8th ENC WG MEETING

S-101 Attribute Nature of Construction "Latticed" in Geo Feature Beacon Special Purposes General

Submitted by:	Pushidrosal
Executive Summary:	Proposed consideration to obtain an automatic encoded value Latticed for the Nature of Construction Attribute on the Beacon Special Purposes General Geo Feature when converting S-57 to S-101.
Related Documents:	S-57 Appendix B.1 Annex A (UOC Edition 4.3.0), S-65 Annex B Edition 1.1.0.
Related Projects:	S-57 to S-101 Conversion

Agenda 5.6

Lombok, Indonesia 25 - 29 September 2023

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The BCNSPP (P) object class in S-57 will be converted into a Beacon Special Purpose General (P) in S-101 Geo Feature. One of the changes to the Beacon Special Purpose General in S-101 Geo feature from BCNSPP object class in S-57 is the removal of encoding value "Lattice beacon" in the Beacon shape Attribute and it becomes an Attribute value of Nature of construction.

> The S-101 attribute **nature of construction** includes the new enumerate value *11* (latticed). This information is encoded in S-57 on **BCNSPP** using the mandatory attribute BCNSHP value *4* (lattice beacon), which is not an allowable value for the mandatory attribute **beacon shape** in S-101. Data Producers will be required to evaluate their converted S-101 data and populate **beacon shape** with an appropriate allowable value.

S-65 Annex B S-57 ENC to S-101 Conversion Guidance Edition 1.1.0

Acronym: **BCNSHP**   Code: **2**

Attribute type: E

Expected input:

ID	Meaning	INT 1	M-4
1	stake, pole, perch, post	IQ 90;	456.1;
2	withy	IQ 92;	456.1;
3	beacon tower	IQ 110;	456.4;
4	lattice beacon	IQ 111;	456.4;
5	pile beacon		
6	cairn	IQ 100;	456.2;
7	buoyant beacon	IP 5	459.1-2;

S-57 Appendix A, Chapter 2: Attribute Catalogue, BCNSHP

To find out the results of the conversion of the Beacon shape and Nature of construction attributes on the S-101, several converter software's are used. Trial conversion using all existing software is not intended to compare the advantages of each software, but only as a tool to find out the possible conversion results.

ENC, tools and conversion methods used:

- ENC Band 4: MS4BR2JS ed. 10 up. 13, Compilation Scale: 45.000;
- Converter: ArcGIS Pro 3.0.3 within S-101 FC 1.0.2; Caris S-57 Composer 4.1 within S-101 FC 1.0; dan dKart S-101 Converter 1.0 within S-101 FC 1.0.2.;
- Validation: 7Cs Analyzer Version 4.2.0 Build 3, Reference: S-101 ENC Validation Checks, Ed. 1.0.0;
- Display: KHOA S-100 Viewer version 1.0.17
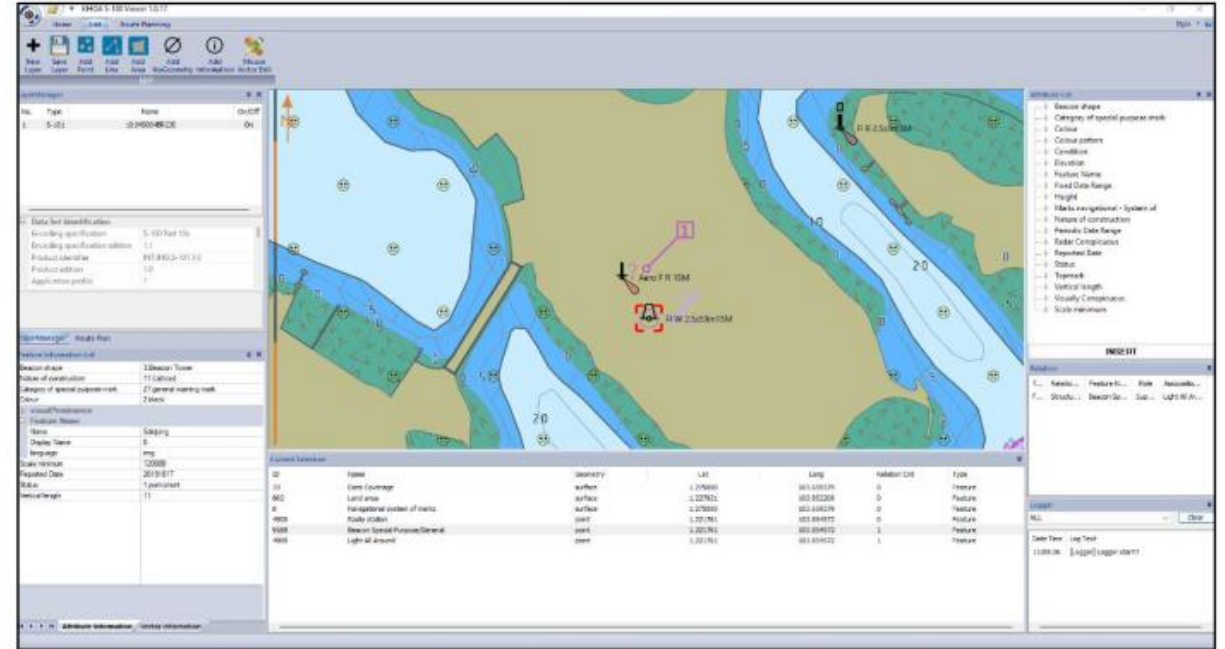
In this conversion, FC version 1.0.2 is still used, where it is known that version 1.1.0 has now been released, but this version is still considered relevant because there are no changes to the Beacon Special Purpose section from version 1.0.2 to 1.1.0

From the conversion results using several software's mentioned above, it can be seen that two of the three softwares showed a critical error due to the mandatory attribute Beacon shape attribute was not filled in. This happens because BCNSHP = "4. Lattice" is no longer an attribute option for the Beacon shape on S-101, instead of Nature of construction Attribute which is an empty value.

Object: 100/3336 (2010, 1570694289, 20) **OffshorePlatform**
Categories: Attribute
Message: Mandatory attribute **waterLevelEffect** is missing from **OffshorePlatform**.
Suggested Solution: Add missing mandatory attribute. Leave value empty if unknown.

References:
S-101 ENC Validation Checks, Ed. 1.0.0, check 507

The other software does not show any critical errors because it is automatically fills the Beacon shape attribute with the encoded value of Pile beacon, even though in fact Pile beacon is not an appropriate value to replace Lattice beacon, but rather Beacon tower.

However, according to the IHO definition, a Beacon tower is a structure with a height (VERLEN) of 10 meters or more. Therefore, changing the default value of Pile Beacon to Beacon Tower on S-101 must be done manually.

Note: BCNSHP = 4 (lattice) depreciated in S-101. Encoding moved to Nature Of Construction. Beacon Shape set to '5 (pile)' by default, consider if '3 (tower)' may be appropriate for this feature.

Number of Objects: 3
(Select All)

Untranslatable FOID (BeaconSpecialPurposeGeneral)
Untranslatable FOID (BeaconSpecialPurposeGeneral)
Untranslatable FOID (BeaconSpecialPurposeGeneral)

3) **beacon tower**

IHO Definition: A solid structure of the order of 10 metres in height used as a navigational aid. (S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.5, November 2000).
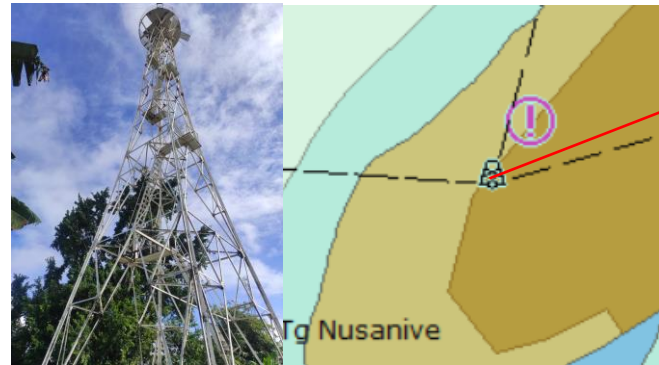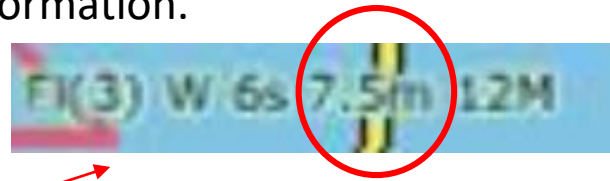
International Hydrographic Organization
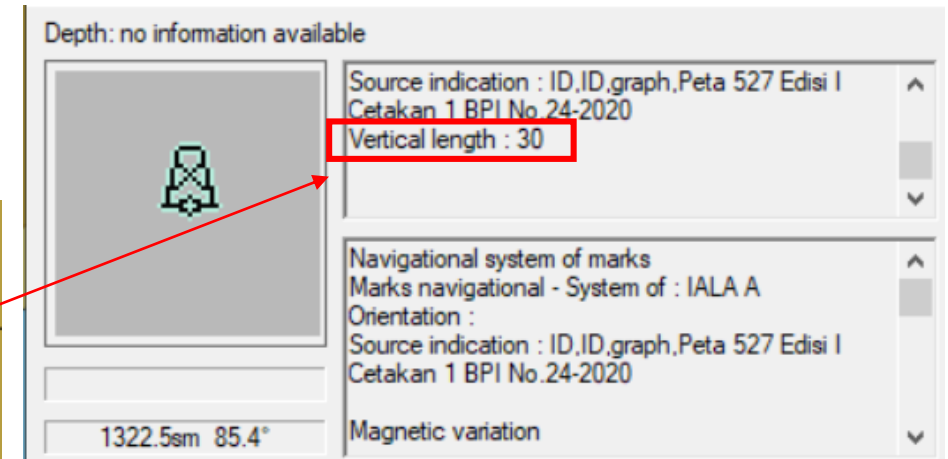
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- this will be quite a lot of cartographic work considering that in Indonesia there are huge numbers of BCNSPP within BCNSHP = "Lattice Beacon" which have varying heights above 10 m or less than 10 meters.

- automatic filling during conversion not only makes it easier to load ready conversion workload but also avoids missing-information.

Lattice beacon with Height less than 10 meters.

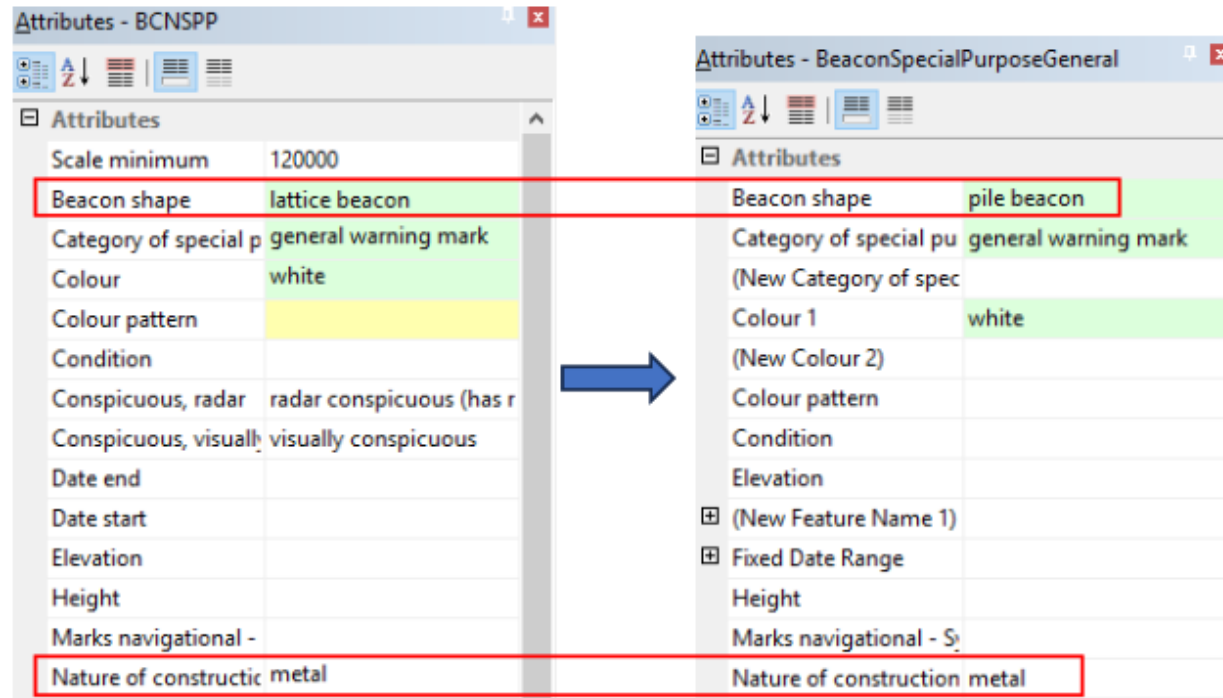Lattice beacon with Height above 10 meters.

IHO PROBLEM

If on S-57 there is a BCNSPP with "Lattice Beacon" and it has a NATCON value, for example "Metal", then after the conversion to S-101, latticed information does not move automatically to NATCON

Lattice information has missing, so its not possible to filter the "latticed" BCNSHP which is converted into a "Pile beacon" to be converted to a "Beacon tower" manually.

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- The loss of lattice information due to changes to the Nature of construction will increase the conversion workload and feature encoding errors may occur.

- If it is not possible to keep the Lattice beacon as the encoded value of the BCNSHP attribute in the Beacon Special Purpose General attribute as encoded on S-57,

- then alternatively, it is recommended to carry out the conversion automatically.

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To keep the Lattice beacon as the encoded value of the Beacon shape attribute in the Special Purpose General Beacon feature, in other words, latticed will not an encoded value in the Nature of construction. This solution will make conversion easier because cartographers do not need to fill in the Beacon shape in the S-101 feature manually.

Acronym: **BCNSHP**   Code: **2**

Attribute type: E

Expected input:

ID	Meaning	INT 1	M-4
1 :	stake, pole, perch, post	IQ 90;	456.1;
2 :	withy	IQ 92;	456.1;
3 :	beacon tower	IQ 110;	456.4;
4 :	lattice beacon	IQ 111;	456.4;
5 :	pile beacon		
6 :	cairn	IQ 100;	456.2;
7 :	buoyant beacon	IP 5	459.1-2;

S-57 Appendix A, Chapter 2: Attribute Catalogue, BCNSHP

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Based on the definition of Beacon tower, it is recommended to automatically convert BCNSHP Lattice to Beacon tower by considering the VERLEN value in BCNSPP.

- If VERLEN ≥10 meters, it will be automatically converted into a "Beacon Tower".

- If VERLEN <10 meters, it will be automatically converted into "Pile beacon".

3) **beacon tower**

IHO Definition: A solid structure of the order of 10 metres in height used as a navigational aid. (S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.5, November 2000).

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Based on the multiplicity type according to DGEG 1.1.0 on the Nature of construction attribute, it is recommended that the Latticed Attribute shall not loss when converting to S-101.

For example,

if a latticed BCNSPP has NATCON "Metal" on S-7, it will be converted automatically to Beacon Tower with Nature of construction "Metal", and "Latticed" on S-101, this will make it searchable or filterable for any amendments.

| nature of construction | (NATCON) | 1 : masonry
2 : concreted
6 : wooden
7 : metal
8 : glass reinforced plastic
11 : latticed | EN | 0,* |

ACTION Required of ENCWG

The ENCWG8 is invited to:
- discuss the paper.
- consider the recommendations.
- decide on the next steps forward.