UI HSC 9 "Keel Laying Date for Fibre-Reinforced Plastic (FRP) Craft"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
NEW (Mar 2013)	19 March 2013	1 January 2014

- **NEW (Mar 2013)**

.1 Origin for Change:

☒ Suggestion by IACS members

.2 Main Reason for Change:

With the introduction of the NOx Tier I/II/III requirements and other emerging statutory legislation, it is necessary to agree a consistent interpretation for the term "the keels of which are laid or which are at a similar stage of construction" for Fibre-Reinforced Plastic (FRP) Craft.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel, and after some discussion a qualifying majority of the Panel agreed to draft an IACS UI and associated HF & TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: November 2012 made by Statutory Panel
Panel Approval: 10 February 2013 by Statutory Panel
GPG Approval: 19 March 2013 (Ref: 13047_IGc)

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (March 2013)**

See separate TB document in Annex 1.

Technical Background for UI HSC 9 New, March 2013

1. Scope and objectives

This UI is intended to define a consistent interpretation for the term "*the keels of which are laid or which are at a similar stage of construction*" when applied to Fibre-Reinforced Plastic (FRP) Craft.

2. Engineering background for technical basis and rationale

The Keel Laying date can be difficult to define accurately when FRP Craft are considered. This has not caused a great problem in the past as FRP vessels are rare.

However MARPOL Annex VI uses the term "ship constructed," particularly in relation to NOx Tier I/II/III requirements (noting that Tier III applies to a marine diesel engine that is installed on a ship constructed on or after 1 January 2016).

For most composite vessels it would require the application of the latter, i.e. that the mass of 1% of the structural material is estimated from the laminate schedule and agreed between the Builder and the Surveyor. However, this is not a practical approach.

It was considered necessary therefore to agree a consistent interpretation for the term "*the keels of which are laid or which are at a similar stage of construction*" for Fibre-Reinforced Plastic (FRP) Craft.

3. Source / derivation of the proposed IACS Resolution

IMO Conventions and Codes (Performance Standards, Technical Standards, Resolutions and Circulars)

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

The initial suggestion was for the commencement of keel laying to be when the gel coat and back up reinforcements are laid and at the point of commencement of the main structural laminate.

Therefore where there is no gel coat then the structural laminate is the first item laid in the mould so that is the start of the Keel Layup.

To simplify this it was agreed that the start of Keel Layup is when the main structural laminate commences which in most cases will be after the gel coat is applied. Therefore the definition could bypass the gel coat stage because that is "equivalent" to a paint system on the outside of a steel hull.

A definition using the words "hull resin application" was rejected as it did not suit vessels that use a resin infusion technique - several weeks of loading the hull mould

with dry reinforcements may take place and the proposal would be the date when the hull is actually infused.

To satisfy all scenarios it was concluded that the start of Keel Layup is the “commencement of laying the main structural reinforcements of the hull". This definition suits moulding in a female mould or on a male plug. This definition excludes any gel coat and the associated gel coat back up reinforcements (i.e. typically light weight powder bound CSM back up layer(s)).

6. Attachments if any

None