

Paper for Consideration by HSSC

Consider “S-101 to S-57 conversion” as a new work item for the ENCWG

Submitted by:	France
Executive Summary:	In order to promote the development of S-100 ECDIS and facilitate the Dual Fuel transition period, it is proposed to consider S-101 to S-57 conversion as a new work item that could be addressed by the existing ENCWG Conversion sub-group.
Related Documents:	S-57 to S-101 Conversion Guidance; S-100 ECDIS and Dual Fuel Governance Document.
Related Projects:	S-57; S-101; S-98.

Introduction / Background

S-100 ECDIS may be in use for navigation from 2026. From then will start a Dual Fuel period during which Hydrographic Offices (HOs) will start delivering their ENCs in both S-57 and S-101 formats. The Dual Fuel period will only come to an end at the deadline date IMO will make the carriage requirement of legacy S-57 ECDIS by an S-100 version mandatory. This deadline is unknown but might be around 2035.

A conversion Sub-Group has been set-up under the ENCWG, which concentrates on the conversion of S-57 data to S-101 (new ENCWG work item B.5 approved by HSSC 12).

It is felt that, at varying dates during the Dual Fuel period, all HOs, or RENC, or an authorized data producer will also have to convert S-101 data to S-57. In order to have efficient production tools available, guidance for the S-101 to S-57 conversion seems necessary.

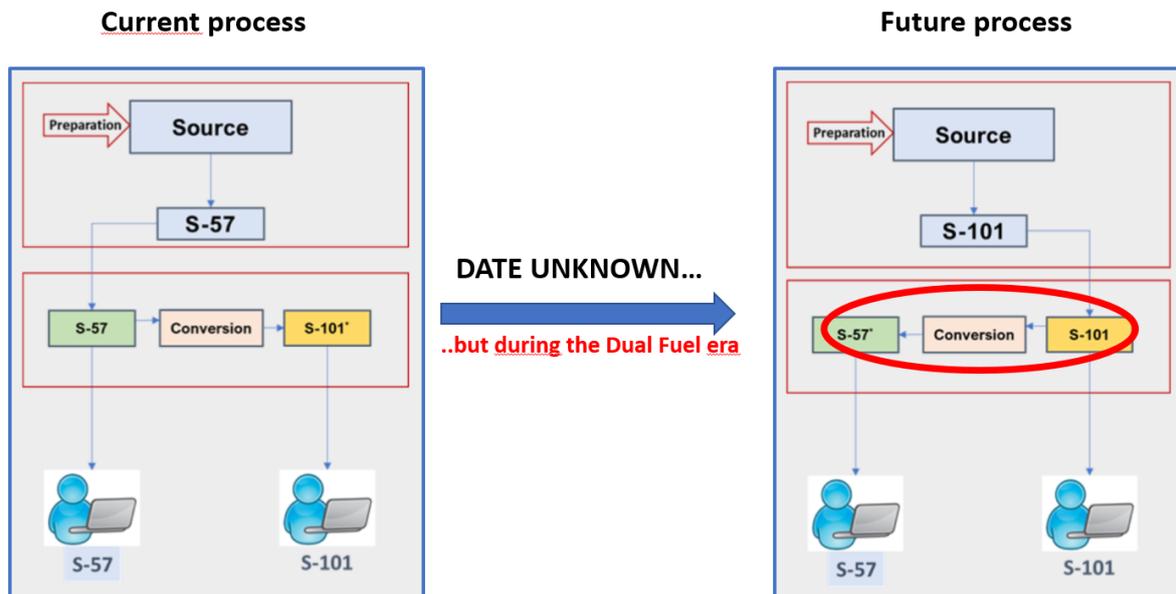
Analysis/Discussion

During the Dual Fuel period, both S-57 and S-100 ECDISs will be available for ship navigation under SOLAS. S-100 ECDIS will have a Dual Fuel mode that will allow them to load and display S-57 and S-101 ENCs indifferently. HOs will gradually add S-101 ENCs to their portfolios, but will still have to provide S-57 ENCs worldwide for those vessels that are not equipped yet with S-100 ECDIS.

HOs will organize their S-101 production according to their own strategy and in line with their production tools and internal process. In terms of data conversion from S-57 to S-101, the “S-57 to S-101 Conversion Guidance” document (which is submitted to HSSC14 for endorsement) will guarantee consistency between the different converters on the market while being an essential source of information for HOs for the understanding of the conversion and the unavoidable preparation of their S-57 data for the best (i.e. as automated as possible and with the minimum of post conversion cartographic intervention) conversion.

At some point during the Dual Fuel period, some (if not all) HOs will have converted their S-57 databases and/or products in S-101 and will be producing native S-101 ENCs. Yet, they will still have to offer equivalent S-57 ENCs for those SOLAS ships that will not yet be equipped with an S-100 ECDIS. Consequently, a reliable converter from S-101 to S-57 will be required.

The illustrations below are based on Presentation WENDWG12-04.4A on the Dual Fuel Concept and reflect the shift that HOs will have to operate in their production process during the Dual Fuel period.



As there is no one to one equivalence between S-57 and S-101 data models (including allowable attribute values) there is a need to set the conversion rules for:

- The conversion tool providers, so that:
 - o they follow the same conversion rules and consequently that the result cells are consistent across all Member States;
 - o any conversion issue is identified and a response provided in an IHO documentation;
 - o the converted S-57 ENC's are conformant as regards to S-58 validation checks.
- The Member States, so that:
 - o they have a document that will explain the conversion rules;
 - o they can easily understand the data model differences between S-101 and S-57;
 - o they can complete the document and customize the conversion with respect to their national encoding requirements (NINFOM and NTXDSC ¹attributes typically).

Hereafter, a few considerations on what this potential work should address:

- Elaboration of a “S-101 to S-57 Conversion Guidance” document, that could be based on the same structure than the S-101 DCEG;
- The conversion of S-101 data to S-57 ENC should probably be a *minima*², that is the S-57 ENC will be safe for navigation and will conform to the S-58 validation checks, but will be different from native S-57 ENC in terms of encoding;
- There should be no preparation of S-101 data necessary before conversion to S-57;
- The national encoding practices may not be retained by the converters (the level of customization should be reduced to the strict minimum);
- It should be planned to test the “S-101 to S-57 Conversion Guidance” document, possibly via the IHO Singapore Innovation Lab, to ensure that resulting ENC's are safe and conformant to the standards;
- It is advised to wait for the endorsement of S-101 edition 1.1.0 and some feedback from the “S-57 to S-101 Conversion Guidance” document to effectively start this work. By the way, it might be interesting to test the retro-conversion of these “S-101 non-native ENC's” to S-57 ENC in order to benchmark the outcome with the native S-57 ENC.

¹ NINFOM and NTXDSC are textual attributes populated in the national language of the Data Producer country.

² As an example, the S-57 meta-object M_HOPA has no equivalent in S-101. Any instance of this object will not be converted in S-101 and consequently the « back-converted » S-57 ENC will not contain the instance that is present in the native S-57 ENC.

Conclusions

The elaboration of an “*S-101 to S-57 Conversion Guidance*” document is certainly a work that needs to be done to ensure consistent S-57 encoding and safety of navigation during the Dual Fuel period, not necessarily in sequential mode after the S-57 to S-101 Conversion Guidance is completed (as in general it evolves constantly and takes time to become mature) but from now, in a parallel pathway as both developments will benefit to each other.

Recommendations

It is proposed to add the elaboration of an “*S-101 to S-57 Conversion Guidance*” document as a new work item assigned to the ENCWG (Conversion Sub-Group).

Action Required of [HSSC] [Relevant HSSC WG]

The HSSC is invited to:

- a. discuss this paper
- b. agree with the recommendation
- c. take any necessary additional action