

**Paper for Consideration by S-101PT****Improvements to encoding Maritime Jurisdiction features in S-101**

<b>Submitted by:</b>	United Kingdom
<b>Executive Summary:</b>	This paper proposes the addition of new features in S-101 to remove the suboptimal encoding of maritime limits in ENC's. This removes a current workaround and improves the user experience ensuring that ENC's can be used by producers to support due publicity.
<b>Related Documents:</b>	S-101 Edition 1.1.0
<b>Related Projects:</b>	S-121 Maritime Limits and Boundaries

**Introduction / Background**

- 1) S-101 currently provides information for Maritime Limits and Boundaries to support navigation. In addition, the IHO has developed the S-121 data product specification, to allow more detailed information on Maritime Limits and Boundaries to be exchanged. Considering the principles set out in ISO 19100 standards, these two product specifications reflect different user audiences with different user needs.  
A key principle of S-101 is that it is driven by navigation user needs and this paper therefore proposes changes to improve S-101 to better support users and align to an appropriate extent with S-121. The proposed changes affect the DCEG, Feature Catalogue and Portrayal Catalogue, validation checks may also be impacted.

**Analysis/Discussion**

- 2) Currently S-101 1.1.0 DCEG 16.2 includes the following guidance.

“The clauses in Section 16 below provide guidance for the encoding of maritime jurisdiction areas. Occasionally, these “areas” may actually be defined as linear due to international treaties, or the areas may not be fully defined, and it may therefore be necessary to encode the boundary as a linear feature. Clause 2.2 defining features permitted for use in ENC and their geometric primitives does not allow many of the feature classes relating to maritime jurisdiction areas to be encoded as type curve.”

If it is required to encode a linear maritime jurisdiction feature, it must be done using the corresponding feature class as outlined in Section 16 below. If the “curve” primitive is not permitted for the related feature class, the linear maritime jurisdiction feature must be encoded as a “very narrow” feature of type surface, and by masking all the edges of the area that are not relevant (that is, are not along the reference line – see clause 2.5.10). **Note that this method must not be used where an area can be defined.**

The “very narrow surface” should be a surface having an edge corresponding to the reference line and be at least 0.3mm in width at the maximum display scale of the ENC data. Caution notes for such areas must be encoded using the **complex attribute information** (see clause 2.4.6).

- 3) In S-101 we now have the opportunity to remove this “workaround” by extending it to allow additional geometry, of primitive type curve, for the relevant features and by introducing new features which align more closely with those in S-121.  
Annex A of this paper lists the relevant feature types showing current features present in S-101 and S-121. It proposes 5 new feature types for inclusion in S-101 1.2.0. These would all be of geometric primitive curve, but would carry the same attributes as the equivalent surface feature in S-101 1.1.0.
- 4) Although this approach will require manual intervention when converting from S-57 to S-101 ENCs, a limited number of instances exist. Ultimately this change will more clearly and accurately represent information and avoid potential confusion caused by the current “narrow areas” workaround. It will also achieve greater alignment between the S-101 and S-121 data models. Notably, this change will improve coastal state’s option to use ENCs to give due publicity for Maritime Limits and Boundaries.

### **Recommendations**

- A. S-101PT to consider adding 5 new feature types to represent Maritime Limits and Boundaries in S-101 as listed in Annex A. All features are registered in the GI Registry (Concept Register). (S-101 PT)
- B. Develop symbology to present these features (Portrayal Sub-group)
- C. Within the DCEG, enhance figure 16.1 to reflect the relevant feature types. (See redline at Annex B) Consequential action to be applied in DCEG 2.5.10 Masking and Fig.2.9 “Linear” Maritime Jurisdiction Area. (DCEG sub-group)
- D. Reflect in the S-57 to S-101 conversion guidance document guidance on how to convert data in these scenarios noting that manual intervention may be required. (ENCWG sub-group)

**Annex A: Maritime Limit and Boundary Feature Types**

<b>Current S-101 (1.1.0) Features</b> All geometric primitive surface only	<b>Proposed additional S-101 Features</b> All geometric primitive curve only	<b>S-121 Features (1.0.0) (Relevant subset only)</b>
	Territorial Sea limit	Outer Limit of the Territorial Sea
	Contiguous Zone limit	Outer Limit of the Contiguous Zone
	Exclusive Economic Zone limit	Outer Limit of the Exclusive Economic Zone
	Continental Shelf limit	Outer Limit of the Continental Shelf
Territorial Sea area		Territorial Sea
Contiguous Zone		Contiguous Zone
Exclusive Economic Zone		Exclusive Economic Zone
Continental Shelf area		Continental Shelf
Administration Area	International Boundary	International Boundary

**Key**

	Limits
	Zones/Areas
	Boundary

**Annex B: Proposed Redline DCEG Changes**

Will be provided at the PT10 meeting.