Paper for Consideration by S-101 PT10

Mooring/Warping Facility in S-101 Rev2

Submitted by:	S-101PT Chair
Executive Summary:	This paper proposes the S-101PT remodel the Mooring/warping facility feature as it currently mixes distinct concepts and this change would benefit users and encoders alike.
Related Documents:	S-101 Edition 1.1.0
Related Projects:	S-100

1. S-101 has sought to improve modelling from the S-57 ENC standard by adding new items, splitting features that mix concepts and removing many of the complex attribution rules. A good example of this are the new Lights features which more logically describe the different types of lights as distinct features and permit appropriate attribution. In addition to making information more obvious to end users this should also ease encoding effort.

2. S-101 1.1.0 includes the Feature Mooring/warping facility this feature currently covers a range of real-world objects and consequently the feature has a range of geometric primitives and a broad set of attributes. The table below summarises these and proposes how they could be mapped to existing features, or new features. The main benefits are that users would not need to query attribute values to understand a feature and that encoders would find it much simper to capture objects as only the relevant primitives and attributes would be available.

Code	Label	Definition	Primitives	Comments
1	Dolphin	A post or group of posts, used for mooring or warping a vessel, or as an aid to navigation. The dolphin may be in the water, on a wharf or on the beach.	Point/Surface	Create new feature Dolphin. Potential for OCIMF definition to be used. "An independent platform incorporating mooring hooks or bollards for securing ship's mooring lines"
2	Deviation Dolphin	A post or group of posts, which a vessel may swing around for compass adjustment.	Point/Surface	Create new feature Dolphin and use a Boolean attribute to indicate deviation Dolphins. .
3	Bollard	Small shaped post, mounted on a wharf or dolphin used to secure ship's lines.	Point, Surface	Propose create a dedicated feature this would allow an attribute for Safe Working Loadto be included. Elevation as present on MORFAC should be retained. An attribute

				for identification should be included.
4	Tie-Up Wall	A section of wall designated for tying-up vessels awaiting transit. Bollards and mooring devices are available for both large and small ships.	Curve/Surface	Shore line construction includes categories of various walls, fender and landing steps. Propose making this a category of shoreline construction.
5	Post or Pile	A long heavy timber or section of steel, wood, concrete, etc., forced into the seabed to serve as a mooring facility.	Point	Pile already exists as an S-101 feature, add additional value for Category of Pile.
6	Mooring Cable	A chain or very strong fibre or wire rope used to anchor or moor vessels or buoys.	Curve	Submarine Cable also has a category of mooring cable (6). Propose map any instances to that feature in S-101.
7	Mooring Buoy	A buoy secured to the bottom by permanent moorings with means for mooring a vessel by use of its anchor chain or mooring lines.	Point	Propose making a specific Mooring Buoy feature with the relevant attributes.

Table 1 - Review of Category of Mooring Warping Facility values in S-101 1.1.0.

An example of one of the current S-58 checks that has been carried through to S-101 is check 1677. This check would no longer be required given the proposed remodelling.

For each Mooring/Warping Facility feature object where buoy shape is Present AND category of mooring/warping facility is Not equal to 7 (mooring buoy).

3.   The IHO Nautical Information Provision Working Group (NIPWG) has been developing the S-131 Product Specification for Marine Harbour Infrastructure and an edition 1.0.0 is now available. This retains the single Mooring/Warping Facility feature with the 7 categories but additionally adds attribution relevant to bollards, including bollard pull. Information on bollard pull is important for safe and efficient berthing operations. Noting that S-131 datasets may not exist in all areas and user feedback highlights the value of this information. It is proposed that bollard pull as an optional attribute is added into S-101 to allow it to be captured if required.
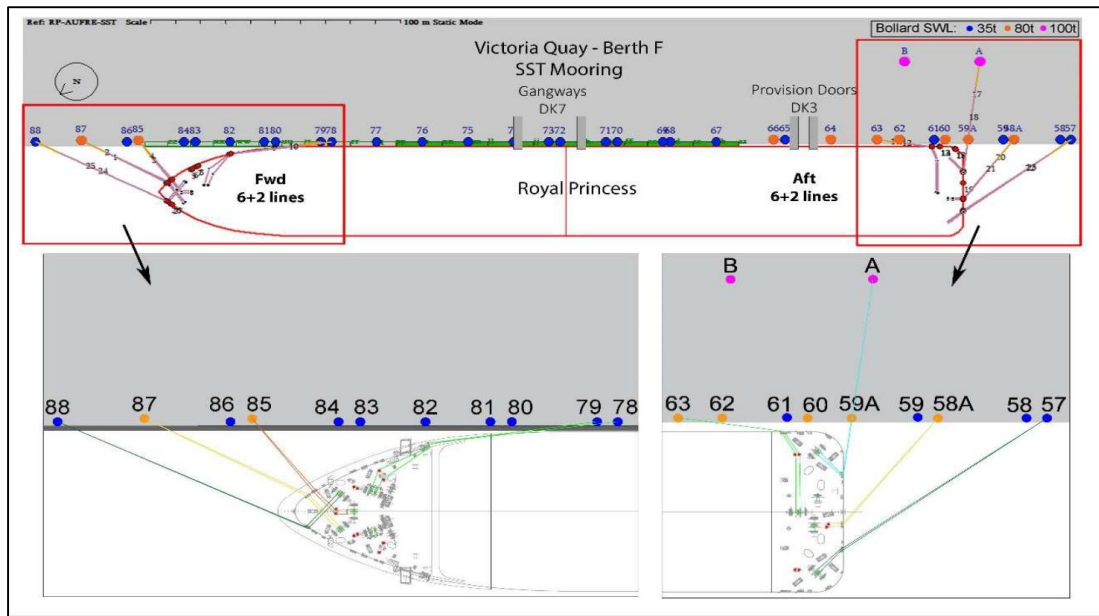
IHO Geospatial Information Registry

Figure 1 – An existing mooring diagram showing bollard Safe Working Load.

Recommendations

A. S-101PT adapt the Mooring/Warping Facility feature to improve modelling and make changes to the Feature Catalogue and DCEG in S-101 1.2.0.

B. S-101PT as a consequence of A should engage with the Conversion Subgroup to update conversion guidance for these changes.

C. Review any affected S-101 validation checks.

D. S-101PT consider adding Safe Working Load as a new attribute on the proposed new feature Bollard. No new or amended symbols are proposed at this stage but the 1.2.0 Portrayal Catalogue will need to be edited due to the modelling changes.

E. Engage with NIPWG on potential changes in S-131 given S-101PT discussions.