



# 8th<sup>th</sup> Meeting of the IHO ENC Working Group

## **S-57 ENC UOC Changes and ENC Encoding Bulletins**

### **Agenda Item 05.9**



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# ENC ENCODING BULLETINS

International  
Hydrographic  
Organization

- ENC EB65/FAQ46 – Duplicate RCNM\_RCID combinations .

## EB65 Duplicate RCNM\_RCID Combinations

A potential ECDIS anomaly has been identified in cases where the record identifier NAME (concatenation of the RCNM and RCID subfields) has been used more than once in any dataset (Base dataset (EN) file and all subsequent Update (ER) files) applicable to a single Edition of an ENC.

**Encoders are advised, therefore, that reusing the record identifier NAME (concatenation of the RCNM and RCID subfields) must be avoided. This issue is normally not identified until the data has been issued via a service provider. Where this occurs, Data Producers must release the ENC as a New Edition; and should contact their production software providers to provide a permanent solution.**

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## Question 46

***Can the record identifier NAME (concatenation of the RCNM and RCID subfields) be used more than once to identify a record in a dataset?***

No. See ENC Encoding Bulletin number 65.

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# ENC ENCODING BULLETINS (2)

International  
Hydrographic  
Organization

- ENC EB66/FAQ47 – Too many values in RESTRN.
  - Note final paragraph of EB66 – no intention to apply changes to the UOC.

## EB66 Objects with 7 or more values populated for attribute RESTRN

An ECDIS issue has been identified in some ECDIS, causing the machine to crash when attempting to load ENC datasets (EN or ER) containing Objects having 7 or more values populated for the List type attribute RESTRN. This problem occurs for all Object Classes except for **RESARE** and **NEWOBJ**.

**Encoders are advised, therefore, to limit the number of values populated for a single instance of the attribute RESTRN to a maximum of 6, with preference being given to those that have the greatest impact on navigational safety and environmental protection. If it is considered necessary to encode additional RESTRN values, these should be populated using the attribute INFORM, for example *Additional restrictions: fishing restricted; diving prohibited*, on the same Object instance that carries RESTRN.**

**This issue is normally not identified until the data has been issued via a Service Provider. Where this occurs, Data Producers must apply the appropriate changes and release the ENC as a New Edition.**

**This action is needed in the short term to minimise the risk of some ECDIS crashing when attempting to load an ENC dataset. Data Producers will be notified when the issue has been rectified and this Encoding Bulletin will be cancelled.**

## Question 47

### *Can a List type attribute be populated with too many values?*

There is no maximum allowable number of values that can be populated for a List type attribute in the S-57 Standard; however some ECDIS may crash if more than 6 values have been populated for the attribute **RESTRN**. See ENC Encoding Bulletin number 66.

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# UOC CHANGES

International  
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- Clarification to clause 2.1.3 (Sounding datum) to reflect that soundings can be stored in groups:

If the sounding datum for an area is different to the value given in the SDAT subfield for the data set, it must be encoded using **M\_SDAT**. The areas covered by these [meta](#) objects must not overlap.

Meta object: Sounding datum (**M\_SDAT**) (A)  
Attributes: **VERDAT** **INFORM** **NINFOM**

The use of the attribute **VERDAT** on individual objects related to depth (for example **DEPARE**, **DEPCNT**, **DRGARE**, **OBSTRN**, **SOUNDG**, **UWTROC**, **WRECKS**) is prohibited.

[Sounding groups, depth](#) contours and depth areas going across areas having different values of sounding datum must be split at the border of those areas.

## 2.1.4 Units

The depth, height and positional accuracy units in a data set must be metres. They must be given in



**Teh Stand** January 25, 2023

Refer to email from Christian 12/01/23. Change made to be consistent with 5-58 Check 1512a and 5-101 DCEG clause 3.8.1. This change will also add consistency to the ENC conversion process.

Reply

Resolve

**Teh Stand** January 25, 2023

Deleted: **Depth**



# IHO UOC CHANGES (2)

International Hydrographic Organization

- Correction to clause 2.2.7.1 (Table 2.5, sample SCAMIN policy) - ARCSLN erroneously listed as type Line and Area; missing ASLXIS:

A.14 Use of the Object Catalogue for ENC

OBJECT	PRIMITIVE	CONDITION	SCAMIN STEPS
ACHARE	Point/ Area		2
ACHARE	Point/Area	If RESTRN defined	3
ACHBRT	Point/Area		1
ADMARE	Area		3
AIRARE	Point/Area	If CONVIS = 1 (visually conspicuous)	3
AIRARE	Point/Area		1
<del>ARCSLN</del>	<del>Area</del>		<del>4</del>
<u>ASLXIS</u>	<u>Line</u>		<u>4</u>
BCNCAR	Point		3 (see Notes 2, 3 & 4 above)

 **Teh Stand**  
Refer email from Christian 18/04/23.

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**Teh Stand** April 19, 2023  
**Deleted:** ~~Line/~~



# IHO UOC CHANGES (3)

International Hydrographic Organization

- Clarification to clause 4.6.2 (Berths) - Berths of type line will not display berth name/number if encoded coincident with SLCONS:

## 4.6.2 Berths (see S-4 – B-321, B-321.6-9 and B-410.1)

If it is required to encode a berth, it must be done using the object class **BERTHS**.

Geo object: Berth (BERTHS) (P,L,A)

Attributes: DATEND DATSTA

DRVAL1 - minimum depth at the berth.

NOBJNM OBJNAM - name or number of the berth.

PEREND PERSTA QUASOU SOUACC STATUS VERDAT

INFORM - maximum draft permitted at the berth (for example *Maximum draft permitted = 14 metres*).

NINFOM

Remarks:

- The berth encodes the named place where a vessel can be moored adjacent to a shoreline construction. The shoreline construction itself should be encoded using the object class **SLCONS** (see clause 4.5.2).
- Where BERTHS are encoded coincident (that is, share the geometry) of a SLCONS or COALNE object, the berth symbol and associated name/number of the berth will not display in ECDIS. This is due to S-52 display priorities and resultant display rendering draw order. Where it is considered important that the name/number of the berth is displayed, the BERTHS should be encoded using alternate (point or area) geometry; or by encoding the BERTHS using slightly offset, parallel line geometry.
- Landing places for boats should be encoded as small craft facilities (see clause 4.6.5).



**Teh Stand**

Refer to email from Jani 08/08/23 and reply from Hannu 09/08/23.



# IHO UOC CHANGES (4)

International Hydrographic Organization

- Clarification to clause 5.3 (Soundings) – Redundant sentence related to triggering of ECDIS alarms when soundings shoaler than safety depth are populated with EXPSOU = 2:

A sounding associated with a rock or coral pinnacle which is an obstruction to navigation must be encoded using the object class UWTRC (INT1 – K14) with attribute VALSOU populated with the value of the sounding.

The geometry of soundings is held in a 3 dimensional array (latitude, longitude, depth). In the interests of efficiency, multiple soundings should be encoded in one spatial object, provided that all the spatial and geo object attributes are common to the group.

As the sounding multiplication factor (SOMF) for ENC is always 10, soundings must only be encoded to one decimal place of a metre. Drying soundings must be indicated by a negative value.

For soundings surrounded by a danger line, see clause 6.3.

**NOTE:** Use of the attribute EXPSOU indicates whether the “value of sounding” is within or not within the range of depth of the surrounding depth/dredged area. This allows a SOUNDG object having a shoaler “value of sounding” than the depth/dredged area in which it lies, to be encoded on an ENC. The object class SOUNDG is not included in the list of SENC information to be displayed in either the Base Display or the Standard Display modes on the ECDIS unless requested by the operator through menu selection. Therefore soundings shoaler than a vessels safety depth, as set on the ECDIS, will not be displayed when using the Base Display or Standard Display settings.

It is therefore strongly advised not to use the attribute EXPSOU = 2 (shoaler than the range of depth of the surrounding depth area) for SOUNDG objects. Where a sounding is encountered that is shoaler than the range of depth of the surrounding depth/dredged area, encoders are strongly advised to conduct further investigation of source material in order to encode additional depth contour and depth area information more relevant to the sounding. Alternatively, encoders should consider using an alternate object class from SOUNDG (for example OBSTRN – see clause 6.2.2) to encode the depth. For additional guidance on encoding shoal depths in dredged areas, see clause 5.5.

Hi Tom (and others),

this is a question I've been asking myself for some time now: "Do ECDIS systems trigger an alarm on spot soundings with EXPSOU=2?"

Reading S-52 PL §10.5.9, this seems clear to me:

SOUNDG	EXPSOU=2 and VE3D subfield< = safety contour value	POINT
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Yet, in the UOC § 5.3, we still have this :

*"NOTE: Use of the attribute EXPSOU indicates whether the “value of sounding” is within or not within the range of depth of the surrounding depth/dredged area. This allows a SOUNDG object having a shoaler “value of sounding” than the depth/dredged area in which it lies, to be encoded on an ENC. The object class SOUNDG is not included in the list of SENC information to be displayed in either the Base Display or the Standard Display modes on the ECDIS unless requested by the operator through menu selection. Therefore soundings shoaler than a vessels safety depth, as set on the ECDIS, will not be displayed when using the Base Display or Standard Display settings. In addition, there is no guarantee that the ECDIS anti-grounding system will detect such soundings either in route planning or passage monitoring modes. This may result in a potential hazard to navigation being undetected by the mariner or the system in use."*



Teh Stand

Refer to email from Christian 31/03/23.

Teh Stand March 31, 2023

**Deleted:** In addition, there is no guarantee that the ECDIS anti-grounding system will detect such soundings either in route planning or passage monitoring modes. This may result in a potential hazard to navigation being undetected by the mariner or the system in use.



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# UOC ISSUES RAISED

International Hydrographic Organization

- Clause 2.2.7.1 (Table 2.5, sample SCAMIN policy) - Amend SCAMIN step for light support from 3 to 4 (new Table entry):

LNDARE	Point/Line/Area		NOT SET
LNDELV	Point	If CONVIS = 1 (visually conspicuous)	3
LNDELV	Point/Line		1
LNDMRK	Point/Line/Area	If CONVIS = 1 (visually conspicuous) or CONRAD = 1 (radar conspicuous) or FUNCTN contains value 33 (light support)	3
LNDMRK	Point/Line/Area		1
LNRGN	Point/Area		1
LOCMAG	Point/Line/Area		3



**Teh Stand**

Consider splitting out light support to step 4 – telecom  
10/03/22 with Richard.



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# OUTSTANDING ISSUES

International Hydrographic Organization

- Action ENCWG7/40: New EB for dangerous cargo berths.

05.3	Dangerous Cargo Berths	ENCWG7/40	ENC EB Sub-Group to develop an ENC Encoding Bulletin for indicating dangerous cargo berths in S-57 ENCs.	December 2022	
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## EB67 UOC Clause 4.6.2: Berths

Clause 4.6.2 of Edition 4.3.0 (October 2022) of the *Use of the Object Catalogue for ENC (S-57 Appendix B1, Annex A)* provides guidance for the encoding of berths. IHO Publication S-4 – *Regulations of the IHO for International (INT) Charts and Chart Specifications of the IHO*, clause B-321.8 provides guidance for the depiction of berths intended for particular purposes, including berths for the loading or unloading of dangerous or hazardous cargo.

**Encoders are advised that if it required to encode a berth designated for the loading/unloading of dangerous or hazardous cargo, this must be done by encoding a BERTHS object, with the attribute INFORM populated with a standardized text string, for example *Dangerous or hazardous cargo*.**



### FAQ

#### Question 48:

#### *How do I encode a dangerous or hazardous cargo berth?*

This must be done, where required, using a BERTHS feature with attribute INFORM indicating the purpose of the berth. See ENC Encoding Bulletin number 67.

ENCWG, Lombok, Indonesia, 25-26 September 2023



- Action ENCWG7/43: New EB for defining bridge types as opening or closing.

05.4	Transporter Bridge Clearance	ENCWG7/43	ENC EB Sub-Group to develop an ENC Encoding Bulletin describing different attribute values for CATBRG as fixed or opening.	April 2023
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FAQ

Question 49:

How do I determine the appropriate attribute combinations to encode (opening and closing) for bridges based on the category of the bridge (CATBRG)?

See ENC Encoding Bulletin number 68.

- Impacts on S-58:

1799	For each BRIDGE feature object where VERCCL or VERCOP are Known AND CATBRG is Not equal to 2 (opening bridge) OR 3 (swing bridge) OR 4 (lifting bridge) OR 5 (bascule bridge) OR 7 (draw bridge).	BRIDGE object has values of VERCCL or VERCOP without appropriate value of CATBRG.	Ensure appropriate value of CATBRG is populated for BRIDGE object.	Logical consistency	W
1800	For each BRIDGE feature object where VERCLR is Known AND CATBRG is Equal to 2 (opening bridge) OR 3 (swing bridge) OR 4 (lifting bridge) OR 5 (bascule bridge) OR 7 (draw bridge).	VERCLR populated for BRIDGE object with an inappropriate value of CATBRG.	Ensure appropriate value of CATBRG is populated.	Logical consistency	W

RejsePC Deleted: OR 8 (transporter bridge).

RejsePC Deleted: OR 8 (transporter bridge).

EB68 UOC Clause 4.8.10: Bridges

Clause 4.8.10 of Edition 4.3.0 (October 2022) of the Use of the Object Catalogue for ENC (S-57 Appendix B1, Annex A) provides guidance for the encoding of bridges, including the mandatory encoding of attribute combinations for fixed and opening bridges (attributes VERCLR, VERCCL and VERCOP). However, there is currently no guidance related to the encoding of the attribute CATBRG (mandatory over navigable waters) and the defining of these categories of bridges as fixed or opening (values CATBRG = 1 and 2). This has resulted in some confusion by encoders as to the intended encoding combinations that should be applied for each of the bridge categories.

Encoders are advised that the following are the encoding combinations that should be used for defining the different categories of bridges as fixed and opening:

CATBRG	Value	Fixed/Opening	Attributes
1	fixed bridge	Fixed	CATBRG = 1; VERCLR
2	opening bridge	Opening	CATBRG = 2; VERCCL; VERCOP
3	swing bridge	Opening	CATBRG = 2,3; VERCCL; VERCOP
4	lifting bridge	Opening	CATBRG = 2,4; VERCCL; VERCOP
5	bascule bridge	Opening	CATBRG = 2,5; VERCCL; VERCOP
6	pontoon bridge	Fixed *	CATBRG = 1,6; VERCLR
7	draw bridge	Opening	CATBRG = 2,7; VERCCL; VERCOP
8	transporter bridge	Fixed **	CATBRG = 1,8; VERCLR
9	footbridge	Fixed	CATBRG = 1,9; VERCLR
10	viaduct	Fixed	CATBRG = 1,10; VERCLR
11	aqueduct	Fixed	CATBRG = 1,11; VERCLR
12	suspension bridge	Fixed	CATBRG = 1,12; VERCLR

\* A pontoon bridge may be considered to be an opening bridge if a section of the pontoon is periodically moved to allow for the passage of vessels.

\*\* The height of the gantry for a transporter bridge must be populated, if required, using VERCLR. If it is required to encode the clearance height of the moving transporter platform, this must be done by populating the attribute INFORM; for example, Transported clearance height = 6.2 metres.



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# OUTSTANDING ISSUES (3)

International  
Hydrographic  
Organization

- Action S-101PT10-03: Population of POSACC and SOUACC on soundings and underwater hazards < 30 metres in S-57 ENC's – guidance to be included in the UOC?
  - Intended to facilitate S-57 to S-101 conversion. Could this be done through interpretation of the underlying M\_QUAL?

S-101PT10-03	DCEG Sub-Group Update	Submit a Paper to the ENCWG proposing that guidance is included in the S-57 UOC on encoding the spatial attributes (POSACC and SOUACC) on the S-57 Objects corresponding to the mandation of the population of these attributes on S-101 Features.	IHO Sec	New Action	For ENCWG8.	
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## OUTSTANDING ISSUES (4)

International  
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- ENC conversion: Multiple text strings included in INFORM – standard separator.
  - In order to facilitate automatic conversion of S-57 object instances to the corresponding S-101 feature instance (and vice-versa) where new attributes have been included in S-101 to reduce the requirement to encode information in INFORM.
  - For example:
    - **BERTHS:** INFORM = *Maximum permitted draft = 14 metres* -> **Berth:** maximumPermittedDraught = 14
    - **BERTHS:** INFORM = *Dangerous or hazardous cargo berth* -> **Berth:** categoryOfCargo = 7 (dangerous or hazardous)
  - INFORM = *Dangerous or hazardous cargo berth; Maximum permitted draft = 14 metres*
- Candidates: ; \_ % # ( ) \$ @ ...?
- Possible breaking of “200 character” rule?



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# DEVELOPMENT OF NEW VERSION OF UOC?

- Last publication date October 2022.
- Is it time to look at a new Clarification/Revision version?

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ENCWG, Lombok, Indonesia, 25-26 September 2023



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## ACTIONS REQUESTED OF ENCWG

International  
Hydrographic  
Organization

- **Discuss** the draft changes made in the DCEG.
- **Consider** the draft Encoding Bulletins 67 and 68.
- **Agree** on a way forward for guidance in the UOC on the population of the attributes POSACC and SOUACC.
- **Agree** on a standard separator for discrete text strings to be populated in INFORM to facilitate ENC conversion
- **Discuss** whether it is required to develop a new version (clarification or revision) of the UOC.
- **Initiate** further action as required.



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**THANK YOU**

ENCWG, Lombok, Indonesia, 25-26 September 2023