

Not always afloat but (hopefully) safely aground on a flat earth

Current design precautions taken to prevent damage to vessels aground in tidal basins are not robust enough, writes Navalmartin's Val Martin

We recently reminisced about the practical joke I played on a senior Master Mariner who is very well respected for his time at sea and his eloquent expertise in the court of arbitration in London. The man is an authority on everything that floats, navigates or steers.

To enlighten his life, I registered him formally as a supporting member of the Flat-Earth Society. Thereafter, Captain Flat-Earther would never again be allowed to brag about his skills with a sextant or his ability to find the optimum rhumb line to the watering hole.

Drawing on this truculent metaphor, I note again that it is at the boundary of the science (or commonly accepted knowledge) that lay the perils of our industry.

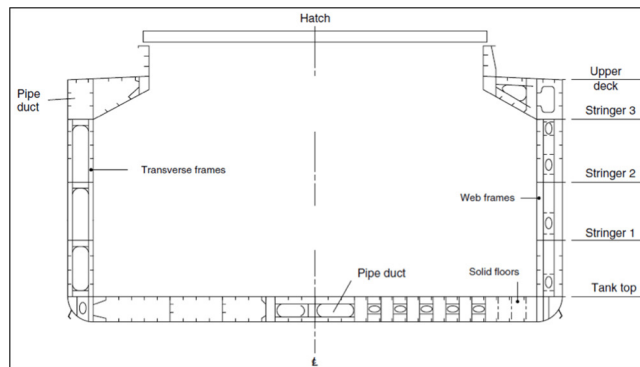
Specifically, the 'terra incognita' of naval architecture is the situation where the hull is in contact with the hard stuff: docking aground, on a slipway, or in slings.

The abnormal state of rest is one which is prone to anxiety; it is a time when the master surrenders his vessel to the shipyard, the crane operator, or merely allows the tide escape from under his keel (hopefully, not accidentally).

Separately from white yachts and behind the curtains of litigious circumstances, we have examined a number of vessels that had sustained damage at NAABSA berth: Not Always Afloat But Safely Aground. These are moorings where the tidal range has the visiting ship touching the bottom.

The 'Safely' here is governed by both the ship and the berth's propensity to meet one another, and unfortunate surprises occur when that is not the case. The presumption of guilt is with the berth as it is difficult to prove that the berth was free of obstruction.

As it turns out, from a design point of view, the class notation 'loading and unloading aground' is granted on some very coarse checks, and the precautions implemented by design to prepare a vessel for sitting on unknown sediments are surprisingly rudimentary, such as adding 20% on the



Common precautions such as adding 20% on steel plating thickness will not protect every vessel required to sit on sediment

steel plating thickness and a little bit extra for the inner structure. There is no check of the quantity of cargo carried, no check to reflect the loss of hydrostatic support away from the flat bottom, and no additional thin-plate-buckling critical stress check.

With general cargo ships that have a double bottom and whose longitudinal strength is governed by the stresses in the deck more than the stress in the bottom plating, much of the attention is devoted to the deck and hatch corners, with economy applied with regard to the intrinsically robust close-cell bottom and tank top

combination. As such, the bottom plating is not fundamentally very thick. Therefore, the risk of bottom damage in the drydock has been traditionally managed by the careful application of tins and blocks under the keel and selected longitudinal members. The master and the shipyard agree on the importance of the docking plan.

We have observed that some ships are better suited for NAABSA operations and this is not necessarily reflected in the certification. It is the remit of Class to assess the seaworthiness of a ship. As for their sediment-worthiness, it is, in my opinion, a grey area.

It is therefore valid to consider some kind of agreement between the port operator and the ship owner before the ship enters the tidal berth. This can protect all parties against an unpleasant surprise and accusations afterward.

In these modern times, the debate about the flatness of the earth is still raging and the flat-earthers have a valid point to make! **NA**

About the author

Val Martin has worked variously as a naval architect, as part of a classification society's emergency response team, and as an offshore renewable energy advisor for the EU and UK. At Navalmartin, Val acts as an expert witness on design-related claims, and as an on-site salvage engineer.

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