

Paper for Consideration by TSMAD and DIPWG

Addition of new objects to the Skin of the Earth

Submitted by:	France (SHOM)
Executive summary:	This paper shows how, in S-101, new objects could be added to “the skin of the earth”, and explores the consequences on various documents of the standard.
Related Documents:	S-101 Electronic Navigational Chart Product Specification S-101 Data Classification and Encoding Guide S-58 Recommended ENC validation Checks
Related Projects:	S-101

Introduction / Background

In S-57, lakes, rivers, canals, lock basins and dock areas (objects LAKARE, RIVERS, CANALS, LOKBSN and DOCARE) are only used to encode non navigable waters and do not belong to the group 1 (the “skin of the earth”). Consequently, ENC producers must encode an underlying group 1 object: LNDARE or UNSARE. This is not a “natural” encoding (as it does not conform with the real world).

During TSMAD27, France suggested that these five objects be moved into the Skin of the earth. It was agreed (action 21, ref 4.5.2A) that France would present a paper at TSMAD28, in which both the encoding and the portrayal would be examined.

Analysis/Discussion

- Current situation

Due to the fact that LAKARE, RIVERS, CANALS, LOKBSN and DOCARE are not part of the Skin of the Earth in S-57, the UOC makes it compulsory to encode an underneath Group 1 object (LNDARE or UNSARE). These objects are only used to encode non navigable waters.

In S-52, RIVERS, CANALS, LOKBSN and DOCARE are objects of Display base level, while LAKARE is of Standard level.

This encoding is not optimal for the following reasons:

- ✓ The encoding using LNDARE or UNSARE proposed in S-57 is a work around which should be removed from S101.
- ✓ The object catalogue characterizes a land area as “a solid portion of the Earth's surface” A basin, a river, a lake or a canal, which are perfectly distinguishable from the “land”, do not match with this definition. It is thus not “natural” to have a LNDARE on such objects.
- ✓ Similarly, UNSARE should ideally only be used to encode unsurveyed areas. A dock area (e.g an inner harbour) which is not navigable at compilation scale is a maritime area that is generally perfectly surveyed.

- ✓ The current S-57 encoding may also lead to absurd situations. For instance, where a point LNDARE is encoded over an LNDARE of type area (that covers a RIVERS object). This situation does not trigger any Warning in S-58 because the work around has been included into test 55: “Check that no line or point LNDARE object is situated within a LNDARE object of type Area, except for cases where it is covered by a LAKARE, RIVERS, DOCARE, LOKBSN or CANALS object.”
- ✓ SCAMIN can be used for the objects LAKARE, RIVERS, CANALS, LOKBSN and DOCARE, so the encoder must be aware that the coast line may be distorted as they could be removed from the display and LNDARE tint may appear in inner harbours or in river mouths.

- Proposed encoding

SHOM proposes adding LAKARE, RIVERS, CANALS, LOKBSN and DOCARE to the list of group 1 objects. This would have various implications on S-101 documents, although the encoding would not change much as regard to S-57 (only no LNDARE or UNSARE would have to be encoded as underneath objects).

- ✓ Impact on DCEG

DCEG would have to be changed to take into account the new encoding prescription.

For example:

5.4.1 Land area

Land areas that are never covered by the sea must be encoded using the feature **Land Area**. **Land Area** features of type surface are part of the Skin of the Earth.

~~Rivers, canals, lakes, basins and docks, which are not navigable at the maximum display scale for the ENC data, must be encoded on top of **Land Area** or **Unsurveyed Area** features (see clause X.X).~~

5.6.1 Rivers (see S-4 – B-353)

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If it is required to encode a river that is not navigable at the maximum display scale for the ENC data, it must be done using **River, covered by a **Land Area** or **Unsurveyed Area** feature. The name of the river should be encoded using the complex attribute **feature name** on the **River** feature.**

- ✓ Impact on portrayal

If these objects are included into Group 1, SCAMIN will not apply and they will always display.

- ✓ Impact on S-58

Quite an important amount of tests would have to be modified among which all those that mention “Group1”

Conclusions

SHOM proposes to take benefit of S-101 to get rid of the work arounds that are present in S-57. The encoding of LNDARE or UNSARE as group 1 objects on non navigable areas is not satisfactory.

Action Required of TSMAD and DIPWG

The TSMAD and DIPWG are invited to:

- Note this paper
- Discuss SHOM's proposal
- Decide if further investigation has to be undertaken