



AMERICA'S CUP XXXI PROTOCOL

INTERPRETATION OF ARTICLE 16

October 19, 2000

Article 16 of the America's Cup Protocol dated March 2, 2000 anticipates an explanatory interpretation to assist Challengers and candidates for the defence to understand the technical aspects of Article 16 including the nature of **alterations** which may or may not be permitted to ACC yachts. This interpretation is made by the ACC Technical Director in consultation and technical agreement with Royal New Zealand Yacht Squadron and the Challenger of Record.

This explanatory interpretation is not intended to cover every permutation of possible **alterations** but rather is intended to present the principles under which approval may be granted for such **changes** as required by Article 16.

The Protocol sets the base date for any **alterations** for existing ACC yachts is March 2, 2000

All existing yachts, including those altered under the provisions of Article 17 of the Protocol for America's Cup XXX are deemed to have zero **alterations** as at March 2, 2000. The procedures for seeking approval to make **alterations** to a yacht completed prior to March 2, 2000 and yachts completed after March 2, 2000 are set out in Protocol Article 16.6(a).

It should be noted that Protocol Article 16 refers to rules 2.4 and 39.5 in Version 3.0 of the IACC Rule. It should be further noted that Version 3.0 of the IACC Rule including all Public and Confidential Interpretations is to be replaced by Version 4.0 by September 2, 2000 as provided for in Protocol article 14.1 (d)(i).

For the purposes of this interpretation the following definitions shall apply. Where they are shown in bold typeface they are used in their defined sense.

"**Alteration**" or "**Change**" is a change to the shape of some part or parts of the **original hull** relative to the part of the **hull** which remains unchanged and is required to be approved prior to commencement of the change.

"**Hull**" is as defined in ACC Rule 2.4(h) and means the fair body (canoe body) of the yacht up to the sheerline and does not include the deck, nor the appendages.

"**Original**" is defined as the **hull** shape as at March 2, 2000. as set out in Protocol Article 16.

"**New**" is defined as the part of the **original hull** which is to be removed and replaced in a different position relative to the remaining portion of the **original hull** or a section built to replace a section of the **hull** removed from the **original hull**.

Change or **alteration** may be translational and/or rotational in any direction. It is likely and anticipated that any **alteration** may combine more than one direction of translation and/or rotation of the **new** laminated section or part of the **original hull** relative to the remaining portion of the **original hull** due to the ACC Rule hollows limitations.

America's Cup XXXI Protocol **alteration** limits now permit, for example, cutting the yacht transversely and adding (or subtracting) length. This operation could alter say 49% of the **hull** relative to the remaining **original** 51 % of the **hull**.

The physical limit of an **alteration** is deemed to be at the line of the actual join of the **original** inner surface of the inner skin with the inner surface of the inner skin of the **new** part(s). The principle of this extent is shown in the sketch marked as Figure 1. Verification of the limits of the proposed alteration may then be by visual inspection inside the hull.

However, if the width of the scarf of the outer skin of the new section extends onto the **original hull** by more than 100 mm, the limit of the **alteration** shall be the actual join of the outer skin. If it is proposed that the outer skin join be the limit of the **alteration** the designer and builder shall provide a signed declaration to the technical director nominating the overlap between the inner and outer skin. The technical director may check this overlap by any appropriate means.

Prior to commencement of the **alteration** the designer shall submit to the Technical Director, a drawing of the proposed join/scarf detail including proposed scarf thicknesses and scarf reinforcement extents/limits. The Technical Director may request changes to this detail to better facilitate verification procedures.

Fairing of the join between the **original** and **new** part(s) which may extend onto the **original hull** shall not be considered as an **alteration** in the calculation of the extent of **alterations**. Protocol Article 16.7(a) places no limit on the extent of fairing however ACC Rule 18.5 (e) limits fairing outside the "rule legal" skin to a maximum thickness of 51mm except as specifically altered in ACC Rule 18.5(e) and (f). These limits shall continue to apply.

Protocol Article 16.7(a) permits the laminate area of the **hull** being distorted without the area distorted constituting an **alteration**.

Examples of this type of distortion would include

- (a) squeezing the sugar scoop and holding it in the distorted shape with tie rod(s)
- (b) removing the deck and major internal transverse structure and squeezing or spreading the **hull** to reduce (or increase) the beam, then replacing the deck
- (c) removing the deck and major internal longitudinal structure and bending the **hull** to change the rocker and/or measured length, then replacing the deck

Distortion may also be achieved by cuts (or slitting) of the original skins to allow twisting or bending of the adjacent section to modify the shape of the hull. These cuts or slits shall not be considered **alterations** for the purposes of this interpretation provided the saw cut(s) in the original skin(s) do not exceed 5mm in width.

In the case of sequential **alterations** they shall be referenced to the **original hull** shape in assessing the total **change** as a percentage of the **original** shape to determine compliance with the Protocol. Returning to the shape of the **hull** to the **original** shape shall not constitute additional **change** provided the actual section replaced is the **original** part removed from the **hull** and not a newly laminated section of identical shape.

The formula used in the calculation of the extent of **alterations** shall be as follows:

If A_o is the area of the **original hull**

A_r is the area of the **original hull** which is to be moved or removed.

A_a is the area of the relocated part of the **original hull** or the **new** section to be added

then $\text{Percentage Change} = \text{Max}(A_r, A_a) / A_o * 100$

Typical examples of **alterations** and the method by which the extent of the **alteration** of laminate area altered is assessed are given below

- (a) An ACC yacht was altered by the removal of the **original** bow and a **new** bow fitted to the **original** yacht which constituted a 30% **change** in the laminate area of the **hull**. After testing it was found that the **new** shape was not an improvement on the **original** shape and the old bow was replaced in exactly the same position as it was on the **original** yacht. The cumulative **alteration** of returning to zero **change** is 30% **change** in the laminate area of the **hull**. See figure 2.
- (b) An ACC yacht was altered by the removal of the **original** bow and a **new** bow fitted to the **original** yacht which constituted a 25% **change** in the laminate area of the **hull**. After testing it was found that the **new** shape did not deliver the anticipated improvement over that of the **original** shape and it was decided to leave the aftmost part of the first **change** but to replace the forward most part of the bow with an **alteration** which constituted 18% of the **original** laminate area of the **hull**.

The net result of this **change** is an **alteration** of 43% (25% + 18%) of the laminate area of the **hull**. If after further testing it was decided to scrap all the **alterations** and return to exactly the **original** shape the cumulative **alterations** would be 43% to the laminate area of the **hull** provided that this is achieved by using the **original** parts.

- (c) An ACC yacht is cut transversely at approximately 27% of the area of the **hull** from the bow and a short transverse section (say 250 mm which represents 2.5% of the **original** laminate area of the **hull**) is cut from the remaining section. The old bow is then re-attached to the **original** remaining part of the **hull**. The extent of the **alteration** would be 29.5% (27% for the section being moved relative to the **original** part of the **hull** remaining plus 2.5% for the section of the **original hull** removed and discarded).

If the **original** part remaining was slit and distorted to approximately marry the bow section this distorted area would not be taken into account in the calculation of the laminate area being altered. Similarly if the small step in the shape formed by the marriage of the **original** bow and the **original** minus the removed section is filled and faired the filled area has no impact on the laminate area being altered provided the depth of the filler does not exceed 51mm.

- (d) Similarly if an ACC yacht was cut with long fingers remaining from the **original** laminated area and these fingers were twisted and distorted to marry into a **new** bow shape only the **new** laminate area would be taken into the altered laminate area.

The above examples are shown diagrammatically in Figures 2, 3, 4 & 5 respectively.

In all cases the diagrams are intended to be schematic and are not to scale. No attempt should be made to scale dimensions or calculate areas from these sketches.

This interpretation includes 4 pages of sketches.

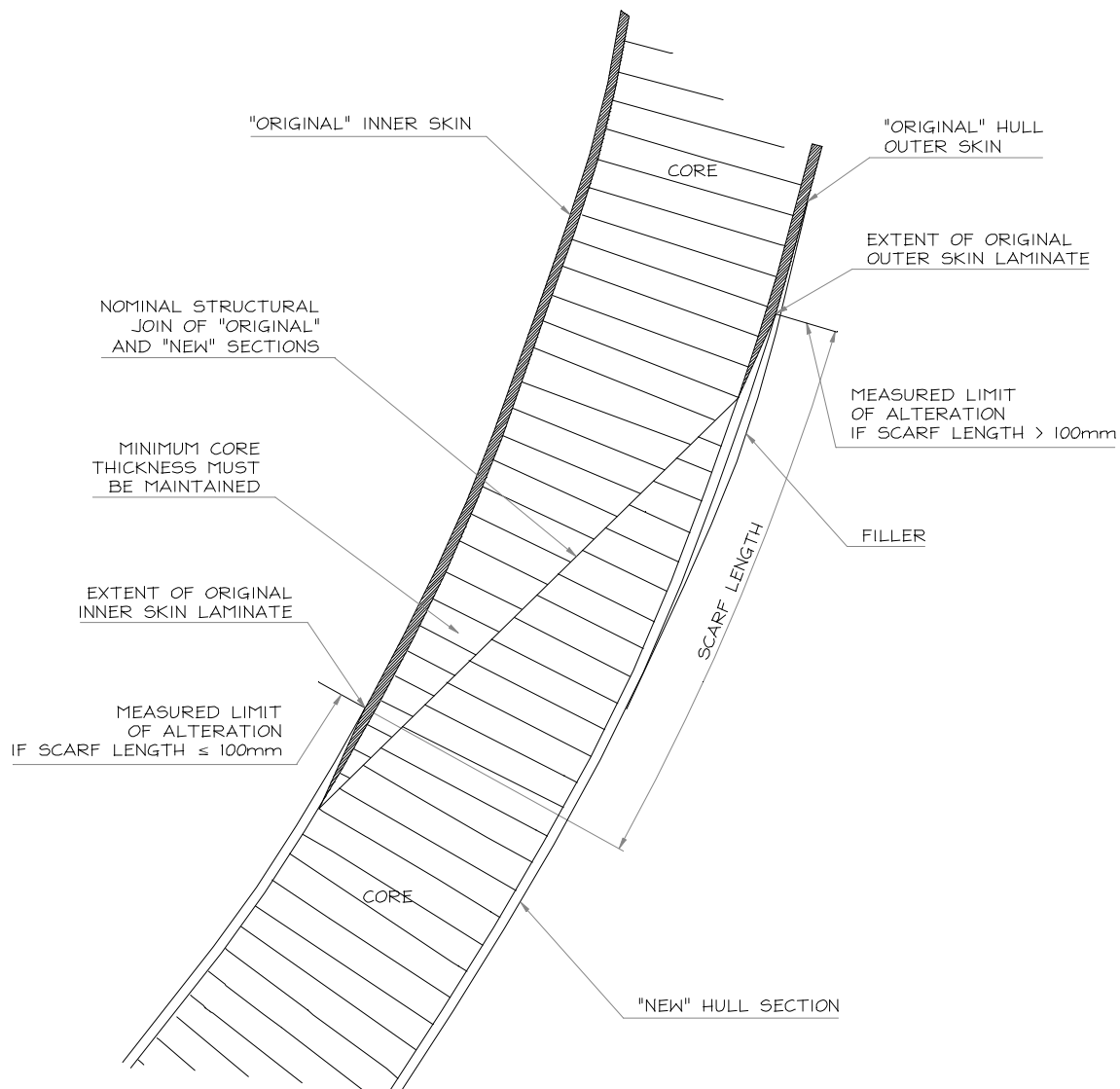
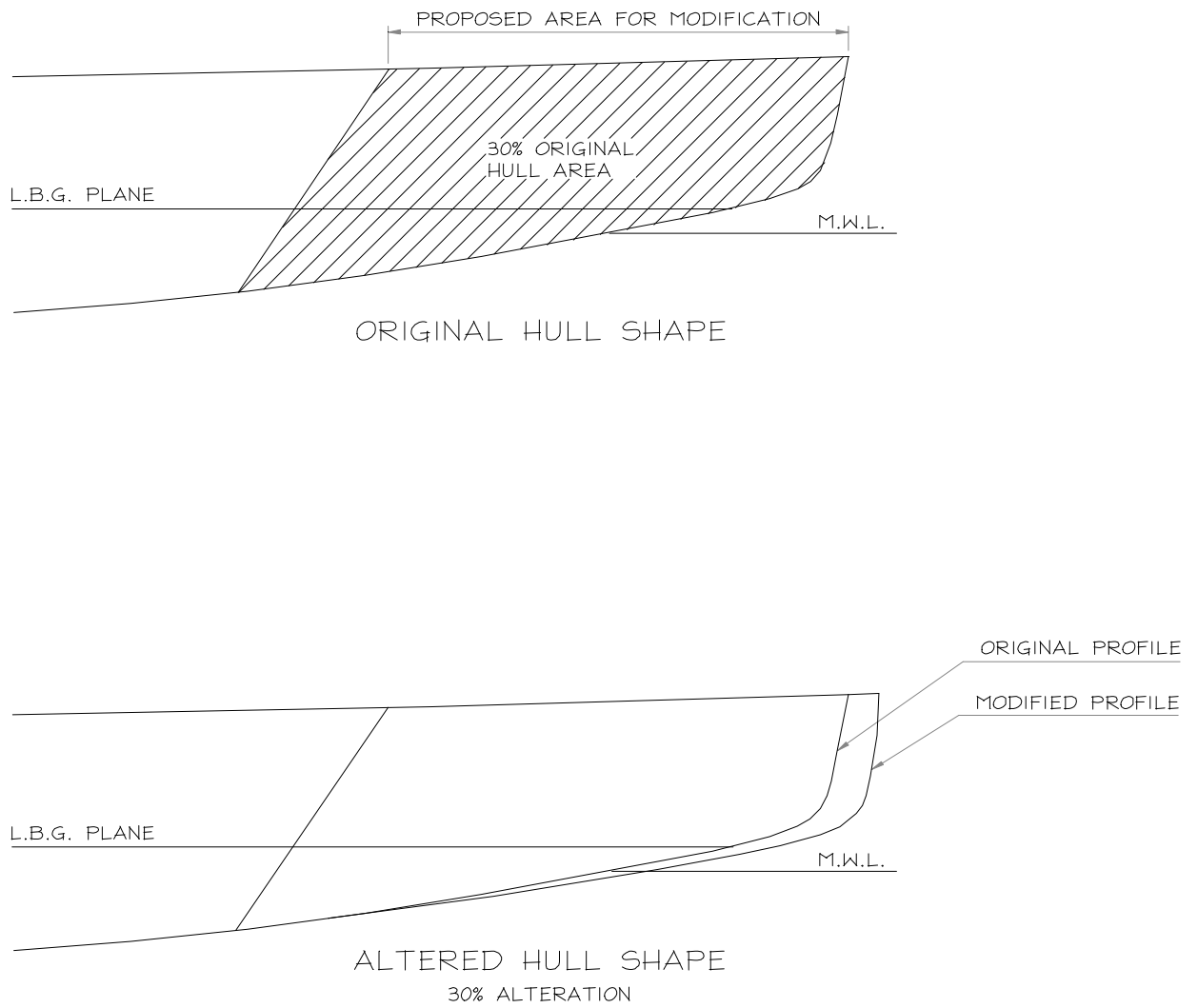


FIGURE 1

**FIGURE 2**

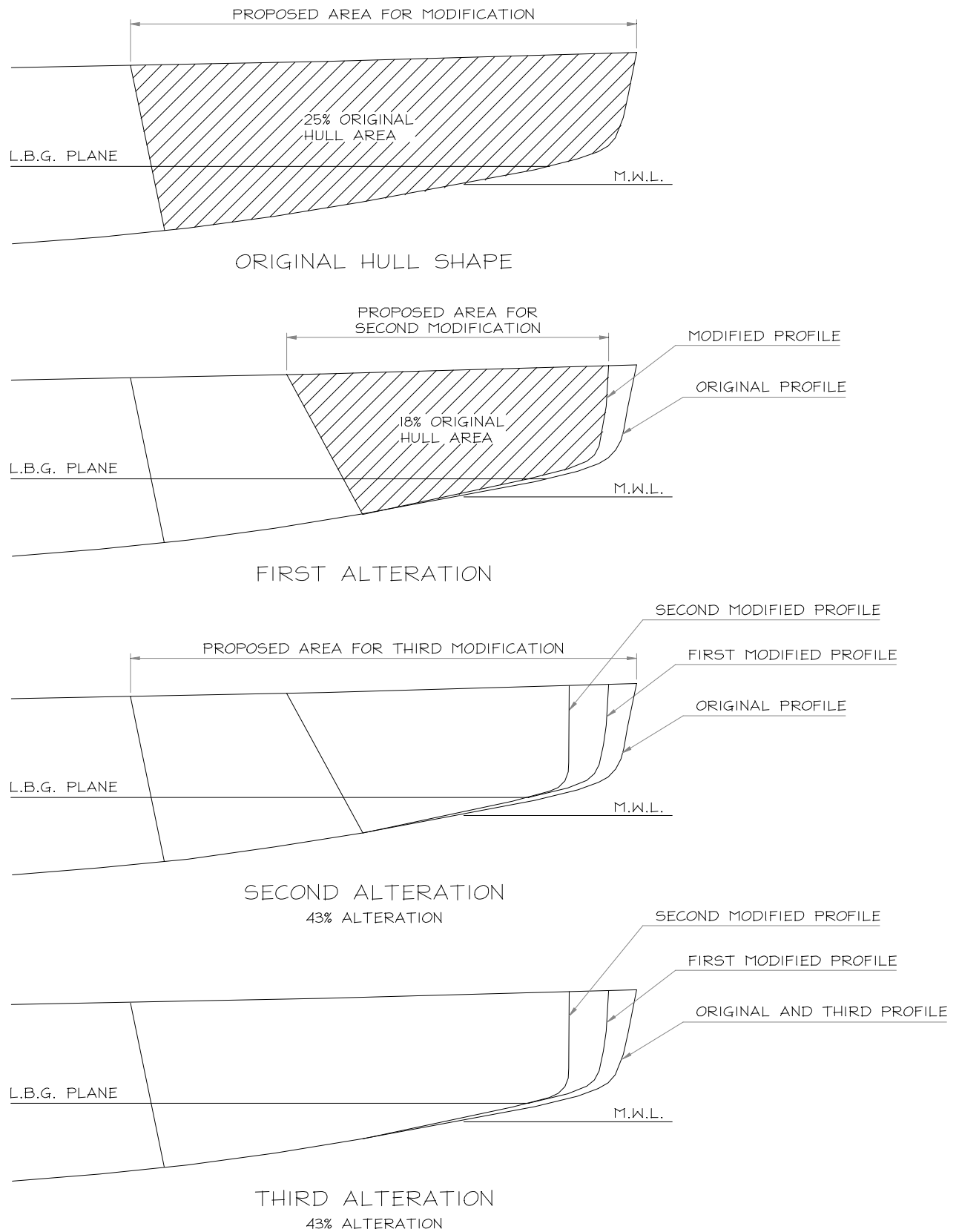


FIGURE 3

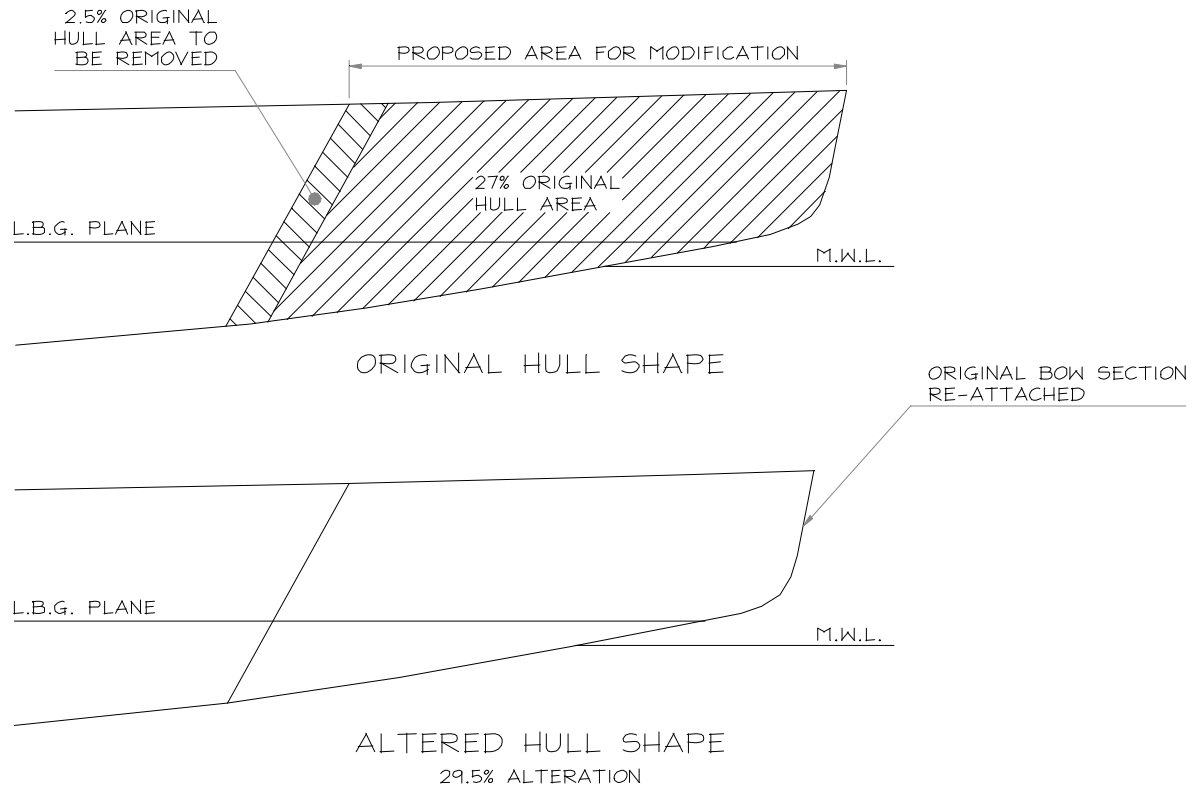


FIGURE 4

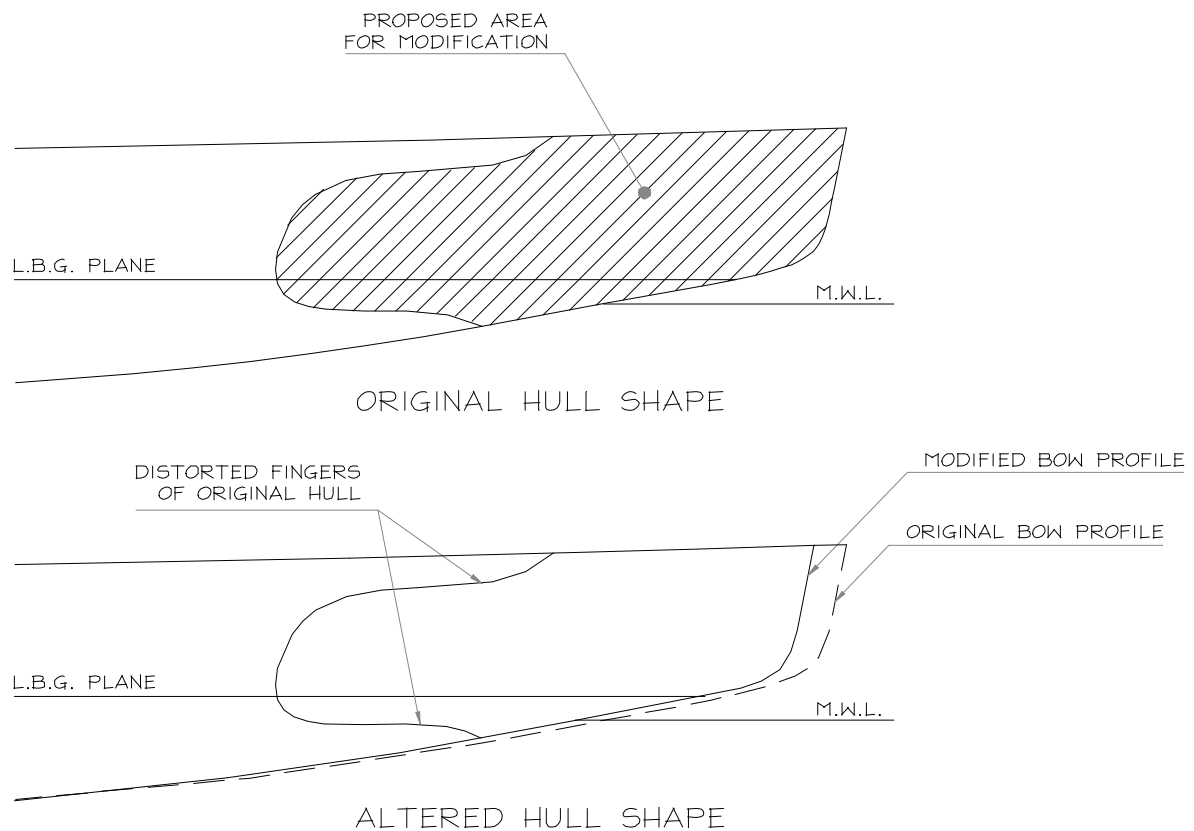


FIGURE 5

This interpretation is issued under the authority of the following parties:

Party	Date	Name	Signature
Royal New Zealand Yacht Squadron	25/10/00	P.D. Taylor	
Yacht Club Punta Ala as Challenger of Record	16/11/00	Bruno Celandriello	
America's Cup Class Technical Director	October 19, 2000	Ken McAlpine	