

Paper for Consideration by ENCWG5 Proposed Revision of S-58

Submitted by:	ENCWG S-58SubWG
Executive Summary:	This paper proposes a number of new S-58 checks and the existing S-58 checks.
Related Documents:	S-58 edition 6.1.0, ENCWG4-5.8, ENCWG4-5.11, ENCWG4-5.13A, ENCWG4-5.13B, ENCWG4-5.17, ENCWG4-5.22, ENCWG4-5.25
Related Projects:	-

Introduction / Background

This document includes a number of proposals to revise S-58 that have originated from RENCs, OEMs, Member states and ENCWG4.

Discussion

Proposed changes in red

Check 19

Proposal from AHO (see ENCWG5-11E)

The AHO is of the idea that this validation check should be upgraded to an ERROR because it 'may degrade the quality of the ENC through appearance' (refer to s-58 section 1.2 Check Classification).

19	For each edge which is COINCIDENT with the data limit borders (i.e. limits of M_COVR with CATCOV is Equal to 1 (coverage available)) where USAG is Not equal to 3 (exterior boundary truncated by the data limit)	Edge coincides with the data limit and USAG does not equal 3 (exterior boundary truncated by the data limit).	Amend edge to USAG = 3 (exterior boundary truncated by the data limit).	Part 3 (4.7.3.3)	WE
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Check 44

Proposal from Nautical Dimensions

The current check 44 triggers when the DRVAL1 or DRVAL2 of a DEPARE (apart from the shallowest and deepest found in the cell) contains a value that is not equal to the value of VALDCO on a DEPCNT feature object found within the cell.

Some producers encode DRVAL1 with the shallowest depth within a shoal. For example, a shoal with DRVAL1 = 4.6 and DRVAL2 = 5. The values of VALDCO are 0, 2, 5, 10, ...

S-57 Appendix B.1 Annex A (Use of the Object Catalogue) 5.4.3 states the following :-

For each depth area of type area, DRVAL1 and DRVAL2 should be encoded with the values corresponding to the shallowest and deepest depths in that area. These values, except for the shallowest and deepest areas, should be chosen from the values of the depth contours encoded in the data set.

and specifically for shoals:

5. If the depth area is bounded by only one depth contour, contains no soundings, and is a shoal:

- DRVAL1 should take the value of the data set depth contour immediately shallower than the value of the depth contour, or -H.
- DRVAL2 should take the value of the depth contour.

So check 44 holds for shoals with no soundings, however if one or more soundings are present, a non-VALDCO DRVAL1 can be used.

Propose

- splitting existing check 44 into three checks and
- add the following definition :-

shoal - a DEPARTURE that represents a local shallow area bounded by a single depth contour

44	For each DRVAL1 or DRVAL2 value (except the shallowest and the deepest found in the ENC) for a DEPARTURE feature object which is not Equal to a value of VALDCO on DEPCNT feature objects found in the ENC.	The value of DRVAL1 or DRVAL2 is different from one of the values of VALDCO found in the ENC.	Amend value of DRVAL1 or DRVAL2 so that it equals a value of VALDCO.	Logical consistency	W
44a	For each DEPARTURE feature object where the value of DRVAL2 (except the deepest found in the ENC) is Not equal to a value of VALDCO in the dataset.	The value of DRVAL2 is different from one of the values of VALDCO found in the ENC.	Amend value of DRVAL2 so that it equals a value of VALDCO.	Logical consistency	W
44b	For each shoal where the value of DRVAL1 is not Equal to the value of VALDCO in the dataset immediately shallower than the value of VALDCO of the bounding DEPCNT AND is Not equal to the shallowest encoded depth WITHIN the DEPARTURE AND is not Equal to -H	The value of DRVAL1 does not correspond to one of the expected values	Amend value of DRVAL1 so that it equals either the shallowest depth or the next shallower contour value or -H	Logical consistency	W
44c	For each DEPARTURE feature object that is not a shoal where the value of DRVAL1 is Not equal to a value of VALDCO in the dataset AND is Not equal to -H	The value of DRVAL1 does not correspond to one of the expected values	Amend value of DRVAL1 so that it equals a value of VALDCO or -H	Logical consistency	W

Check 54a, 54b and 54c

Proposal from IC-ENC – (see ENCWG4-05.17)

We are seeing a number of instances across multiple producers where DAYMAR objects are situated on a MORFAC. With the implementation of the Critical checks we will have to fail these cells and make producers make the DAYMAR a master or encode another structure object. However it seems logical that MORFAC (with appropriate values of CATMOR 1,2 or 5) is added to checks 54a and 54b. As it seems a logical structure object for a DAYMAR.

Justifications are as follows;

- MORFAC is included in the list of structure objects at 12.1.1 of the UOC.

- MORFAC (of the appropriate CATMOR) display in BASE display according to S-52 Preslib 4.0.2.

Arguably, given the values of CATMOR a MORFAC may just be a pile with a specific purpose, PILPNT is allowable in checks 54a, b and c.

54a	For each FORSTC, LNDMRK or SILTNK feature object which is not COVERED_BY a BRIDGE, COALNE, DAMCON, FLODOC, HULKES, LNDARE, MORFAC (CATMOR 1,2 or 5) , OFSPLF, PILPNT, PONTON, PYLONS, SLCONS or UWTRC feature object.	FORSTC, LNDMRK or SILTNK not covered by a suitable supporting object.	Amend object to ensure it is situated on a suitable object.	Logical consistency	C
54b	For each DAYMAR feature object which is not a slave in a master/slave relationship AND is not COVERED_BY a BRIDGE, COALNE, DAMCON, FLODOC, HULKES, LNDARE, MORFAC (CATMOR 1,2 or 5) , OFSPLF, PILPNT, PONTON, PYLONS, SLCONS or UWTRC feature object.	DAYMAR not covered by a suitable supporting object.	Amend object to ensure it is situated on a suitable object.	Logical consistency	C
54c	For each BUISGL or CRANES feature object which is not COVERED_BY a BRIDGE, COALNE, DAMCON, FLODOC, HRBFAC, LNDARE, MORFAC (CATMOR 1,2 or 5) , OFSPLF, PILPNT, PONTON, PYLONS or SLCONS feature object.	BUISGL or CRANES not covered by a suitable supporting object.	Amend object to ensure it is situated on a suitable object.	Logical consistency	W

Check 54b & 1775

Proposal from AHO (see ENCWG5-11F & ENCWG4-05.17)

Check 61b

Proposal from AHO (see ENCWG5-11A)

The existence of 'always underwater' objects within an UNSARE or DRGARE should not be reported as an ERROR. The existence of, for example, UWTRC, WATLEV=3 within unsurveyed areas is fairly common and the existence of features such as foul ground obstructions within dredged areas, although maybe not that common, cannot be ignored. Hence, reporting a Validation error message in these scenarios produce a number of 'false positives' that have a negative impact on the confidence users allocate to error messages.

The AHO proposes amending the wording of S-58's 'Check Description' and 'Check Message'

61b	For each feature object of geometric primitive point where WATLEV is Equal to 3 (always underwater/submerged) which is not COVERED_BY a DEPRE feature object where DRVAL2 is Greater than 0	Point object where WATLEV = 3 (always underwater/submerged) is not covered by a suitable depth-area object .	Amend value of WATLEV.	Logical consistency	E
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	AND is not COVERED_BY a DRGARE OR UNSARE feature object OR is COVERED_BY a LNDARE feature object of geometric primitive point or line.				
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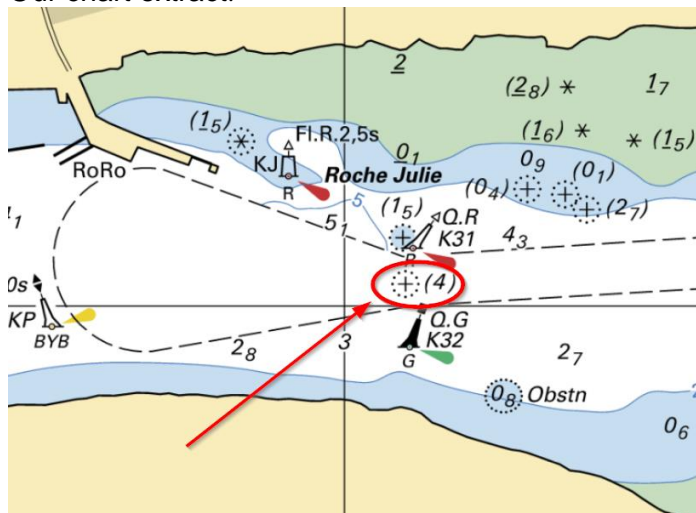
The solution proposed by the AHO aims reducing the number of 'erroneous messages' reported by this check by expanding the objects listed in the 'is not COVERED_BY' section of the check.

Check 61b

Proposal from SHOM

I have a proposal to improve S58 check 61b which triggers an Error when an UWTRC (and surely other objects) with WATLEV=3 are encoded on a DRGARE.

Our chart extract:



61b	For each feature object of geometric primitive point where WATLEV is Equal to 3 (always underwater/submerged) which is not COVERED_BY a DEPARE feature object where DRVAL2 is Greater than 0 AND is not COVERED_BY a DRGARE feature object OR is COVERED_BY a LNDARE feature object of geometric primitive point or line.	Point object where WATLEV = 3 (always underwater/submerged) is not covered by a suitable depth area.	Amend value of WATLEV.	Logical consistency	E
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Check 94

Proposal from Nautical Dimensions

Clarification is required for Check 94 which has been interpreted in two different ways by validation software.

1. It should only be triggered when all of the entries of an updated FSPT field are the same as that of the base dataset. I have not seen an example of this in production data.
2. It should be triggered when at least one of the entries of an updated FSPT field are the same as that of the base dataset. This occurs more frequently where the update is produced by CARIS or ESRI software (and possibly others).

Comment check 94 should only check for situation where the entire FSPT within an update is identical to the existing FSPT, also downgrade to "W" as this would only be duplication

94	For each ER file feature object record that which contains instructions for the FSPC field to modify an FSPT field whose field values are all equal to the field values of the original FSPT field. of a feature object to a value it already contains.	ER file contains instructions to modify an FSPT field to a value it already contains. Feature object update record contains a redundant FSPT field.	Remove irrelevant FSPC field from ER file.	Logical consistency	EW
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Check 502

Proposal from AHO (see ENCWG5-11D)

Proposal to increase the maximum permissible size of both S-57 EN and ER files and amend S-58 checks as follows:-

502	If the cell file size is greater than 5 AND less than OR equal to 10 Megabytes.	The cell is larger than 5Mb but less than or equal to 10Mb in size	Ensure that the cell is not larger than 5Mb.	2.2 Appendix B.1, Annex A (2.1.7)	E
502a	If the cell file size is greater than 10 Megabytes	The cell is larger than 10Mb in size.	Ensure that the cell is not greater than 10Mb	Appendix B.1, Annex A (2.1.7)	
502b	If the ENC Update file size is greater than 50 AND less than OR equal to 200 Kilobytes.	The ENC Update is larger than 50Kb but less than or equal to 200Kb in size.	Ensure that the cell is not larger than 50Kb.	Appendix B.1, Annex A (2.1.7)	E
502b	If the ENC Update file size is greater than 200 Kilobytes.	The ENC Update is larger than 200Kb in size.	Ensure that the cell is not larger than 200Kb.	Appendix B.1, Annex A (2.1.7)	C

Check 505

Proposal from Nautical Dimensions

Check 505 for M_NSYS isn't currently triggered as an error in the validation software when M_NSYS exists within the data (albeit without MARSYS). This is because check 505 doesn't specify that M_NSYS has to have MARSYS encoded.

The reference for the check, ENC Product Specification 3.4, does however include the extra requirement for MARSYS:- *The meta object M_NSYS with the attribute MARSYS (to indicate the system of navigational marks) must also provide an exhaustive non-overlapping coverage of the part of the cell containing data.*

505	If either M_COVR, M_NSYS where MARSYS is notNull or M_QUAL meta objects do not exist within the data set.	Mandatory feature objects are missing.	Include mandatory feature objects M_COVR, M_NSYS and M_QUAL.	3.4	C
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Check 507, 508 and 509b

Proposal from AHO (ENCWG5-11A)

When an object (e.g. BCNxxx) has the attribute COLOUR populated with more than one value there is an expectation that the attribute COLPAT 'is Present' (has a meaningful value or is null (255)). According to section 3.5.2 (incl. 1.C0.21) of the ENC PS, the attribute COLPAT is mandatory for any object (except LIGHTS) that has more than one colour. This statement makes existing Validation tools report a CRITICAL ERROR when this requirement is breached (see S-58 Check 507). Once COLPAT is populated with a 'Null' value, the CRITICAL ERROR message disappears and is replaced by an ERROR (see S-58 Check 508a) instead. Considering that having the attribute COLPAT unpopulated or encoded with a 'Null' value does not affect ECDIS display or performance, the AHO would like the ENCWG to consider the following changes to the following S-58 Checks:

- Check 507 – Remove 'COLPAT is not Present' from the check's logic. This would avoid this situation being reported as CRITICAL (An error which could make an ENC unusable in ECDIS through not loading; or causing an ECDIS to crash; or presenting data which is unsafe for navigation).
- Check 508a – Amend as per table below.
- Check 508b – No change.
- Add new check (508c ?) – WARNING - Amend as per table below or swap 508b and 508c around..

507	If any mandatory attributes are not Present.	Mandatory attributes are not encoded.	Populate mandatory attributes (If unknown encode attribute with empty value).	3.5.2 and Supplement No.3 Ch.4 (3.5.2.1)	C
508a	For each feature object (excluding LIGHTS) where more than one value of COLOUR is encoded AND COLPAT is not Present OR is Null .	COLOUR has multiple values without a value for COLPAT.	Ensure COLPAT has a value where multiple COLOUR values are encoded.	3.5.2 and Logical consistency	E
508b	For each feature object where COLPAT is notNull AND COLOUR is Null OR only has one value.	COLPAT is populated without multiple COLOUR values.	Ensure multiple COLOUR values are populated or remove COLPAT value.	3.5.2 and Logical consistency	E
508c	For each feature object (excluding LIGHTS) where more than one value of COLOUR is encoded AND COLPAT is Null.	COLOUR has multiple values without a meaningful value for COLPAT	Review source information and allocate a meaningful value for COLPAT	Logical consistency	W

Check 519

Proposal from Navico

The message and solution wording for check 519a requires amendment

519a	If the combined coverage of all DEPART, DRGARE, FLODOC, HULKES, LNDARE, PONTON and UNSARE feature objects is Not equal to the combined coverage of all M_COVR meta objects where	Skin of the earth (Group1) objects do not cover equal the data coverage (M_COVR = 1).	Amend to ensure Group1 coverage and M_COVR with CATCOV = 1 are equal	3.10.1	C
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	CATCOV is Equal to 1 (coverage available).				
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Check 548

Proposal from Navico
Propose adding a new check for overlapping M_COVR feature objects

548a	If the combined coverage of M_COVR meta objects is Not equal to the cell extents.	Cell not entirely covered by M_COVR objects.	Edit M_COVR coverage to match cell extents.	3.4	C
548b	For each M_COVR meta object that OVERLAPS or is COVERED_BY another M_COVR meta object.	Cell contains overlapping M_COVR objects	Amend M_COVR objects to		

Check 551a

Proposal from PRIMAR (see ENCWG4-05.13A)
As S-57 Formatting characters are prohibited it is proposed to re-classify from 'Error' to 'Critical'

551a	If text attribute values use (C0) characters (C0 as defined in S-57 Part 3, Annex B)..	C0 characters used in text attribute values.	Correct text attribute values.	3.5.5 and Part 3 Annex B	EC
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Check 555

Proposal from PRIMAR (see ENCWG4-05.13B)

Based on experience there are instances where the incorrect ordering of data records has less significance. Propose splitting check 555 as follows:-

555	If the order of the data in a base or update file is not correct.	Incorrect data order.	Amend data order	6.1.1	C
555a	If the order of the data in a base or update file is not correct, except for when: 1. isolated nodes (SG2D) are listed before isolated nodes (SG3D) or 2. connected nodes are listed before isolated nodes (SG3D) or 3. connected nodes are listed before isolated nodes (SG2D) or 4. meta features are listed before a geo features	Incorrect data order.	Amend data order	6.1.1	C
555b	If the order of the data in a base or update file is such that: 1. isolated nodes (SG2D) are listed before isolated nodes (SG3D) or 2. connected nodes are listed before isolated nodes (SG3D) or 3. connected nodes are listed before isolated nodes (SG2D) or 4. meta feature are listed before a geo feature.	Incorrect data order.	Amend data order	6.1.1	E

Check 1512a

Proposal from PRIMAR (see ENCWG4-05.13A)

The spatial operator CROSSES only apply Line/Line and Line/Area relationships (ref S-58 6.1.0, chapter 2.4 Geometric Operator Definitions). A SOUNDG feature is neither a Line nor an Area. We propose to amend the check description accordingly to:

551a	For each SOUNDG feature object which CROSSES OR TOUCHES a M_SDAT meta object	SOUNDG object intersects boundary of a M_SDAT object.	Split SOUNDG object at boundary of M_SDAT object.	2.1.3	E
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Check 1637

Proposal from AHO – (see ENCWG4-05.22)

1637	For each PYLONS feature object of geometric primitive area where WATLEV is Equal to 1 (partly submerged at high water) OR 2 (always dry) OR 6 (subject to inundation or flooding) which is not COVERED_BY a LNDARE feature object of geometric primitive area.	PYLONS object with WATLEV = 1, 2 or 6 not covered by a LNDARE object.	Ensure PYLONS object is covered by a LNDARE object.	4.8.18	E
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Check 1657, 1663 and 1669

Proposal from Nautical Dimensions

Inconsistent use of terminology

Checks 1663 uses the term Undefined. Not Present should be used instead.

Checks 1663 and 1669 use the term Any value. S-58 doesn't provide a definition for Any value and it is used inconsistently. Based on the UOC 6.1.2 and 6.2.2, Any value for TECSOU and SOUACC implies that they may be encoded at the discretion of the encoder.

"A blank indicates that the encoder may choose a relevant value for the attribute."

In other uses of Any value, e.g. WRECKS with VALSOU not Present, Any value for CATWRK implies Present, since CATWRK is mandatory when VALSOU is not Present.

Proposal

I propose that Any value be replaced with a blank cell or Present, as appropriate.

Check 1657

Proposal from Nautical Dimensions

For each UWTRC feature object where the values of VALSOU, QUASOU, WATLEV, TECSOU and SOUACC are not as defined in the table below (additional values may be encoded).

When QUASOU is not present, the check expects that both TECSOU and SOUACC are encoded with a value (notNull). The UOC 6.1.2 doesn't seem to mandate this. Contrast this with checks 1663 and 1669 (for WRECKS and OBSTRN) where TECSOU and SOUACC can be "any value" when QUASOU is not present. Is "any value" the same as notNull, or does it include "not Present" and "Null" as well?

1657	For each UWTRC feature object where the values of VALSOU, QUASOU, WATLEV, TECSOU and SOUACC are not as defined in the table below (additional values may be encoded).		Possible illogical attribute values for UWTRC object.	Amend to logical attribute combination for UWTRC object.	6.1.2	W
	VALSOU	QUASOU	WATLEV		TECSOU SOUACC	
	unknown	2 OR not Present		3, 4, 5 OR 5unknown	Not Present	
		2 OR not Present		unknown	Not Present	
	< 0	1, 3, 4, 6, 8, 9 OR not Present		4	notNull	
7		4	Not Present			

Note: FOR REASONS OF ECONOMY, DELEGATES ARE KINDLY REQUESTED TO BRING THEIR OWN COPIES OF THE DOCUMENTS TO THE MEETING

0	1, 3, 4, 6, 8, 9 OR not Present	5	notNull
	7	5	Not Present
> 0	1, 3, 4, 6, 8, 9 OR not Present	3	notNull
	7	3	Not Present

Check 1663

Proposal from Nautical Dimensions

The following changes are proposed.

For TECSOU and SOUACC, change Any value to blank.

Based on the terminology changes proposed above, change Undefined to not Present.

Change CATWRK Any value to Present when VALSOU is not Present. This is because CATWRK is mandatory when VALSOU is not encode.

Change HEIGHT Any value to blank, indicating the use of HEIGHT is optional.

Change CATWRK Any value to blank when VALSOU is Present, indicating that the use of CATWRK is optional.

Don't allow VALSOU Unknown for WATLEV = 1 or 2. This doesn't make sense. VALSOU should be not Present and CATWRK should be Present.

1663	For each WRECKS feature object where the attribute values do not correspond to the table below.		WRECKS object with illogical attribute combination.	Amend attributes in accordance with the logical values defined in the table.	6.2.1	W
	VALSOU	WATLEV	CATWRK	QUASOU	HEIGHT	TECSOU SOUACC
Undefined not Present		3 OR Null	1, 2, 3 OR Null	2 OR not Present	not Present	not Present
		4 OR 5	Any value Present	2 OR not Present	not Present	not Present
		1 OR 2	4, 5 OR Null	not Present	Any value	not Present
Unknown		3 OR Null	1, 2, 3 OR not Present	2 OR not Present	not Present	not Present
		4 OR 5	Any value	2 OR not Present	not Present	not Present
		1 OR 2	4, 5 OR not Present	not Present	Any value	not Present
< 0		4	Any value	7	not Present	not Present
		4	Any value	1, 3, 4, 6, 8, 9 OR not Present	not Present	Any value
0		5	1, 2, 3 OR not Present	7	not Present	not Present
		5	Any value	1, 3, 4, 6, 8, 9 OR not Present	not Present	Any value
> 0		3	1, 2, 3 OR not Present	7	not Present	not Present
		3	1, 2, 3 OR not Present	1, 3, 4, 6, 8, 9 OR not Present	not Present	Any value

Check 1669

Proposal from Nautical Dimensions

The following changes are proposed.

Add the line where VALSOU is not Present and HEIGHT is Present (first line highlighted in blue).

This is because

S-57 Maintenance Document Number 8 states that VALSOU is only mandatory when HEIGHT is not encoded.

Object Class		Attributes				
OBSTRN	WATLEV	At least one of:	VALSOU	HEIGHT		

- Don't allow VALSOU *Unknown* for WATLEV = 1 or 2. This doesn't make sense. VALSOU should be *not Present*.
- For TECSOU and SOUACC, change *Any value* to blank, indicating that the use of TECSOU/SOUACC is optional.

1669	For each OBSTRN feature object where the attribute values do not correspond to the table below.		OBSTRN object with illogical attribute value combinations.	Amend attributes in accordance with the logical values defined in the table.	6.2.2	E
	VALSOU	WATLEV	QUASOU	TECSOU SOUACC	HEIGHT	
	<i>not Present</i>	1 OR 2	<i>not Present</i>	<i>not Present</i>	<i>Any value</i>	
	Unknown	3, 4, 5 OR Null	2 OR not Present	not Present	not Present	not Present
		1-OR-2	<i>not Present</i>	<i>not Present</i>	<i>not Present</i>	<i>Any value</i>
	< 0	7	not Present	not Present	not Present	not Present
		4	1, 3, 4, 6, 8, 9 OR not Present	<i>Any value</i>	<i>Any value</i>	not Present
	0	4	7	not Present	not Present	not Present
		5	1, 3, 4, 6, 8, 9 OR not Present	<i>Any value</i>	<i>Any value</i>	not Present
	> 0	3	1, 3, 4, 6, 8, 9 OR not Present	<i>Any value</i>	<i>Any value</i>	not Present
3		7	not Present	not Present	not Present	

Check 1670

Proposal from Dk

The current wording of check 1670 only references point WRECKS & OBSTRNS within area WRECKS and OBSTRNs however the wording in the UOC states "The area enclosed by the danger line must be encoded using WRECKS or OBSTRN objects of type area, with the attribute values, when encoded, reflecting the characteristics of the shallowest point object encoded in the area. The area must also be covered by DEPARE or UNSARE objects as appropriate. "

1670	For each WRECKS or OBSTRN feature object of geometric primitive area which COVERS a WRECKS or OBSTRN feature object of geometric primitive point AND where the values of EXPSON, QUASOU, SOUACC, VALSOU and WATLEV of the area feature object are Not equal to the values of EXPSON, QUASOU, SOUACC, VALSOU and WATLEV values of the shallowest point feature object WITHIN the area.	Point WRECKS or OBSTRN object within Attributes of area WRECKS or OBSTRN object have attribute values not reflected for the area do not reflect the attributes of the shallowest point object within the area.	Ensure area WRECKS or OBSTRN object attribute values reflect the values of the shallowest point object.	6.3.2	W
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Check 1687

Proposal from SHOM

We have experienced an error with check 1687 on the an ENC where a TSEZNE coincides with an ISTZNE and a single TWRTPT (may be because TWRTPT is not in the list of objects in UOC §10.2.3).

The last bullet of §10.2.6 of UOC states that a two-way route can be included with a TSS to comprise a complet traffic routing system

I would suggest amending this check to include the situation described.

1687	For each TSEZNE feature object which is not COINCIDENT with two or more TSSLPT feature objects OR at least one TSSLPT feature object and one ISTZNE feature object OR a TSSRON feature object OR an ISTZNE and a TWRTPT.	TSEZNE does not separate appropriate TSS objects.	Amend TSEZNE to separate appropriate objects.	10.2.1.4	E
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NB, other feature objects could fit this scenario e.g DWRTPT & RCTLPT

Check 1722a

Proposal from Nautical Dimensions

Should this check only be raised when a candidate for a master is available? For example, a LIGHTS feature on a LNDARE where there are no structure features encoded.

1722a	For each navigational aid equipment feature object covered by a LNDARE(excluding a LIGHTS feature object with VALNMR Greater than or equal to 10) which is not a master AND is not a slave to a navigational aid structure object OR another navigational aid equipment object.	Equipment object which is not a slave of a structure object or another equipment object.	Amend equipment object to slave.	12.1.2 and 12.1.1	W
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Propose adding additional check for isolated navigational aid equipment features:-

1722c	For each RETRFL, RTPBCN OR TOPMAR which is not a slave to a navigational aid structure feature object.	Isolated Equipment object which is not a slave of a structure object.	Encode suitable structure feature object and create master/slave relationship	12.1.2 and 12.1.1	W
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Check 1768

Proposal from DK

In order to display the depth of a DRGARE to the mariner many HO's encode a sounding equal to the dredged depth within the area, this however trigger check 1768.

1768	For each SOUNDG feature object where the depth value is Less than or equal to the DRVAL1 of the DEPARE or DRGARE feature object it is WITHIN AND DRVAL1 of that feature object is notNull.	SOUNDG object with depth less than or equal to the DRVAL1 value of the underlying DEPARE or DRGARE object.	Amend bathymetry accordingly.	5.3	E
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We propose splitting check1768 into two separate checks one for DEPARE and another for DRGARE

1768a	For each SOUNDG feature object where the depth value is Less than or equal to the DRVAL1 of the DEPARE feature object it is WITHIN AND DRVAL1 of that feature object is notNull.	SOUNDG object with depth less than or equal to the DRVAL1 value of the underlying DEPARE object.	Amend bathymetry accordingly.	5.3	E
1768b	For each SOUNDG feature object where the depth value is Less than the DRVAL1 of the DRGARE feature object it is WITHIN.	SOUNDG object with depth less than the DRVAL1 value of the DRGARE object.	Amend bathymetry accordingly.	5.3	E

Check 1772b

Proposal from PRIMAR (see ENCWG4-05.13A)

The check solution column erroneously mentions DRGARE instead of UWTRC. We propose amend the check solution to:

1772b	For each UWTRC feature object where VALSOU is notNull AND EXPSOU is Equal to 1 (within the range of depth of the surrounding depth area) OR not Present AND VALSOU is Less than or equal to DRVAL1 OR Greater than DRVAL2 of the DRGARE feature object it is COVERED_BY AND DRVAL2 is notNull AND Not equal to DRVAL1.	VALSOU for UWTRC object with EXPSOU = 1 (within the range of depth of the surrounding depth area) or not present is outside the depth range of the underlying DRGARE object.	Populate appropriate value of EXPSOU for DRGARE UWTRC object.	6.1.2	E
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Check 1775

Proposal from AHO (see ENCWG5-11F)

Check 1795a & 1795b

Proposal from Nautical Dimensions

The AHO have an encoding example of an OFSPLF master with DATSTA of 20191011. The OFSPLF has a LIGHTS slave, but the LIGHTS feature does not have DATSTA encoded. This is a problem, since the OFSPLF will not display on an ECDIS until 20191011, but the LIGHTS feature will display before then.

Strictly speaking, this won't be reported under check 1795a, since the DATSTA of LIGHTS is not notNull and is not less than the DATSTA of the OFSPLF.

Check 1795a states: For each feature object which is a slave in a Master to Slave relationship AND where DATSTA or PERSTA attributes are notNull AND the values of DATSTA OR PERSTA are Less than the values of DATSTA OR PERSTA encoded on the master object.

However, it is the opinion of the AHO and myself that the intent of check 1795a is to report on the above example. From UOC 2.1.5: all other component objects within the relationship must not extend beyond the temporal attribute values encoded.

I.e. where there is no DATSTA for the slave, the temporal value is implicitly extended beyond the DATSTA of the master.

Proposal

Add the following four checks.

1795a	For each feature object which is a slave in a Master to Slave relationship AND where DATSTA or PERSTA attributes are notNull AND the values of DATSTA OR PERSTA are Less than the values of DATSTA OR PERSTA encoded on the master object.	Temporal attributes on a slave object extend beyond those on the master object.	Populate appropriate temporal attributes on master/slave objects.	2.1.5	C
1795b	For each feature object which is a slave in a Master to Slave relationship AND where PEREND OR DATEND attributes are notNull AND the values of PEREND OR DATEND are Greater than the values of PEREND OR DATEND encoded on the master object.	Temporal attributes on a slave object extend beyond those on the master object.	Populate appropriate temporal attributes on master/slave objects.	2.1.5	C
1795c	For each feature object which is a slave in a Master to Slave relationship AND where DATSTA is notNull on the master object AND DATSTA is Not Present or Null on the slave object.	DATSTA not encoded for slave of a master feature where DATSTA exists.	Populate temporal attribute DATSTA on slave objects to match the master feature object	2.1.5	C

1795d	For each feature object which is a slave in a Master to Slave relationship AND where PERSTA is notNull on the master object AND PERSTA is Not Present or Null on the slave object.	PERSTA not encoded for slave of a master feature where PERSTA exists.	Populate temporal attribute PERSTA on slave objects to match the master feature object	2.1.5	C
1795e	For each feature object which is a slave in a Master to Slave relationship AND where DATEND is notNull on the master object AND PEREND is Not Present or Null on the slave object.	DATEND not encoded for slave of a master feature where DATSTA exists.	Populate temporal attribute DATEND on slave objects to match the master feature object	2.1.5	C
1795f	For each feature object which is a slave in a Master to Slave relationship AND where PEREND is notNull on the master object AND PEREND is Not Present or Null on the slave object.	PEREND not encoded for slave of a master feature where PEREND exists.	Populate temporal attribute PEREND on slave objects to match the master feature object	2.1.5	C

Check 2000

Proposal from DK

There is an inconsistency between the allowable values of STATUS for TOPMAR and buoys and beacons.

The values 2 (Occasional) and 18 (existence doubtful) are listed as allowable for BCN***s and BOY***s but are not allowed for TOPMARs

Propose adding 2 and 18 to the allowable values of the attribute STATUS for TOPMAR

	TOPMAR	144	1-2-5-7-8-12-14-18
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Proposal from Nautical Dimensions (see ENCWG4-05.11)

It is recommended that the values for DSPM/VDAT, M_VDAT/VERDAT, the VERDAT attribute of features other than M_SDAT and the DSID.SDAT, be constrained in line with the constraints stated in the S-101 DCEG and the S101 Feature Catalogue, therefore propose the following changes to check 2000

VERDAT		185	
	BRIDGE	11	3-16-17-18-19-20-21-24-25-26-28-29-30
	CBLOHD	21	3-16-17-18-19-20-21-24-25-26-28-29-30
	CONVYR	34	3-16-17-18-19-20-21-24-25-26-28-29-30
	CRANES	35	3-16-17-18-19-20-21-24-25-26-28-29-30
	GATCON	61	3-16-17-18-19-20-21-24-25-26-28-29-30
	LIGHTS	75	3-16-17-18-19-20-21-24-25-26-28-29-30
	PIPOHD	93	3-16-17-18-19-20-21-24-25-26-28-29-30
	M_SDAT	309	1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-19-22-23-24-26-27 (#)
	M_VDAT	312	3-16-17-18-19-20-21-24-25-26-28-29-30 (#)

Note: FOR REASONS OF ECONOMY, DELEGATES ARE KINDLY REQUESTED TO BRING THEIR OWN COPIES OF THE DOCUMENTS TO THE MEETING

Proposed new checks

Check to identify where M_COVR is modified by an ER file

Proposal from UKHO (ENCWG chair)

Whilst reviewing critical error checks in S-58 we came across a mandatory requirement in S-57 that is not tested for and can cause gaps and overlaps in data. Both S101 and S57 state that M_COVR should not be modified by update. We have fallen foul of this omission from S-58 and consequently released numerous cells to market that introduced overlaps and gaps in ENC coverage.

S101 Annex A (DCEG)

"An ENC Update dataset must not change the extent of the data coverage for the base ENC cell. Where the extent of the data coverage for a base ENC cell is to be changed, this must be done by issuing a New Edition of the cell"

"All base datasets (new dataset, new edition and re-issue) must contain at least one Data Coverage feature."

S-57 UOC

"An ENC Update will be rejected by the ECDIS if it is located outside the area of data coverage for the cell (that is, area covered by the meta object M_COVR with attribute CATCOV = 1 (coverage available)) or if it changes the extent of this area. Where the area of data coverage for a base ENC cell is to be changed, this must be done by issuing a New Edition of the cell. "

I am suggesting that for the next edition of S-58 we have a new check that would pick this problem up.

1024c	For an update cell file where the extent M_COVR where CATCOV is Equal to 1 (coverage available) is not EQUAL to the extent M_COVR where CATCOV is Equal to 1 (coverage available) on base cell to which they apply.	ER file changes the extent of data coverage.	Issue as NE	Appendix B.1 Annex A 2.6)	E
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Check for SCAMIN on components of collection objects

Proposal from AHO – (see ENCWG4-05.25)

A new S-58 check (Warning) should be created to alert encoders when a 'centre point' object has not been added to the product in accordance with section 12.1.2 of the UOC.

xxxx	For each LIGHTS feature object WITHIN a LNDARE feature object, where VALNMR is Greater than or equal to 10 and CATLIT is Not equal to 1,5,6 or 16 AND SECTR1 and SECTR2 are Not Present that is Not COINCIDENT with an aid to navigation structure object.	No structure object for an omnidirectional light with a nominal range of 10 NM or more.	Encode an aid to navigation structure object coincident with the LIGHTS object	Appendix B.1 (12.1.2)	C
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Check for Master/Slave relationships

Proposal from SHOM

I suggest to create (for next edition of S-58) a new check to detect an object that would be slave and master.

I have found nothing against this in the Product Specification, but in the UOC (§12.1.2) we have:

"A slave object must not be related to more than one master object, and an object must not be both a master and a slave object."

89c	For each feature object which is slave and master.	Object which is slave and master at the same time.	Review the relationship so that there is only one master and one or more slaves.	Appendix B.1 (12.1.2)	C
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Check for SCAMIN on components of collection objects

Proposal from IC-ENC– (see ENCWG4-05.8)

An IC-ENC member has recently highlighted that there is no specific S-58 check for SCAMIN consistency on collection objects. I've therefore had a quick look into this;

The UOC includes specific guidance for range systems and routeing measures that they must have consistent values across the objects referenced (top of page 25 of the UOC).

I understand that this is part of the SCAMIN recommendations which are not mandatory, but for me an S-58 check probably as an error (possibly a warning) would seem appropriate. I don't think anything is needed for other types of collections as they are less often used by most producers anyway.

My justification for the category errors is that p[atrial display of a routeing measure or range system could be potentially confusing to the user, they may e unable to identify important features.

Obviously they can disable SCAMIN but that may be undesirable.

XXX	For each C_AGGR collection which references NAVLNE and RECTRC feature objects where the value of SCAMIN is not identical across all objects referenced.	Range system where SCAMIN values are not the same.	Amend SCAMIN values or remove SCAMIN.	UOC 2.2.7.1 and 10.1.2	E
XXX	For each C_AGGR collection object which references any of the following feature objects DWRTCL, DWRTPT, ISTZNE, PRCARE, TSELNE, TSEZNE, TSSBND, TSSCRS, TSSLPT, TSSRON where the value of SCAMIN is not identical across all objects referenced.	Routeing Measure where SCAMIN values are not the same.	Amend SCAMIN values or remove SCAMIN.	UOC 2.2.7.1 and 10.2.3	E

Check for overlapping M_VDAT objects

Proposal from NAVICO

????	For each M_VDAT meta object which OVERLAPS OR is COVERED_BY another M_VDAT meta object.	M_VDAT objects overlap.	Edit M_VDAT objects so that they do not overlap.	2.1.2	E
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Checks for constrained values of DSPM.VDAT and DSPM.SDAT

Proposal from Nautical Dimensions (see ENCWG4-05.11)

????	If the VDAT subfield of the DSPM field is not equal to 3, 16, 17, 18, 19, 20, 21, 24, 25, 26, 28, 29 or 30.	DSPM/VDAT does not refer to a high water or local datum.	Encode a legal value for VDAT.	Logical consistency	E
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????	If the SDAT subfield of the DSPM field is not equal to 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 19, 22, 23, 24, 26 or 27.	DSPM/SDAT does not refer to a low water or local datum.	Encode a legal value for SDAT.	Logical consistency	E
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????	If the SDAT subfield of the DSPM field is not equal to 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 19, 22, 23, 24, 26 or 27.	DSPM/SDAT does not refer to a low water or local datum.	Encode a legal value for SDAT.	Logical consistency	E
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Checks for illogical Intertidal areas

Proposal from Nautical Dimensions (see ENCWG4-05.11)

????	For each intertidal feature object (DEPARE feature object where DRVAL2 is Less than or equal to 0) where both the Vertical Datum and Sounding Datum of that area are Equal.	Vertical and sounding datums are the same for intertidal area.	Amend datum values so that the vertical datum is above the sounding datum.	Logical consistency	E
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????	For each intertidal feature object (DEPARE feature object where DRVAL2 is Less than or equal to 0) where both the Vertical Datum and Sounding Datum of that area are Equal to a Mean Sea Level datum (3 (Mean sea level), 19 (Approximate mean sea level) or 26 (Mean water level)).	Vertical and sounding datums are the same for intertidal area.	Amend datum values so that the vertical datum is above the sounding datum.	Logical consistency	E
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Conclusions

The inclusion of the proposed changes to S-58 will improve the clarity of the document and contribute to the identification of data that does not conform to the encoding guidelines in the UOC.

Recommendation

The S-58 SubWG invites the ENCWG to consider and accept the proposal changes checks to S-58 and initiate a revised edition for submission to HSSC.

Action Required of ENC WG

The ENCWG is invited to:

- a) Consider the proposed revisions and additional checks for inclusion in S-58.
- b) Consider the impact on the S-101 validation checks which are being developed.