**;

(b) shall be flown within the region allowed for **Hoist Point B**;

(c) shall have an **LP** measurement no greater than 9.54 m;

(d) shall have a three-quarter width (measured as the shortest distance between the three-quarter **leech** point and the **luff**) no greater than 41% of the LP;

(e) shall have a width at the **head** not exceeding 20% of the LP;

(f) may have battens;

(g) shall have no battens below a line joining points 1.00 m above the **clew** and 1.00 m above the **tack**.

12.6 Code zeros:

(a) shall not be tacked forward of **Tack Point A**;

(b) shall be flown within the region allowed for **Hoist Point A** or **Hoist Point B**;

(c) shall have an **LP** measurement no less than 11.27 m and no greater than 12.77 m; and

(d) shall not have battens.

12.7 Gennakers:

(a) shall not be tacked forward of **Tack Point A**;

(b) shall be flown within the region allowed for **Hoist Point A**;

(c) shall have an **LP** measurement no less than 14.00 m; and

(d) shall not have battens.

12.8 Other than as required for **soft sail** hardware, intentional openings in **soft sails** are prohibited.

12.9 Local hollows or distortions in the way or measurement points on the edges of **soft sails** shall be bridged or ignore when making all measurements.

12.10 **Soft sails** shall have no more than six battens, and battens shall be no closer than 0.50 m to each other at any point.

12.11 Artificially thickened **soft sails** are prohibited, e.g., foamed **soft sails** or rigid **soft sails** and multiple-surface **soft sails**, whether inflated by the action of the wind or otherwise, except for battens and batten pockets as provided in rule 12.12.

12.12 Battens:

(a) shall pass through a 0.075 m diameter circle;

(b) may consist of multiple elements that need not necessarily be attached to one another, provided the batten is fitted within a single, continuous batten pocket, and provided the multi-element array complies with (a) above and all other limits of this rule;

(c) shall not have a permanent bend or set, within a tolerance of 0.100 m over their entire length;

(d) shall not be adjusted while the **soft sail** is set;

(e) shall not be inflatable;

(f) shall be inside a pocket not exceeding 0.15 m width measured normal to the longitudinal axis of the batten; and

(g) shall be oriented not less than 30 degrees to the local **luff**, with the centerline of the batten projected to the **luff** if necessary

12.13 The dimension of any **soft sail** hardware, in any direction, shall not exceed 0.750 m for a **clew** board, or 0.250 m for any other hardware.

12.14 Any **soft sail** may be attached to **rigging** along its **luff** provided the attachments measure no more than 0.120 m perpendicular to the **luff** and 0.075 m parallel to the **luff** and these attachments are no closer than 1.000 m to each other. No **luff** support device may be used to increase effective sail area.

12.15 No device shall control a **soft sail** except:

(a) sheets on the **clew** or **clew** board to sheeting points on the **hull** or **cross structure**;

(b) a cunningham system near the **tack**;

(c) **leech** and **foot** lines no greater than 0.010 m in diameter;

(d) a furling system;

(e) a tacking line on or near the **foot**, the purpose of which is to bring the **clew** of the **soft sail** forward during a tack or gybe, provided the tacking line is not used to sheet the **soft sail** in any way;

(f) halyards;

(g) secondary control devices on sheets, such as barber haulers; and

(h) sail ties or similar devices.

SECTION C

13. GENERAL LIMITS ON MATERIALS AND CONSTRUCTION

13.1 Limits on materials and construction methods in rule 13 apply except where altered by rules 14 through 17.

13.2 A maximum of 40 kg of **FRP** constituent parts from commercially available ex-stock material (e.g. tube, plate, etc.) may be used in the construction of the **AC72 Yacht**, provided that no single constituent part exceeds 10 kg. These constituent parts are not limited by the building methods otherwise set out in **AC72 Class Rule**.

13.3 Boron and Beryllium are prohibited except when used as an alloy in concentrations of less than 0.00042%.

13.4 The use of electron beam or any other non-thermal radiation cure of composites is prohibited. This does not prohibit the use of conductive heating with electrical current for the cure of composites.

13.5 Sandwich construction techniques are permitted. Any component materials used in the manufacture of core shall have a modulus in any direction not exceeding 75 GPa, and shall only be composed of aluminum honeycomb, meta-aramid (Nomex) honeycomb, timber or foam.

13.6 The temperature of **FRP** components, other than **soft sails**, shall not exceed 135 degrees Celsius at any time during construction and post construction.

13.7 No **FRP** component shall have **fiber modulus** greater than 395 GPa.

13.8 Isotropic materials shall have elastic modulus less than 220 GPa.

13.9 Pressure applied at any time during construction to **FRP** components, other than **soft sails**, shall not exceed 7 atmospheres, but this limitation shall not prohibit building methods including the use of clamps or mechanical fastenings, wrapping, and winding etc.

13.10 Materials with elastic modulus exceeding that specified in **AC72 Class Rule** may be used provided:

(a) the largest dimension of each particle does not exceed 1 micron; and

(b) the total weight of these materials used in any composite component does not exceed 1.0% of the weight of that composite component.

14. HULL LIMITS ON MATERIALS AND CONSTRUCTION

14.1 No **FRP** in the **hull** and its internal structure shall have **fiber modulus** greater than 245 GPa.

14.2 **Hulls** and its internal structure shall not have pressure applied at any time during construction that exceeds one atmosphere, but this limitation shall not prohibit building methods including the use of clamps or mechanical fastenings, wrapping, and winding, etc.

14.3 Skin weight of any external **hull** surface shall be not less than 0.900 kg/m^2, including fiber and resin but excluding any paint, fairing, core bond adhesive, core, and any other constituent material. This limit applies to all areas of the **hull** that are exposed to the sea and/or weather.

14.4 Core of the hull or watertight bulkheads as per rule 6.11, shall not have a density less than 50 kg/m^3.

14.5 Skin weight on each side of watertight bulkheads required by rule 6.12, shall be not less than 0.900 kg/m^2, including fiber and resin but excluding paint, fairing, core bond adhesive, core and any other constituent material. Core thickness for these bulkheads, excluding any bonding materials, shall be no less than 0.015 m.

15. TRAMPOLINE

15.1 Trampolines shall be fixed to the **hulls** and **cross structure**, and shall:

(a) be strongly secured with regular spacing on their support edges; this spacing shall not be greater than 1.000 m when tensioned but without supporting the weight of crew or **soft sails**; gaps between the trampoline and the **hulls** or **cross structure** shall not be greater than 0.200 m when tensioned but without supporting the weight of crew or **soft sails**;

(b) be able to support local loadings equivalent to the weight of the crew and **soft sails** in normal working conditions at sea;

(c) cover all open areas between the **hulls** from the **wing rotation point** aft to the aft extent of **cross structure**;

(d) cover all open areas in a triangle with a base of a 3.000 m transverse line centered on the **wing rotation point** forward to an apex of **Tack Zone B**.

(e) be constructed of a netting of rhombus-shaped cells, of a size such that a cylinder with a diameter of 0.050 m shall not easily pass through any cell of the netting while

tensioned;

(f) have a minimum twine diameter of 2.7 mm; and

(g) be made of material with a fiber modulus not greater than 135 GPa;

16. HARDWARE AND RIGGING LIMITS ON MATERIALS AND CONSTRUCTION

16.1 Hardware and fittings shall be constructed of wood, polymer, aluminum alloys, **FRP**, titanium, or steel and steel alloys, bronze, brass or a combination thereof.

16.2 **Rigging** shall be constructed of steel, aluminum, bronze, brass, polymer or fibrous materials (carbon, aramid, or polymer fibers that have a fiber modulus not greater than 395 GPa), or a combination thereof.

17. SURFACE FINISHES AND BOUNDARY LAYER INTERFERENCE

17.1 Only paint systems generically specified as two-component linear polyester saturated aliphatic polyurethane, two-component epoxy urethane, or two-component acrylic urethane, and manufactured by International, Awlgrip, Akzo Nobel or Resene, may be used as the outermost surface finish of the **hulls, appendages,** and immersed components such as fairings. No materials other than specified manufacturer-supplied retardants, accelerants, thinners and pigments shall be added. Similarly, the specific gravity of the paint shall not be altered with any material other than those specified above. The **Measurement Committee** may authorize the use of comparable paint products from other manufacturers provided those products meet comparable requirements for product standardization, compliance, and testing.

17.2 The application of vinyl, mylar or other plastic film over the surface of the **hull** for advertising or branding is allowed, provided that the film shall not be specially textured or otherwise manufactured in a way that could improve the character of the flow of water inside the boundary layer.

17.3 The outermost surfaces of the **hulls** or **appendages** may be sanded and cleaned with normal concentrations and quantities of detergents or similar materials. However, while afloat on a scheduled race day, no substances shall be present on the outermost surfaces of the **hull, appendages** or immersed components such as fairings other than those permitted in the rule. Exceptionally, small quantities of friction-reducing compounds (for example, McLube) may be applied only to the surface of **daggerboards** prior to racing, and solely for the purpose of reducing bearing friction while raising and lowering the **daggerboards**. A **Competitor** shall seek the approval of the **Measurement Committee** for the type and quantity of friction-reducing compounds to be used for this purpose.

SECTION D

18. CREW

18.1 There shall be eleven crew (unless reduced while racing due to accident or injury), and the total crew weight shall not be greater than 1012 kg nor less than 957 kg. Crew are to be weighed in light shorts only. If eleven crew members do not reach minimum crew weight, then corrector ballast in the form of lead shall be added to the **AC72 Yacht** to reach 957 kg. Corrector ballast shall be fixed in position while racing, and shall be located within 2.000 m of the longitudinal position of the **Wing Rotation Point**;

18.2 While racing, crew shall not be inside the enclosed volume (as per Rule 6.9) of a **hull** except during emergencies or briefly to perform inspections.

19. STORED POWER

19.1 **Rigging, wing, soft sails**, **rudders** and **daggerboards** shall only be adjusted manually, and the use of stored energy is prohibited, except:

(a) for small springs, shockcord, and similar devices;

(b) low pressure hydraulic or gas accumulators of less than 6 bar which provide back pressure to a hydraulic system to prevent cavitation, but do no significant work themselves;

(c) batteries to power electric bilge pumps, provided the total capacity of all pumps is not greater than 200 l/min; and

(d) batteries to power instruments and ACRM media equipment.

20. AC72 YACHT IDENTIFICATION AND CLASS INSIGNIA

20.1 **AC72 Yacht** identification numbers shall be allocated sequentially by the **Measurement Committee,** except numbers that may be culturally objectionable may be skipped at the discretion of the **Measurement Committee**. When an **AC72 Yacht's** ownership is transferred from one country to another, it shall retain the same identification number with only the national letters being changed.

20.2 A new identification number (in sequence) may be reserved by a team when construction of an **AC72 Yacht's hull** has commenced.

20.3 A new identification number shall be issued to the **AC72 Yacht** when its original measurement certificate is issued, or when otherwise required by the **Protocol**.

20.4 Class insignia and **AC72 Yacht** identification number shall be displayed on the top 25% of the **wing**. Details of the insignia and identification number shall be published by the Regatta Director and may be amended from time to time.

SECTION E

21. MEASUREMENT MARKS

21.1 The **Measurement Committee** may place measurement marks on **AC72 Yachts**. Such marks include, but are not limited to, reference screws or punch marks, measurement bands on spars, and **measurers**' signatures and/or seals or stickers on any component.

21.2 Measurement marks of any type placed or otherwise confirmed by a member of the **Measurement Committee** shall not be moved, removed, altered, or replaced without their written permission.

22. DECLARATIONS

22.1 **Competitors** shall provide the **Measurement Committee** declarations signed by the relevant designer(s), builder(s) and **Competitor's** representative affirming that:

(a) **hull(s)** have been constructed from materials (including surface finishes) and using the methods permitted by the **AC72 Class Rule;**

(b) **cross structure** has been constructed from materials and using the methods permitted by the **AC72 Class Rule;**

(c) **rudders** and **daggerboards** have been constructed from materials (including surface finishes) and using the methods permitted by the **AC72 Class Rule;** and

(d) the **wing** and **rigging** have been constructed from materials and using the methods permitted by the **AC72 Class Rule.**

The form of this declaration shall be as shown in **AC72 Class Rule** Appendix B. The **Measurement Committee** may require additional declarations of a similar form to confirm compliance with any other aspect of the **AC72 Class Rule**.

22.2 **Competitors** shall provide a material usage schedule and the material manufacturer's certificate of compliance for **FRP** used in each component described in rule 22.1 to the **Measurement Committee**. However, documentation is not required for wet-laminate **FRP** materials used in the construction of any component, provided that the total quantity of wet-laminate **FRP** is less than 5% by weight of the total **FRP** materials used in the construction of that component. Nonetheless, wet-laminate **FRP** mechanical properties shall comply with the **AC72 Class Rule** governing the component. Details of the documentation required shall be published by the **Measurement Committee** per rule 24.1.

23. INSPECTION AND MEASUREMENT

23.1 **Competitors** shall permit and assist all inspections and measurements by a **measurer** and the **Measurement Committee** and shall afford all reasonable facility to carry out such measurements and inspections, including during construction. **Competitors** shall provide measurement information reports to **measurers** as requested.

23.2 The **measurer** shall take at least four hull laminate samples per hull no larger than 0.065 m in diameter from a location of their choosing.

23.3 The **Measurement Committee** reserves the right to take samples of the paint or vinyl from the **hull** and/or **appendages** for analysis by the manufacturer to ensure that only the specified paint systems have been used

23.4 An **AC72 Yacht** may be re-measured in whole or in part at the discretion of the **Measurement Committee.**

23.5 A **measurer** who becomes aware that a **Competitor** may have failed to comply with any **AC72 Class Rule** shall advise the **Measurement Committee**.

23.6 The specific gravity of the seawater shall be measured and recorded at the time of measurement afloat. When specific gravity of the water varies from 1.025, the **measurer** shall correct floatation measurements as necessary;

23.7 Weights shall be corrected for local gravitational effects to the geographic datum of San Francisco, California, USA..

23.8 When carrying out measurement ashore, the **measurer** shall allow a reasonable time to drain water from the **AC72 Yacht** equipment and allow the substitution of wet **rigging** with equivalent dry **rigging**.

24. MEASUREMENT PROCEDURES

24.1 Measurement equipment specifications and measurement methodology are determined by the **Measurement Committee** and will be available to all competitors.

25. MEASUREMENT CONDITIONS

25.1 The **AC72 Yacht** shall be brought to **measurement condition** to determine the **measurement weight**. The **measurement condition** includes everything aboard the **AC72 Yacht** during a race except the following:

(a) the **wing** as it was weighed in **wing measurement condition**;

(b) ACRM personnel, guests and ACRM equipment that is not permanently installed on the **AC72 Yacht**;

(c) crew;

(d) crew clothing and equipment that is normally carried on the person while racing but limited to a maximum of 6.00 kg per crewmember;

(e) **soft sails** (including **soft sail** bags, luff cables and hanks) ; and

(f) food and drinks.

25.2 **MWP** shall be determined when the **AC72 yacht** is floating in **measurement condition** and:

(a) all movable equipment is approximately centered, transversely and 11.000 m forward of the **stern plane**;

(b) **rudders** and **daggerboards** shall be in their lowest possible positions (per rule 5.8);

(c) **rudder** and **daggerboard** cases shall be flooded to **MWP**, and net total flooded volume of all cases combined shall be no greater than 50.0 liters; and

(d) no other part of the **AC72 Yacht** shall be flooded.

25.3 The **wing** in **wing measurement condition** shall**:**

(a) be capable of being weighed by horizontal suspension from no more than two points;

(b) be oriented as per **wing measurement position**;

(c) include all **rigging**, spreaders, jumpers and jumper systems, diamonds, all backstays, runner fly blocks (but excluding runner tails), check stays, instruments, instrument sensors, cameras, cables, permanently-installed ACRM media equipment, hydraulic rams, and pipework;

(d) include all wing fittings required to sail the yacht, including mast jacks if an integral part of the wing, halyard locks, spreader fittings;

(e) exclude all halyards, however, halyards may be replaced with light weight mouse lines not exceeding 0.004 m diameter;

(f) have all **rigging** in place and pulled down tight along the **wing**; and

(g) be the configuration which achieves the lowest center of gravity.

25.4 Any component that remains attached to the **wing** when the **wing** is removed from the **AC72 Yacht** is deemed to be part of the **wing** for measurement purposes, and equipment (including halyards) not weighed, as part of the **wing** weight and center of gravity shall be included in the **measurement weight.**

26. COMPLIANCE WHILE RACING

While racing**:**

(a) the **sailing weight** of the **AC72 Yacht** shall not be less than the **sailing weight** on its certificate, nor more than 100 kg greater than the **sailing weight** on its certificate;

(b) dead weight, ballast, **soft sails** and other equipment shall not be moved for the purpose of changing trim or stability; however, bilge water shall be promptly removed;

(c) three **soft sails** are allowed on board, at least one of which shall be a jib; the total weight of **soft sails** (including **soft sail** bags, **luff** cables and hanks) shall be between 220 kg and 250 kg;

(d) and the total weight of consumable stores shall be not greater than 20 kg.

27. MEASUREMENT CERTIFICATE

27.1 When the **Measurement Committee** concludes that the **AC72 Yacht** complies with the **AC72 Class Rule**, having successfully completed all the measurement checks and compliance inspections requested by the **Measurement Committee**, and the **Competitor** having supplied all the requested documentation and declarations, it shall issue to the **Competitor** a measurement certificate as in Appendix A and shall retain a copy for its own records. The **Measurement Committee** shall provide a copy of the front page to the **Regatta Director** for public dissemination.

27.2 Except for repair of, or replacement for, unintended damage, the measurement certificate ceases to be valid if there is any change to:

(a) any information recorded on the **AC72 Yacht**'s measurement certificate, except that when not racing the following changes are permitted:

(i) **rudder** or **rudder** stock movement as a result of the adjustment of a self-aligning bearing mechanism, provided that the total adjustment between bearings shall not exceed 0.010 m, and provided that after the movement the **rudder** complies with rule 8;

(ii) changes to **wing** weight and **wing** CG, provided those changes are still within the limits of rule 10.12; and

(iii) changes in **measurement weight** or the distribution of **measurement weight**, provided that **MWP** would not change more than 0.004 m at the **stern plane** or **stem plane**, and provided that after the change, the **AC72 Yacht** still complies with the limits of rule 26(a).

(iv) changes in other numerical values recorded on the measurement certificate that are solely the result of changes permitted in (i), (ii) and (iii) above, provided that all the resultant changes still fall within the limits of the **AC72 Class Rule**.

(b) the shape of the **hull** surface;

(c) the shape of the **appendage** surfaces;

(d) the shape of the **cross structure** (excluding fittings); or

(e) the shape of the measured **wing** surface area in **wing measurement position**.

27.3 **Competitors** shall obtain written approval of the **Measurement Committee** prior to making any repairs or replacements which, individually or cumulatively, could impact on the **AC72 Yacht**'s compliance with her measurement certificate or any other aspect of the **AC72 Class Rule**.

27.4 The **Measurement Committee** will only give written approval to replace an item when they are satisfied that the damaged item cannot be repaired in a reasonable regatta-constrained timeframe.

27.5 After repair or replacement, **Competitors** shall satisfy the **Measurement Committee** that the **AC72 Yacht** complies with the **AC72 Class Rule.**

27.6 The **Measurement Committee** shall withdraw an **AC72 Yacht's** measurement certificate when they have reason to believe it no longer complies with this **AC72 Class Rule**.

27.7 An **AC72 Yacht** shall have only one valid measurement certificate at any one time.

27.8 The **Measurement Committee** shall hold **AC72 Yacht** data and information in strict confidence. This shall not be construed to prevent the **Measurement Committee** from supplying data or information to the **Regatta Director** or the **Jury** if requested, who shall also hold this data in strict confidence.

APPENDICES

APPENDIX A — MEASUREMENT CERTIFICATE

AC72 Yacht
Measurement Certificate

Name of Yacht: _____

Yacht Identification Number: _____

Measurement Certificate Number: _____

Designer(s): _____

Builder(s): _____

Owner(s): _____

VALIDATION

We confirm that this yacht has been measured in accordance with the **AC72 Class Rule**, and has been found to be in compliance with the rule.

Signatures of issuing Measurers: _____

(on behalf of the Measurement Committee)

_____

Date of certification: _____

Supersedes Certificate No. & Date: _____

Certificate Number		Yacht ID number	

General

Overall length (5.3)	m	Max overall beam (5.5)	m
Draft (5.8)	m	Inboard beam waterline (5.7)	m
Wing above MWP (5.9)	m	Measurement weight (25.1)	kg
Sailing Weight (5.10)	kg		

Hulls

P centerplane / stern plane angle (6.6)	deg	S centerplane / stern plane angle (6.6)	deg

Rudders

Designated Rudder Port		Designated Rudder Starboard	
P rudder distance forward (8.2)	m	S rudder distance forward (8.2)	m
P rudder distance aft (8.2)	m	S rudder distance aft (8.2)	m
P straight line distance (8.5)	m	S straight line distance (8.5)	m

Daggerboards

Designated daggerboard Port		Designated daggerboard Starboard	
P straight line distance (9.3)	m	S straight line distance (9.3)	m
P retracted draft (9.12)	m	S retracted draft (9.12)	m

Wing

Designated wing			
Rotation point above MWP (10.4)	m	Max. half girth differential (10.9)	%
wing weight (10.12)	kg	Wing cg (10.12)	m
Wing projected area (10.6(a))	m^2		

Sails

Hoist point A (12.1(a))	m	Hoist point B (12.1(a))	m
Tack point A from the stern (12.2(a))		Tack point B from the stern (12.2(b))	
Tack point A above MWP (12.2(d))		Tack point B above MWP (12.2(d))	
JA (12.4)		JB (12.4)	

Measurer: _____ Signature: _____

Measurer: _____ Signature: _____

APPENDIX B — CONSTRUCTION DECLARATIONS

HULL CONSTRUCTION DECLARATION

DESIGNER'S DECLARATION

I, the designer of the yacht _____

declare that the hull has been designed and to the best of my knowledge, built, only from materials, and using building methods, as permitted in the AC72 Class Rule.

Designer (Block Letters) _____

Signature _____ Date _____

BUILDER'S DECLARATION

I, the builder of the yacht _____ declare that the hull has been built only from materials, and using building methods, as permitted in the AC72 Class Rule.

Builder (Block Letters) _____

Signature _____ Date _____

OWNER'S DECLARATION

I, the owner of the yacht _____ declare that the hull has been built only from materials, and using building methods, to the best of my knowledge as permitted in the AC72 Class Rule.

Owner (Block Letters) _____

Signature _____ Date _____

This declaration is to be preceded by a completed material usage schedule as set out in AC72 Rule 22.2.

COMPONENT DECLARATION

Yacht _____

Component _____ Date _____

DESIGNER'S DECLARATION

I declare that the component named and referenced above has been designed, and to the best of my knowledge, is constructed only from materials, and using building methods, as permitted in the AC72 Class Rule.

Designer (Block Letters) _____

Signature _____ Date _____

BUILDER'S DECLARATION

I declare that the component named and referenced above, is constructed only from materials, and using building methods, as permitted in the AC72 Class Rule.

Builder (Block Letters) _____

Signature _____ Date _____

OWNER'S DECLARATION

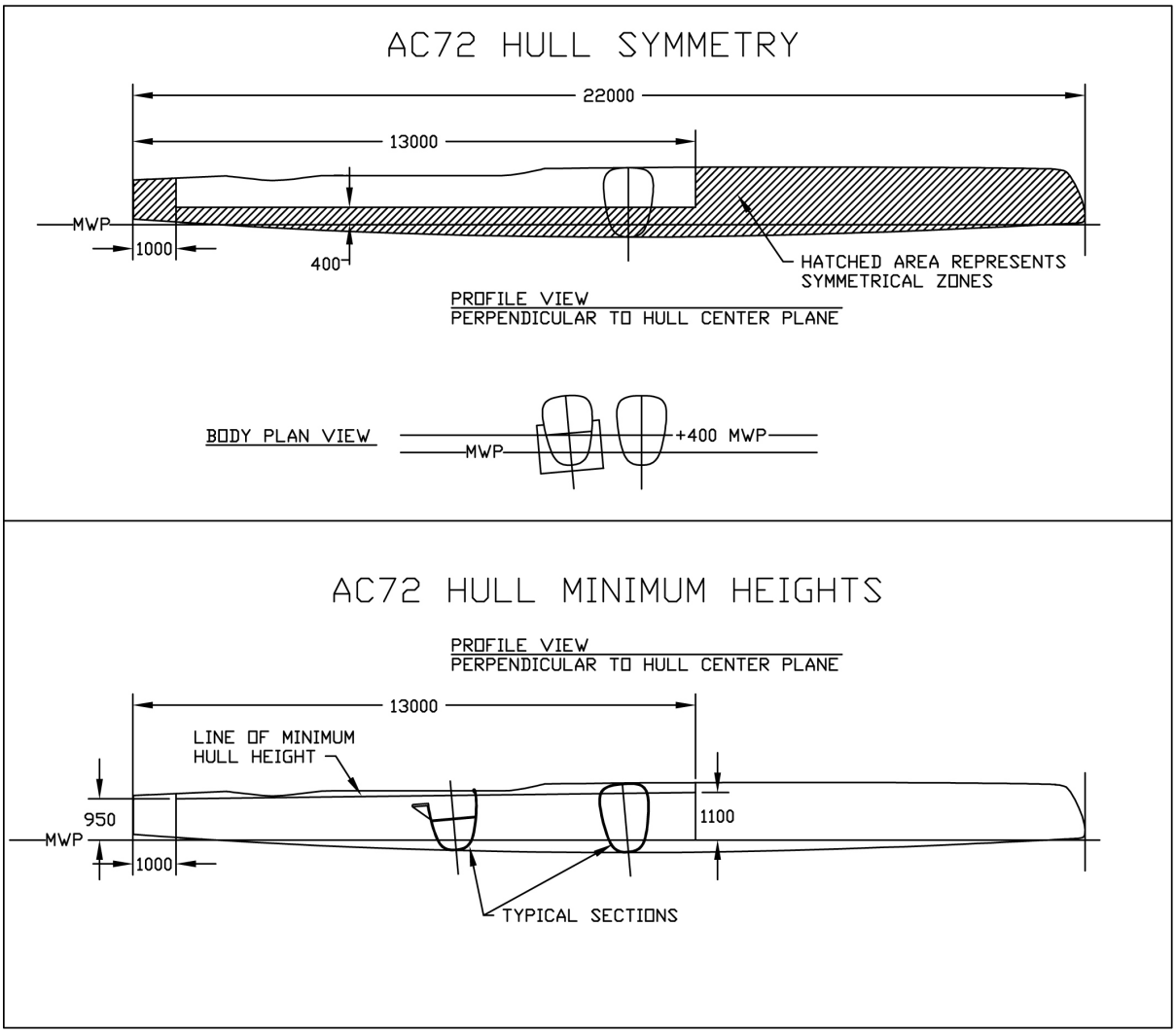
I declare that the component named and referenced above, is constructed from materials, and using building methods to the best of my knowledge as permitted in the AC72 Class Rule.

Owner (Block Letters) _____

Signature _____ Date _____

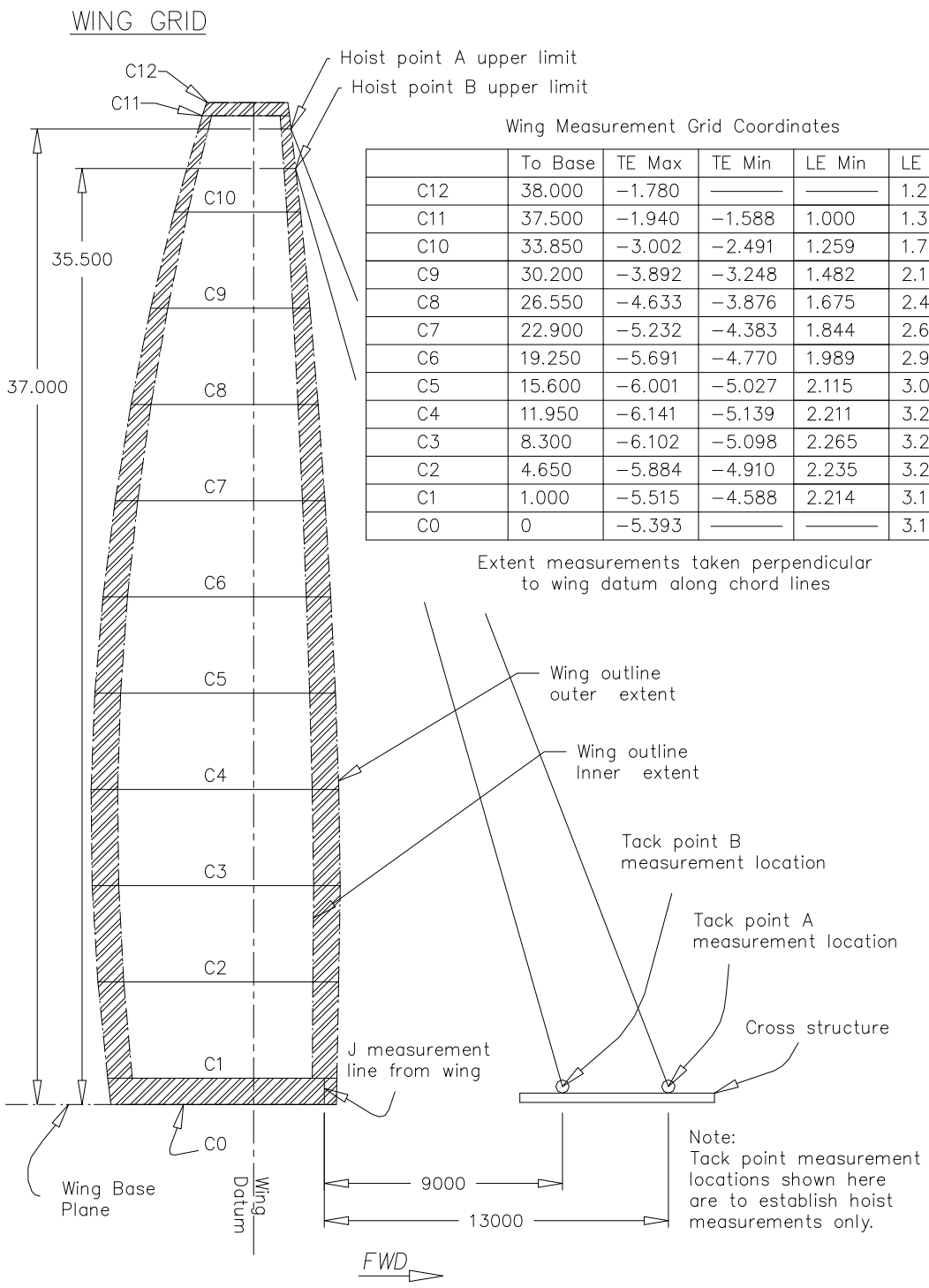
This declaration is to be preceded by a completed material usage schedule as set out in AC72 Rule 22.2.

APPENDIX C — HULL SYMMETRY AND MINIMUM HEIGHT DIAGRAM



HULL SYMMETRY AND MINIMUM HEIGHT REQUIREMENTS

APPENDIX D — AC72 WING

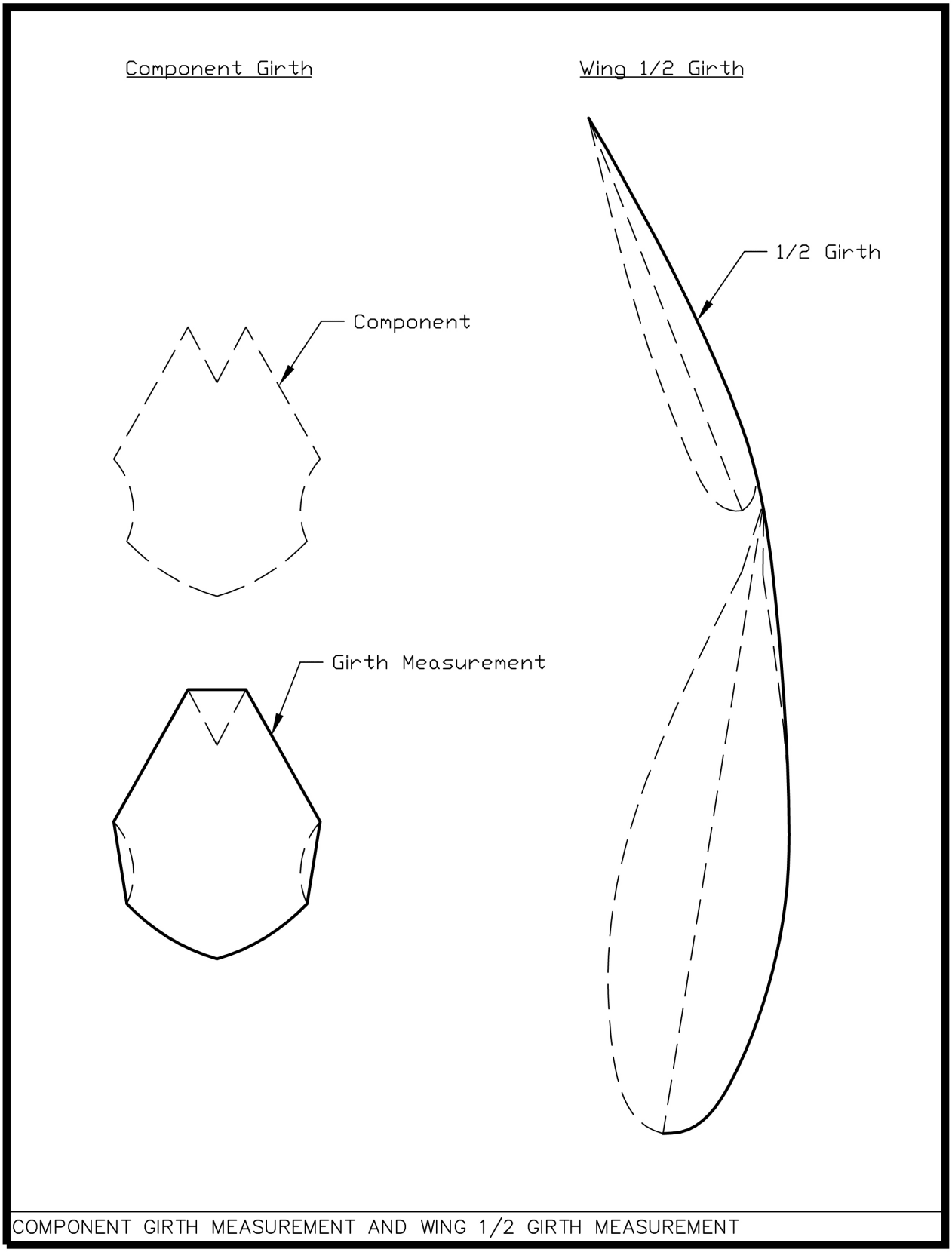


Wing Measurement Grid Coordinates

Extent measurements taken perpendicular to wing datum along chord lines

	To Base	TE Max	TE Min	LE Min	LE Max
C12	38.000	−1.780	———	———	1.290
C11	37.500	−1.940	−1.588	1.000	1.353
C10	33.850	−3.002	−2.491	1.259	1.770
C9	30.200	−3.892	−3.248	1.482	2.127
C8	26.550	−4.633	−3.876	1.675	2.432
C7	22.900	−5.232	−4.383	1.844	2.693
C6	19.250	−5.691	−4.770	1.989	2.911
C5	15.600	−6.001	−5.027	2.115	3.088
C4	11.950	−6.141	−5.139	2.211	3.213
C3	8.300	−6.102	−5.098	2.265	3.269
C2	4.650	−5.884	−4.910	2.235	3.210
C1	1.000	−5.515	−4.588	2.214	3.142
C0	0	−5.393	———	———	3.122

AC72 Wing Measurement Grid



COMPONENT GIRTH MEASUREMENT AND WING 1/2 GIRTH MEASUREMENT

APPENDIX E — MEDIA EQUIPMENT AND PERSONNEL

1. CAMERAS

1.1 The **AC72 Yacht** shall be fitted with seven HD agile cameras (provided by ACRM). Each agile camera shall be a 0.200 m sphere weighing 2.0 kg, requiring a 0.010 m diameter cable to the media bay and shall:

(a) be mounted on a common mounting fixture (possibly a 100 mm plate with threaded sockets and 0.020 m cable duct); and

(a) have control and power modulated/bias-T'd onto coax.

1.2 Agile cameras shall be mounted at the following locations:

(b) on the antenna frame (see Appendix H Rule 6) aft and above the aft-most **cross structure**;

(c) on the highest extent of the **wing**;

(d) two in line with the **wing rotation point** on either side of the **wing**, these shall be positioned to allow for filming of the crew;

(e) on the forward-most extent of the **cross structure**;

(f) below the aft extent of the **wing**; and

(g) below the aft extent of the **cross structure**.

If the **Measurement Committee** deems any of the above camera locations to be impractical, they shall specify alternate camera locations, including but not limited to the following:

(a) at the intersection of the aft-most **cross structure** and **hull** on a 200 mm vertical post;

(b) below the **cross structure** which supports the **wing rotation point**; and

(c) in the **hull**, above **MWP** forward of the forward watertight bulkhead.

1.3 The **AC72 Yacht** shall be fitted with three platforms for camera operators with the dimensions 740 mm x 740 mm at the following locations:

(a) one on the **yacht centerplane**, affixed to the aft side of the aft-most **cross structure**; and

(b) two in line with the **wing rotation point** at the maximum local beam, with one each on the port **hull** and starboard **hull**.

1.4 If a camera or camera operator platform position interferes with sailing, is unsafe or degrades camera operator performance, ACRM may submit alternative locations to the **Measurement Committee** for approval.

1.5 The camera operator shall have the following equipment:

(a) one handheld HD camera with stereo microphone;

(b) one wireless kit;

(c) belt-mounted batteries that are easily replaceable underway with wet-pluggable connectors;

(d) receiver antennas on antenna frame (see Appendix H rule 6) and on the structure supporting the **wing rotation point**; and

(e) safety equipment.

1.6 A four light display shall be fitted to communicate required position to camera operator, indicating the following:

(a) “Must be on platform”

(b) “Ok to weather forward”

(c) “OK to weather aft”

(d) “OK anywhere”

2. MICROPHONES

2.1 There shall be a total of 18 microphones onboard, mounted in the following locations:

(a) one Surround Sound 5.1 microphone on antenna frame (see Appendix H rule 6). This microphone may be encoded into two audio channels or shall require 6 audio microphone channels;

(b) one stereo microphone on cameraman’s camera, using 2 audio channels;

(c) wireless mono microphones on 11 crew & observer; and

(d) within each **hull**, one microphone shall be mounted no further aft than 3.000 m aft of the **stem** and one shall be mounted no further than 1.000 m from the longitudinal position of the **wing rotation point**.

2.2 There shall be a total 20 microphone channels if 5.1 is encoded into two channels, if not, there shall be 24 microphone channels.

3. MEDIA BAYS

3.1 The **AC72 Yacht** shall be fitted with two self-draining media bays. One media bay shall be located in each **hull**.

3.2 Media bays shall:

(a) have sufficient volume to house three 1450 Pelican cases with exterior dimensions of 0.407 x 0.331 x 0.175 m and all associated connecting cables; the cases shall be oriented with handles up and all connectors exiting from the aft end of the cases;

(b) have cable access on no less than one end; and

(c) if a media bay is enclosed, it shall have no less than two 0.050 m vent openings and no less than two 0.050 m cable openings.

3.3 One of the six Pelican cases, to be used for the Inertial Navigation System, shall be mounted in a repeatable, rigid location by one of the following methods:

(a) wedge-plate and cam configuration customary in TV cameras;

(b) clamp or molded bed built into the bay to receive the Pelican case; or

(c) mating plates fastened to the Pelican case and the media bay.

3.4 One media bay shall be reserved for batteries with a total system consumption of 400w while operating and 100w while idle. The battery media bay shall house three 1450 Pelican cases, each of which shall:

(a) contain eight 2590/U military Li-ion batteries and associated electronics;

(b) be capable of three hours of operation; and

(c) be safe during discharge unless physically damaged (e.g. crushed or punctured).

3.5 One media bay shall be reserved for the following electronics which shall be supplied by ACRM:

(a) camera CCUs;

(b) video compression processor;

(c) video switch;

(d) preview compression and Octal split generator;

(e) receivers for wireless microphones;

(f) audio control, A/D converters, and modulator;

(g) CNS-5000 CPT-SPAN INS/RTK GPS, which:

(i) shall be mounted in a rigid location that is repeatable with each re-installation of Pelican case;

(ii) may be mounted onto a plate with index pins;

(iii) may be mounted with a “wedge-plate” and cam; and

(iv) shall be mounted in a location precisely surveyed on each boat for config file.

(h) control computer;

(i) ethernet switch;

(j) telemetry transceiver;

(k) microwavetransmitter;

(l) power control, conditioning; and

(m) interface to **Competitor** electronics, if any.

4. CABLING

4.1 Cables for media purposes shall be provided by ACRM and shall have an onboard connection point that is pre-mounted and molded onto the **AC72 Yacht**.

4.2 Cable paths shall include:

(a) between media bays;

(b) to a zone near the **wing rotation point** and then to the **wing** conduit;

(c) to antenna shelf (see Appendix H Rule 6);

(d) to camera locations;

(e) to microphone locations; and

(f) to **Competitor** electronics;

4.3 Cabling shall be routed to the media bay via routes specified by the **Measurement Committee**.

4.4 Excess cable shall remain in a media bay and be cut off and connected by **ACRM**, who shall bag, label, and provide cutoff cable ends to **measurers** if requested by them.

5. INSTRUMENTS ATOP THE WING

5.1 The **AC72 Yacht** shall have the following antennas, each with a 0.100 m whip (provided by ACRM) located at the highest extent of the **wing**:

(a) microwave PA/LNA with dimensions 0.150 m x 0.075 m x 0.075 mm, weighing 1.5 kg; and

(b) two-way telemetry PA/LNA with dimensions 0.15 m x 0.075 m x 0.050 m, weighing 1 kg.

5.2 A conduit tube with an inner diameter of 0.040 m shall be fitted from top to bottom of the **wing**. This conduit shall allow for:

(a) the passage of one LMR400, one CAT6 ethernet, and

(b) a conduit chosen to easily pass connectors.

6. ANTENNA FRAME

6.1 The **AC72 Yacht** shall be fitted with one antenna frame located aft of and above the aft-most **cross structure** on **yacht centerplane**. This antenna frame shall be large enough to accommodate the following ACRM-provided media equipment and any **Competitor** cableway:

(a) one cameraman antenna;

(b) two wireless microphone receiver antennas;

(c) one GPS antenna;

(d) one agile camera near the **yacht centerplane**;

(e) one Surround Sound 5.1 microphone mounted on a post near **yacht centerplane**; and

(f) one magnetic compass.