9th Meeting of the IHO (S-100WG) S-101 Project Team

Changes to S-101 DCEG Edition 1.0.2

Summary Report

Agenda Item 06.1

S-101PT9, Wellington, New Zealand, 23-25 November 2022

DCEG SUB-GROUP: MEETINGS

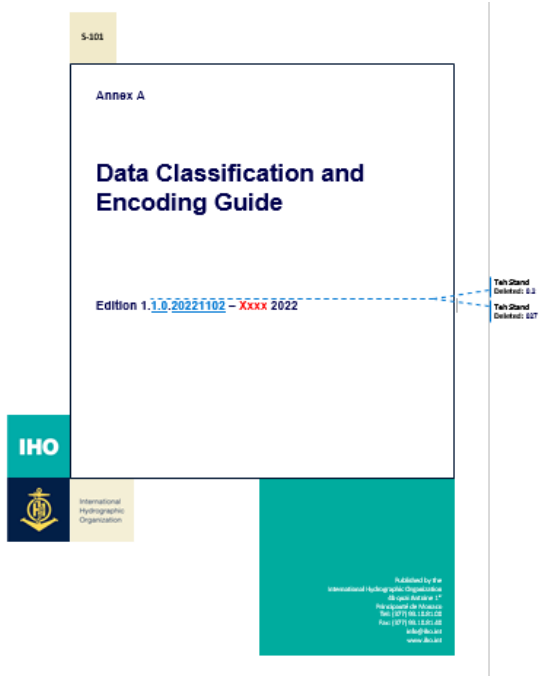
International Hydrographic Organization

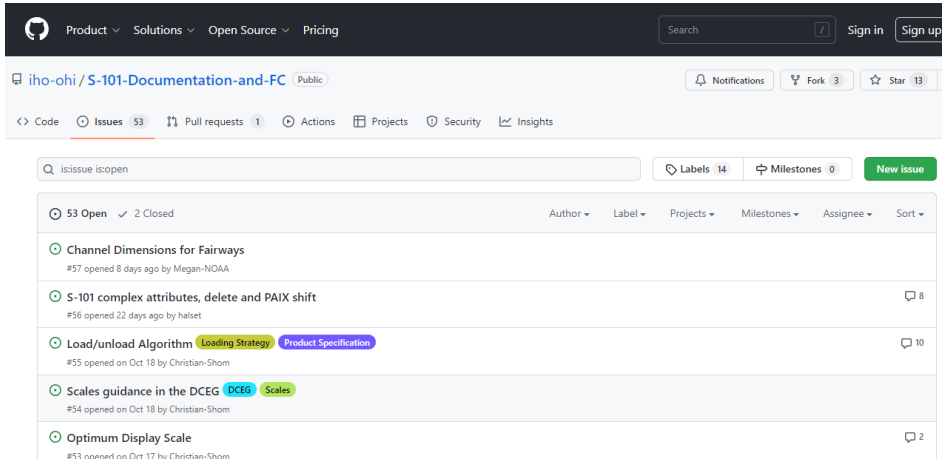
DCEG Sub-Group Meeting 05-06 October 2022

Meeting Notes

- Point out at start that lower GitHub issues to be discussed are related to issues with ECDIS portrayal as derived as actions from the Portrayal Sub-Group. Later issues are related to issues identified in the Changes spreadsheet.

Github	Issue # 47	**Flare Angle** DCEG Clause: 2.4.5.1, 30.2 Points to Note: - Suggestion (from SE) is to allow manual cartographic encoding (for example along a transit or leading line). - Current draft 1.1.0.20220929 only reflects the option to encode manually for cartographic purposes. - Corresponding changes to that shown in the GitHub made at clause 30.2. - Rename to flareBearing? If so bearing towards or away from (Note Christian comments). - Possible alternative: Additional optional feature attribute that overrides all? Discussion/Decision: - General approval of the proposed change from flareAngle to flareBearing. - After some discussion, general consensus was that the bearing to be encoded should be the bearing "away" from the light (i.e. the bearing as populated for any associated navigation line (towards the light) +/- 180. - There was no discussion on the possible alternatives provided (additional optional feature attribute; and Christian's RCDIS portrayal rule. **Action:** - **Amend DCEG to reflect change of name for flareAngle to flareBearing (IHO Sec). [Complete].** - **Supersession proposal to be submitted to Concept Register (IHO Sec). [Complete]** - **Close issue and open new issue to capture possible modelling/portrayal alternatives (IHO Sec).**
		Encoding of Dates DCEG Clause: 2.4.8, 2.4.8.1, 27.76, 27.77, 27.79 Points to Note: - Observation from NIWC that in S-100 Edition 5.0.0 encoded date ranges are inclusive. - Solves the problem for dateEnd but, for "last day in February", not for dateStart.





https://github.com/iho-ohi/S-101-Documentation-and-FC

S-101PT9, Wellington, New Zealand, 23-25 November 2022

DCEG SUB-GROUP APPROVED: ADD GEOMETRIC PRIMITIVES TO FEATURES HAVING ONLY (None)

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Within this document, allowable primitives are included in the description of each feature type. For easy reference, Table 2.1 below summarises the allowable geometric primitives for each feature type. In the Table, abbreviations are as follows: point (P), pointset (A), curve (C) and surface (S). A feature that may have no geometric primitive is annotated as none (N).

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Archipelagic Sea Lane			S	N
Deep Water Route			S	N
Fairway System			S	N
Island Group			S	N
Mooring Trot			S	N
Range System		C	S	N
Traffic Separation Scheme			S	N
Two-Way Route			S	N

- Required to provide positional information in the ECDIS for the position of textual information (names).

Remarks:

- The name of the TSS must be populated using the complex attribute **feature name**. Where it is required for the name to be displayed in the ECDIS, the **Traffic Separation Scheme** must be encoded using surface geometry. The extent of the geometry of the **Traffic Separation Scheme** should utilise the geometry of the components of the scheme so as to cover its full extent.

DCEG SUB-GROUP APPROVED: BUOY NEW DANGER MARKING -> BOUY EMERGENCY WRECK MARKING

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GEO FEATURES

Administration Area			S		Airport/Airfield	P		S	
Anchor Berth	P		S		Anchorage Area	P		S	
Archipelagic Sea Lane			S	N	Archipelagic Sea Lane Area			S	
Archipelagic Sea Lane Axis		C			Beacon Cardinal	P			
Beacon Isolated Danger	P				Beacon Lateral	P			
Beacon Safe Water	P				Beacon Special Purpose/General	P			
Berth	P	C	S		Bridge		C	S	N
Building	P		S		Built up Area	P		S	
Buoy Cardinal	P				Buoy Emergency Wreck Marking	P			
Buoy Installation	P				Buoy Isolated Danger	P			

- Structure Features: Includes **Beacon Cardinal**, **Beacon Isolated Danger**, **Beacon Lateral**, **Beacon Safe Water**, **Beacon Special Purpose/General**, **Buoy Cardinal**, **Buoy Emergency Wreck Marking**, **Buoy Installation**, **Buoy Isolated Danger**, **Buoy Lateral**, **Buoy Safe Water**, **Buoy Special Purpose/General**, **Daymark**, **Light Float**, **Light Vessel**, **Landmark**, **Pile**.
- Equipment Features: Includes **Daymark**, **Fog Signal**, **Light Air Obstruction**, **Light All Around**, **Light Fog Detector**, **Light Sectored**, **Physical AIS Aid to Navigation**, **Radar Reflector**, **Radar Transponder Beacon**, **Retroreflector**, **Signal Station Traffic**, **Signal Station Warning**.
- Navigational Aid Features: Includes **Beacon Cardinal**, **Beacon Isolated Danger**, **Beacon Lateral**, **Beacon Safe Water**, **Beacon Special Purpose/General**, **Buoy Cardinal**, **Buoy Emergency Wreck Marking**, **Buoy Installation**, **Buoy Isolated Danger**, **Buoy Lateral**, **Buoy Safe Water**, **Buoy Special Purpose/General**, **Daymark**, **Light Float**, **Light Vessel**, **Pile**.

Feature	Mandatory Attributes
GEO FEATURES	
Administration Area	jurisdiction
Archipelagic Sea Lane Area	nationality *
Archipelagic Sea Lane Axis	nationality *
Beacon Cardinal	beacon shape; category of cardinal mark; colour
Beacon Isolated Danger	beacon shape; colour
Beacon Lateral	beacon shape; category of lateral mark; colour
Beacon Safe Water	beacon shape; colour
Beacon Special Purpose/General	beacon shape; category of special purpose mark; colour
Berth	feature name
Bridge	over navigable water: **category of bridge** other cases: none
Buoy Cardinal	buoy shape; category of cardinal mark; colour
Buoy Emergency Wreck Marking	buoy shape; colour
Buoy Installation	buoy shape; colour

20.6 Emergency wreck marking buoys

IHO Definition: **BUOY, EMERGENCY WRECK MARKING**. A buoy is a floating object moored to the bottom in a particular place, as an aid to navigation or for other specific purposes. (IHO Dictionary – S-32).

An emergency wreck marking buoy is a buoy moored on or above a new wreck, designed to provide a prominent (both visual and radio) and easily identifiable temporary first response. (Adapted from UKHO NP 735, 6th Edition).

S-101 Geo Feature: Buoy Emergency Wreck Marking

Primitives: Point

Real World	*Paper Chart Symbol*	*ECDIS Symbol*

S-101 Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
buoy shape	(BOYSHP)	1 : conical 2 : can 3 : spherical 4 : pillar	EN	1,1

is apparent from reference to a chart, Sailing Directions or Notice to Mariners.

12) emergency wreck marking

IHO Definition: A mark used to indicate the existence of a recent wreck.

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DCEG SUB-GROUP APPROVED: REMOVAL OF ALLOWABLE FEATURE/GEOMETRY ENCODING COMBINATIONS

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Crane	P		S				Deleted: C

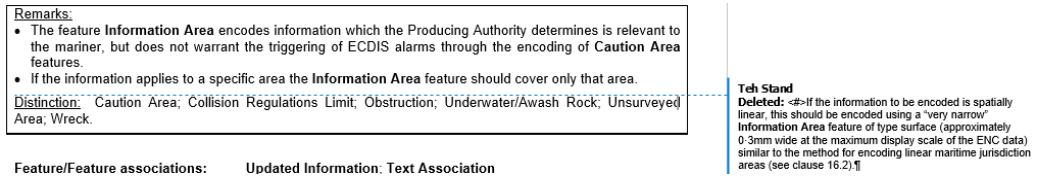
- Curve primitive removed as allowable geometric primitive for feature **Crane**.
  - Not an allowable geometric primitive for S-57 Object Class **CRANES.**
  - No use case identified.
    - Track along which a crane may run is encoded using **Railway**.

Foul Ground	P		S		Free Port Area			S			Deleted: C

- Curve primitive removed as allowable geometric primitive for feature **Foul Ground**.
  - Foul ground encoded in S-57 as **OBSTRN**. However no use case has been identified for curve primitive to be allowable for **Foul Ground** in S-101.

Information Area	P		S				Deleted: C

- Curve primitive removed as allowable geometric primitive for feature **Information Area**.
  - No use case identified.



Remarks:
- The feature **Information Area** encodes information which the Producing Authority determines is relevant to the mariner, but does not warrant the triggering of ECDIS alarms through the encoding of **Caution Area** features.
- If the information applies to a specific area the **Information Area** feature should cover only that area.

Distinction: Caution Area; Collision Regulations Limit; Obstruction; Underwater/Awash Rock; Unsurveyed Area; Wreck.

Feature/Feature associations: **Updated Information**; **Text Association**

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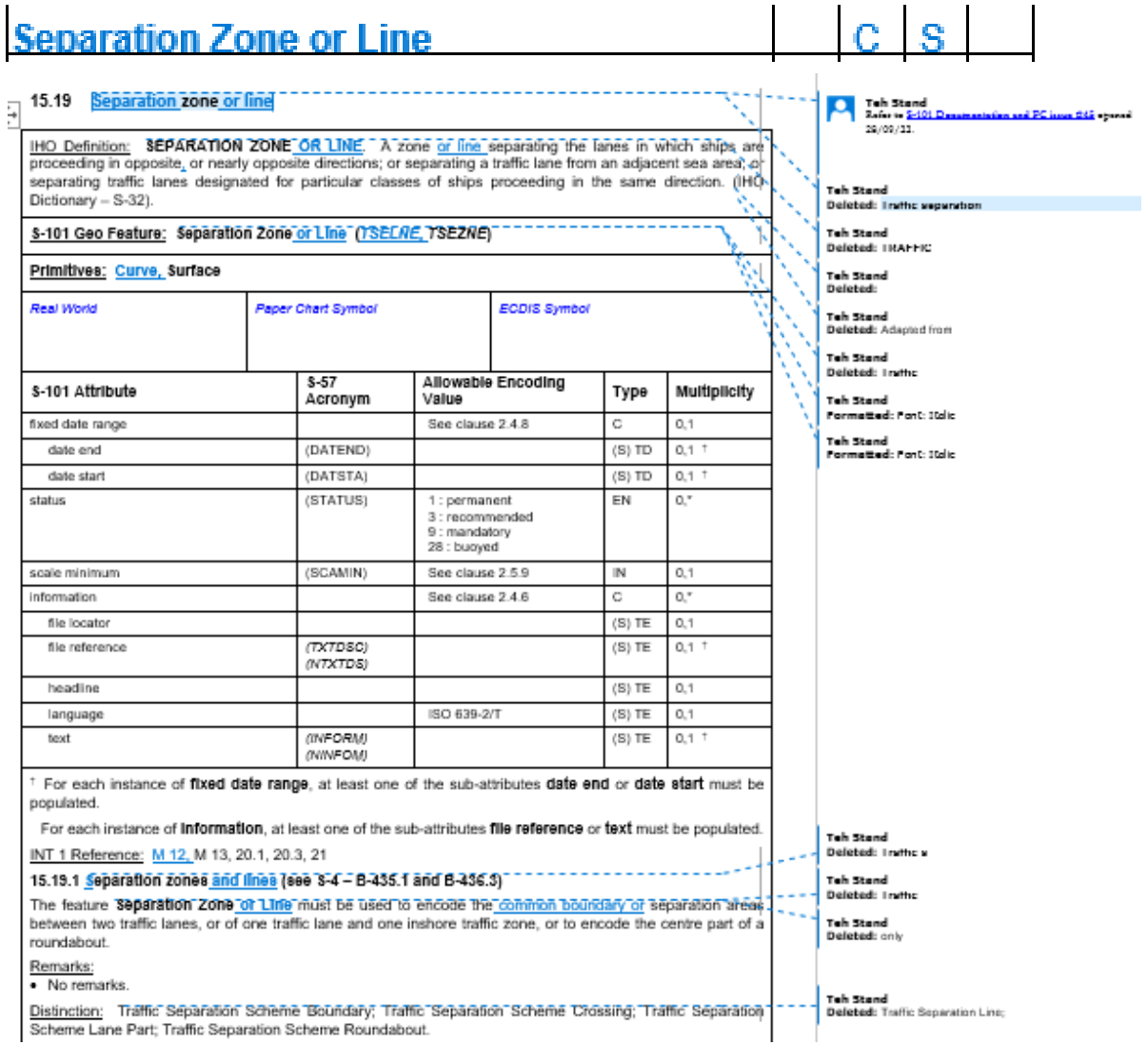
Deleted: <#>If the information to be encoded is spatially linear, this should be encoded using a "very narrow" **Information Area** feature of type surface (approximately 0·3mm wide at the maximum display scale of the ENC data) similar to the method for encoding linear maritime jurisdiction areas (see clause 16.2).¶

DCEG SUB-GROUP APPROVED: SEPARATION ZONE OR LINE

International Hydrographic Organization



Separation Zone or Line | | C | S | |

15.19 Separation zone or line

IHO Definition: **SEPARATION ZONE OR LINE**. A zone or line separating the lanes in which ships are proceeding in opposite, or nearly opposite directions; or separating a traffic lane from an adjacent sea area; or separating traffic lanes designated for particular classes of ships proceeding in the same direction. (IHO Dictionary – S-32).

S-101 Geo Feature: Separation Zone or Line (*TSELNE*, *TSEZNE*)

Primitives: Curve, Surface

Real World	*Paper Chart Symbol*	*ECDIS Symbol*

S-101 Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
fixed date range		See clause 2.4.8	C	0,1
date end	(DATEND)		(S) TD	0,1 †
date start	(DATSTA)		(S) TD	0,1 †
status	(STATUS)	1 : permanent 3 : recommended 9 : mandatory 28 : buoyed	EN	0,*
scale minimum	(SCAMIN)	See clause 2.5.9	IN	0,1
information		See clause 2.4.6	C	0,*
file locator			(S) TE	0,1
file reference	*(TXTDSC)* *(NTXTDS)*		(S) TE	0,1 †
headline			(S) TE	0,1
language		ISO 639-2/T	(S) TE	0,1
text	*(INFORM)* *(NINFOM)*		(S) TE	0,1 †

† For each instance of **fixed date range**, at least one of the sub-attributes **date end** or **date start** must be populated.

For each instance of **information**, at least one of the sub-attributes **file reference** or **text** must be populated.

INT 1 Reference: M 12, M 13, 20.1, 20.3, 21

15.19.1 Separation zones and lines (see S-4 – B-435.1 and B-436.3)

The feature **Separation Zone or Line** must be used to encode the common boundary of separation areas between two traffic lanes, or of one traffic lane and one inshore traffic zone, or to encode the centre part of a roundabout.

Remarks:
- No remarks.

Distinction: Traffic Separation Scheme Boundary; Traffic Separation Scheme Crossing; Traffic Separation Scheme Lane Part; Traffic Separation Scheme Roundabout.

- S-57 features **TSEZNE** and **TSELNE** are identical except for geometry.
- S-32 defines single term “Separation Zone (or Line)”
  - If approved, recommend that proposal submitted to amend to “Separation Zone or Line”.

DCEG SUB-GROUP APPROVED: FLARE ANGLE -> FLARE BEARING

International Hydrographic Organization

flare bearing (see clause 30.2) – defines the orientation direction of a light flare where more than one all around light is collocated so as to avoid the light flares from being coincident in the ECDIS display. This attribute is automatically calculated and populated as required by the ENC production software. However, for improved ENC display in ECDIS, encoders may manually populate **flare bearing** to align, for example, along a transit or leading line.

Teh Stand
See S-101 Documentation and PC GitHub issue #47 opened 29/09/22.

Teh Stand

30.2 flare bearing

Flare bearing: IHO Definition: The bearing about which the light flare symbol is rotated to be displayed in ECDIS.

Attribute Type: Integer

Indication: Indicates the bearing of the light flare to be included in the data for ECDIS display purposes where different from the default. Required where there is more than one light encoded on an instance of point spatial geometry. The value encoded corresponds to a bearing away from the position of the light.

Unit: Degree (°)

Resolution: 1°

Format: xxx

Minimum value: 0

Maximum value: 359

Example: **270** for an flare bearing of 270 degrees away from the light

Remarks:

- The initial flare bearing is calculated by ENC production software systems.
- The attribute **flare bearing** may also be populated manually to cartographically align the light flare along, for example, a transit or leading line (noting that the in such cases the bearing to be encoded will be the reciprocal (+/- 180° of the bearing encoded for the navigational line).

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See S-101 Documentation and PC GitHub issue #47 opened 29/09/22.

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DCEG SUB-GROUP APPROVED: DATE RANGES

International Hydrographic Organization

Notes: YYYY = calendar year; MM = month; DD = day.
The dashes (−) indicating that the year, month or day is not needed must be included.

Encoded date ranges are inclusive, see S-100 Part 3, clause 3-8.3. For example:

fixed date range/date start = *20220922*	Commences at 000000 hours on 22 September 2022
fixed date range/date end = *20221022*	Ends at 240000 hours on 22 October 2022.
periodic date range/period start = *----09--*	Commences annually at 000000 hours on 01 September.
fixed date range/date end = *----09--*	Ends annually at 240000 hours on 30 September.

Where the temporal attributes have been encoded for any feature that is the structure component of a **Structure/Equipment** feature association (see clause 25.15), all other component features within the relationship must not extend beyond the temporal attribute values encoded for the structure feature.

2.4.8.1 Seasonal features

If it is required to show seasonality of features, it must be done using the attribute **status** = 5 (periodic/intermittent). If it is required to encode the start and/or end dates of the season, this must be done using the complex attribute **periodic date range** (see clauses 2.4.8 and 29.15).

Where there is a requirement to indicate the beginning or end date of a seasonal occurrence as the "last day in February", consideration must be given to allowing for the extra day (29th February) added on leap years. Encoding **periodic date range**, sub-attribute **date end** with the value *----0228* may result in erroneous indication of seasonality in the ECDIS on the 29th February for leap years, while encoding the value *----0229* may similarly result in ECDIS performance issues for non-leap years. Encoders are advised, therefore, that where it is required to encode the end of seasonality as the last day in February, this must be done, similar to any other month of the year, by encoding the value of **periodic date range**, sub-attribute **date end** as *----02--*. Where the beginning of seasonality is the last day in February, this must be done by encoding the value of **periodic date range**, sub-attribute **date start** in accordance with the next occurrence of the date (*----0228* if the next occurrence is a non-leap year or *----0229* if the next occurrence is a leap year). The ENC dataset must be amended by ENC Update (see Section 31) where the date is required to be changed. For instance, if the value is *----0228* and the next occurrence is a leap year, an ENC Update must be created to amend the date to *----0229*.

Alternatively, if encoders consider that there is no regulatory requirement to update the start date of a period for leap years, the value of **date start** may be populated as *----03--*, indicating a beginning date of 01 March each year.

Teh Stand
See S-101 Documentation and FC GitHub issue #40 opened 19/09/22.

27.77 date end (DATEND, *PEREND*, *SUREND*)

Date end: IHO Definition: The latest date on which an object (for example a buoy) will be present.

Attribute Type: Truncated date

Indication: Dates should be encoded using 4 digits for the calendar year (YYYY), 2 digits for the month (MM) (for example April = 04) and 2 digits for the day (DD). When no specific year, month and/or day is required/known, indication of the year, month and/or day is omitted, and replaced with dashes (-). See also clause 2.4.8.

Format:

YYYYMMDD	(full date, **mandatory**)
YYYYMM--	(no specific day required – **mandatory**)
YYYY----	(no specific month required – **mandatory**)
----MMDD	(same day each year, **mandatory**)
----MM--	(same month each year, **mandatory**)

Example: **20101203** for 03 December 2010 at 240000 hours as ending date.
----**02**-- for 28 February at 240000 hours as ending date for non-leap years; and 29 February at 240000 hours as ending date for leap years.

Remarks:
- The attribute **date end** indicates the latest date of an event or the end of a date range. This attribute is used to indicate the end of a fixed date range, the end of a periodic date range, or the removal or cancellation of a feature at a specific date in the future.

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See S-101 Documentation and FC GitHub issue #40 opened 19/09/22.

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DCEG SUB-GROUP APPROVED: SKIN OF THE EARTH – REMOVAL OF DOCK AREA AND LOCK BASIN

International Hydrographic Organization

8.18 Dock area

IHO Definition: **DOCK AREA**. An artificially enclosed area within which ships may moor and which may have gates to regulate water level. (S-57 Edition 3.1, Appendix A – Chapter 1, Page 1.56, November 2000).

S-101 Geo Feature: Dock Area (DOCARE)

Primitives: Surface

Real World	*Paper Chart Symbol*	*ECDIS Symbol*

S-101 Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
category of dock	(CATDOC)	1: tidal 2: wet dock	EN	0,1
condition	(CONDTN)	1 : under construction 2 : ruined 3 : under reclamation 5 : planned construction	EN	0,1
feature name			C	0,*
display name			(S) BO	0,1
language		ISO 639-2/T	(S) TE	0,1
name	(OBJNAM) (NOBJNM)		(S) TE	1,1
fixed date range		See clause 2.4.8	C	0,1
date end	(DATEND)		(S) TD	0,1 †
date start	(DATSTA)		(S) TD	0,1 †
periodic date range		See clause 2.4.8	C	0,*
date end	(PEREND)		(S) TD	1,1
date start	(PERSTA)		(S) TD	1,1
horizontal clearance fixed			C	0,1
horizontal clearance value	(HORCLR)		(S) RE	1,1
horizontal distance uncertainty	(HORACC)		(S) RE	0,1
horizontal clearance length			RE	0,1
horizontal clearance width			RE	0,1
maximum permitted draught			RE	0,1
status	(STATUS)	1 : permanent 4 : not in use 6 : reserved 8 : private 14 : public	EN	0,*
scale minimum	(SCAMIN)	See clause 2.5.9	IN	0,1
information		See clause 2.4.6	C	0,*

8.20 Locks

IHO Definition: **LOCK BASIN**. A wet dock in a waterway, permitting a ship to pass from one level to another. (IHO Dictionary – S-32).

S-101 Geo Feature: Lock Basin (LOKBSN)

Primitives: Surface

Real World	*Paper Chart Symbol*	*ECDIS Symbol*

S-101 Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
feature name			C	0,*
display name			(S) BO	0,1
language		ISO 639-2/T	(S) TE	0,1
name	(OBJNAM) (NOBJNM)		(S) TE	1,1
fixed date range		See clause 2.4.8	C	0,1
date end	(DATEND)		(S) TD	0,1 †
date start	(DATSTA)		(S) TD	0,1 †
periodic date range		See clause 2.4.8	C	0,*
date end	(PEREND)		(S) TD	1,1
date start	(PERSTA)		(S) TD	1,1
horizontal clearance fixed			C	0,1
horizontal clearance value	(HORCLR)		(S) RE	1,1
horizontal distance uncertainty	(HORACC)		(S) RE	0,1
horizontal length	(HORLEN)		RE	0,1
horizontal width	(HORWID)		RE	0,1
status	(STATUS)	1 : permanent 4 : not in use 6 : reserved 8 : private 13 : historic 14 : public 16 : watched 17 : unwatched	EN	0,*
scale minimum	(SCAMIN)	See clause 2.5.9	IN	0,1
information		See clause 2.4.6	C	0,*

† For each instance of **fixed date range**, at least one of the sub-attributes **date end** or **date start** must be populated.

–For each instance of **information**, at least one of the sub-attributes **file reference** or **text** must be populated.

INT 1 Reference: F 27, 28

8.18.1 Tidal and non-tidal basins (see S-4 – B-326.3-4)

If it is required to encode a non-navigable dock area, it must be done using the feature **Dock Area**.

Remarks:

- If the dock is navigable at the maximum display scale of the ENC data, it must be encoded using the features **Depth Area**, **Dredged Area** or **Unsurveyed Area** (see clause 11.7.4), and the geo features making up the dock limits must be encoded using appropriate features such as **Coastline**, **Shoreline Construction** or **Gate**. The dock must not be encoded as **Dock Area**. If it is required to encode the name of the dock, it must be done using the feature **Sea Area/Named Water Area**.
- If it is required to encode a dock which is not navigable at the maximum display scale of the ENC data, it must be done using the feature **Dock Area** covered by a **Land Area** or **Unsurveyed Area** feature. The name of the dock should be encoded using the complex attribute **feature name** on the **Dock Area**. The boundary of a dock must not be encoded as a separate feature (for example **Coastline, Shoreline Construction**), except for the gate feature (**Gate**) for a wet dock, which may be encoded.
- The complex attribute **horizontal clearance fixed** is used to encode the size of the entrance to the dock area, where required.
- The attributes **horizontal clearance length** and **horizontal clearance width** are used to encode the regulatory length and width of the navigable part of the dock area as declared by a competent authority, where known.

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Refer to S-101 Documentation and FC issue #38.

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Deleted: <#>**Dock Area** features are part of the Skin of the Earth.¶
<#>If an encoded **Dock Area** has a date dependency, this should be indicated using the complex attribute **information** (see clause 2.4.6). For example, sub-attribute **text** = *Start date: 01 April; End date: 15 October.*¶

S-101PT9, Wellington, New Zealand, 23-25 November 2022

DCEG SUB-GROUP ISSUE: DEPTH ATTRIBUTES ON FOUL GROUND

International Hydrographic Organization

13.7 Foul ground

IHO Definition: **FOUL GROUND**. Areas over which it is safe to navigate but which should be avoided for anchoring, taking the ground or ground fishing. (IHO Dictionary – S-32).

S-101 Geo Feature: Foul Ground *(OBSTRN)*

Primitives: Point, Surface

Real World	*Paper Chart Symbol*	*ECDIS Symbol*

S-101 Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
feature name			C	0,*
display name			(S) BO	0,1
language		ISO 639-2/T	(S) TE	0,1
name	*(OBJNAM)* *(NOBJNM)*		(S) TE	1,1
reported date	*(SORDAT)*	See clause 2.4.8	TD	0,1
status	(STATUS)	13 : historic 18 : existence doubtful 28 : buoyed	EN	0,*
vertical length	(VERLEN)		RE	0,1
scale minimum	(SCAMIN)	See clause 2.5.9	IN	0,1
information		See clause 2.4.6	C	0,*
file locator			(S) TE	0,1
file reference	*(TXTDSC)* *(NTXTDS)*		(S) TE	0,1 †
headline			(S) TE	0,1
language		ISO 639-2/T	(S) TE	0,1
text	*(INFORM)* *(NINFOM)*		(S) TE	0,1 †

Teh Stand
Refer to S-101 Portrayal GitHub issue #65. New S-101 Documentation and FC issue #30 opened 20/09/22.

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Refer to S-101 Portrayal GitHub issue #65. New S-101 Documentation and FC issue #29 opened 20/09/22..

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13.7.1 Foul ground (see S-4 – B-422.8)

If it is required to encode an area where seabed operations are unsafe, but over which it is safe to navigate for surface vessels, it must be done using the feature **Foul Ground**. Such areas are distinct from the feature **Obstruction**, attribute **category of obstruction** = *6* (foul area), where navigation is considered to be unsafe for surface vessels (see clause 13.6).

It is important when encoding foul ground to be aware of the distinction between foul ground and the feature **Obstruction**, attribute **category of obstruction** = *6* (foul area) :

Foul ground is defined as an area over which it is safe to navigate but which should be avoided for anchoring, taking the ground or ground fishing. When encoded on ENC, **Foul Ground** features of type surface will display in the ECDIS "other" display as a "foul area of seabed safe for navigation but not for anchoring", indicating to the mariner that it is safe to enter or transit the area but hazardous to take the ground or undertake other subsurface activities.

Foul areas are defined as areas of numerous uncharted dangers to navigation. When encoded on ENC,

S-101 Annex A Xxxx 2022 Edition 1.1.0

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Data Classification and Encoding Guide 257

Obstruction features of type surface with attribute **category of obstruction** = *6* (foul area) will display in the ECDIS "base display" as an obstruction to navigation, with all associated alarms to indicate that it is unsafe for vessels to enter or transit the area.

It is recommended that if there is any doubt as to whether a feature should be encoded as **Obstruction** or **Foul Ground**, preference should be given to encoding the feature as **Obstruction** (see clause 13.6).

Remarks:

- For reported, not confirmed foul ground, the date of the report must be populated, where known, using the attribute **reported date**.
- A **Foul Ground** feature of type surface must be covered by a surface feature from Skin of the Earth as appropriate.
- Platforms which have been cut-off to the level of the seabed, or which have been cut-off above the seabed and are considered safe for surface navigation, should be encoded as **Foul Ground**. Platforms which have been cut-off above the seabed and are considered dangerous for surface navigation must be encoded as **Obstruction**.
- The distributed remains of wrecks must be encoded using the feature **Wreck** (see clause 13.5), and must not be encoded as **Foul Ground**.
- The attribute **vertical length** may be used to encode the vertical distance of the foul ground above the seabed.

Teh Stand
Deleted: In some cases areas on the source indicated to be foul ground have been misinterpreted as foul areas, which has resulted in encoding in ENC of **Obstruction** with **category of obstruction** = *6* (foul area). This encoding results in the incorrect indication in the ECDIS that the area is unsafe for navigation, which is potentially confusing to the mariner.¶
Foul ground, over which it is safe to navigate but which should be avoided for anchoring, taking the ground or ground fishing, should be encoded using a **Foul Ground** feature. Although the source may depict a "Foul Area", it should be determined whether it is in fact "Foul Ground" before encoding the appropriate feature.It is recommended that if the

Teh Stand
Deleted: Population of the attributes **quality of vertical measurement** and **technique of vertical measurement** are described in Table 13.5 below.¶
In the following Table, the symbol '/' indicates that this attribute is not relevant for the foul ground instance and therefore must not be encoded. A blank indicates that the encoder may choose a relevant value for the attribute.¶
Foul Ground...

DCEG SUB-GROUP ISSUE: DEPTH ATTRIBUTES ON FOUL GROUND

International Hydrographic Organization

Discussion/Decision:

- There was significant discussion regarding the distinction between obstruction (foul area) and foul ground. Although it was conceded that the definitions of these terms provided a clear distinction in regard to a foul area being safe to navigate over, there was concern that removing the depth attributes from the FoulGround feature could result in encoding that may be unsafe.

- There was discussion on the determination of what constitutes foul ground in regard to depth of water, vessel draft etc, and the possibility that a "foul ground" feature may in fact become an obstruction as over time the area may be transited by deeper draught vessels. Although it was pointed out that this is a decision for the Producing Authority and not an issue for the data model, the concern still remained that changing the model to remove the depth attributes from FoulGround may result in unsafe data. It was suggested that if the depth related attributes were to be removed from FoulGround, the encoding guidance must make it clear that if there is any doubt for the encoding as to whether a feature is an obstruction or foul ground, the feature must be encoded as an obstruction.

- The GitHub comment pointing out that in S-52 OBSTRN features with CATOBS = 8, 9 or 10 or WATLEV = 7 are treated in the same way as foul ground was noted, with this possibly being a subject for future discussion (possibility of a categorofFoulGround attribute?).

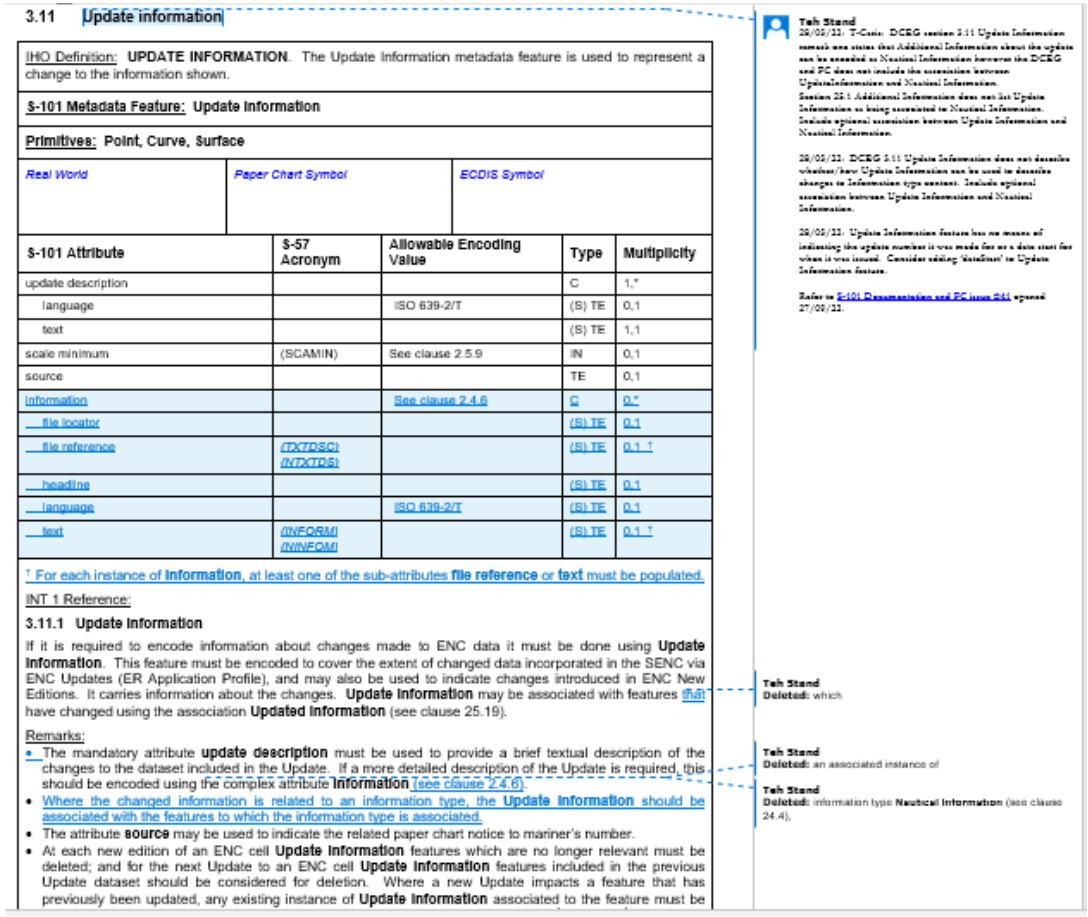
- It was asked as to what would happen in the S-57 to S-101 conversion process if an OBSTRN having CATOBS = 7 was encoded with a value for VALSOU. It was considered that in such cases the feature should convert to an Obstruction feature so as to preserve the encoded depth information.

- There was no consensus reached at the meeting. It was therefore decided that this issue would be submitted to the S-101PT9 meeting (November 2022) for further discussion, and possibly a small group break-away session to resolve.

Action:

- **Amend wording of the first sentence of clause 13.7.1 to reverse the order so as to emphasise unsafe for seabed operations but safe to navigate over (IHO Sec). [Complete]**
- **Review the revised encoding guidance and add emphasis that if there is any doubt as to whether a feature constitutes foul ground or obstruction, the preference is to encode an obstruction (IHO Sec). [Complete]**
- **Prepare a submission for S-101PT9 outlining the discussions by the Sub-Group for consideration and resolution (IHO Sec).**
- **GitHub issue to remain open for further input (All). [Ongoing]**

DCEG SUB-GROUP APPROVED: UPDATE INFORMATION



3.11 Update information

IHO Definition: **UPDATE INFORMATION**. The Update Information metadata feature is used to represent a change to the information shown.

S-101 Metadata Feature: Update Information

Primitives: Point, Curve, Surface

Real World	*Paper Chart Symbol*	*ECDIS Symbol*

S-101 Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
update description			C	1,*
language		ISO 639-2/T	(S) TE	0,1
text			(S) TE	1,1
scale minimum	(SCAMIN)	See clause 2.5.9	IN	0,1
source			TE	0,1
information		See clause 2.4.6	C	0,*
file locator			(S) TE	0,1
file reference	(TXTDSC) (NTXTDS)		(S) TE	0,1 †
headline			(S) TE	0,1
language		ISO 639-2/T	(S) TE	0,1
text	(INFORM) (NINFOM)		(S) TE	0,1 †

† For each instance of **information**, at least one of the sub-attributes **file reference** or **text** must be populated.

INT 1 Reference:

3.11.1 Update information

If it is required to encode information about changes made to ENC data it must be done using **Update information**. This feature must be encoded to cover the extent of changed data incorporated in the SENC via ENC Updates (ER Application Profile), and may also be used to indicate changes introduced in ENC New Editions. It carries information about the changes. **Update information** may be associated with features that have changed using the association **Updated information** (see clause 25.19).

Remarks:

- The mandatory attribute **update description** must be used to provide a brief textual description of the changes to the dataset included in the Update. If a more detailed description of the Update is required, this should be encoded using the complex attribute **information** (see clause 2.4.6).
- Where the changed information is related to an information type, the **Update information** should be associated with the features to which the information type is associated.
- The attribute **source** may be used to indicate the related paper chart notice to mariner's number.
- At each new edition of an ENC cell **Update information** features which are no longer relevant must be deleted; and for the next Update to an ENC cell **Update information** features included in the previous Update dataset should be considered for deletion. Where a new Update impacts a feature that has previously been updated, any existing instance of **Update information** associated to the feature must be

Update Information - detailed description

DCEG Clause: 3.11

Points to Note:

- Proposal is to add the information complex attribute to UpdateInformation to enable encoding of additional information relevant to an ENC Update(s) (consistent with changes made for geo features in Edition 1.2.0).

- Additionally, new guidance has been included to require an instance of UpdateInformation related to a change to an information type to be associated with the geo features to which the information type is referenced.

- Note Christian approval of the changes, with suggestion that the "should" is changed to "must" in the new bullet. Also suggestion that examples/use cases are included.

Discussion/Decision:

- The proposal to add the information complex attribute to the UpdateInformation meta feature was approved for S-101 Edition 1.1.0.

- The proposal to include guidance that updates related only to an information type should require the UpdateInformation to be associated only to the geo feature that the information type is associated with was approved for S-101 Edition 1.1.0.

- Concerns were raised as to how the modelling is intended to work in regard to optimizing portrayal and indications in ECDIS. It was agreed that in moving forward it should be assumed that the implementation of the UpdateInformation feature in S-101 would replace the current S-57/S-52 system implementation (it was noted that the IMO ECDIS Performance Standards only state that the indication of changes applied in an ENC Update are to be made visible (highlighted) to the mariner on request – how this is done is not specified).

- The suggestion was made that a mechanism could be provided for the data producer to indicate those updates that are minor in nature and do not impact on safety of navigation (and therefore are not highlighted on request). There was concern that this could be erroneously applied.

Action:

- Keep Issue open for contributors to include additional comments/observations and as a mechanism for posting/discussing further development of UpdateInformation (All). [Ongoing]

- Report to the S-101PT that the intention for further development of the UpdateInformation meta feature is that it is to replace the current S-57/S-52 system implementation for highlighting ENC Updates (IHO Sec).

DCEG SUB-GROUP APPROVED: VALUE OF LOCAL MAGNETIC ANOMALY

International Hydrographic Organization

value of local magnetic anomaly			C	1,2
magnetic anomaly value	(VALLMA)		(S) RE	1,1
reference direction		5 : east 13 : west	(S) EN	0,1 †

Teh Stand
Deleted: anomaly value maximum < anomaly value minimum¶
(+/- minutes)

Teh Stand
Deleted: magnetic anomaly value minimum

† Where there are two instances of the complex attribute **value of local magnetic anomaly**, the sub-attribute **reference direction** is mandatory for each instance.

–For each instance of **information**, at least one of the sub-attributes **file reference** or **text** must be populated.

INT 1 Reference: B 82.1-2

4.2.1 Local magnetic anomaly (see S-4 – B-274)

If it is required to encode an abnormality in magnetic variation for a localised area, it must be done using the feature **Local Magnetic Anomaly**.

If the area cannot be defined, the feature should be represented as a point.

Remarks:

- If it is required to indicate a local magnetic anomaly that is the same magnitude for both east and west, a single instance of the mandatory ~~Where the mandatory~~ complex attribute **value of local magnetic anomaly** ~~contains a value in the sub-attribute **magnetic anomaly value maximum** only, the deviation is assumed to be positive and negative by that amount. Where the positive and negative values for the local magnetic anomaly differ, the positive value must be populated in **anomaly value maximum**, and the negative value in the sub-attribute **magnetic anomaly value minimum**. The plus/minus character must not~~must be encoded, with the value of the anomaly populated in the mandatory sub-attribute **magnetic anomaly value**. The sub-attribute **reference direction** must not be encoded in this case.
- If it is required to indicate a local magnetic anomaly that is in a single direction, a single instance of **value of local magnetic anomaly** must be encoded, with the value of the anomaly populated in **magnetic anomaly value** and the direction encoded using the sub-attribute **reference direction**.
- If it is required to indicate a local magnetic anomaly that is of a different magnitude for east and west, two instances of **value of local magnetic anomaly** must be encoded, with the values of the anomaly and the direction populated for each instance in **magnetic anomaly value** and **reference direction** respectively.
- If the value of the local magnetic anomaly is unknown, a single instance of **value of local magnetic anomaly** must be encoded, with **magnetic anomaly value** populated with an empty (null) value and the complex attribute **information** containing textual information relevant to the local magnetic variation.
- Abnormal magnetic variation should not be encoded unless it varies by more than about 3° from the normal magnetic variation (see clause 4.1) for the area.

Distinction: Magnetic Variation.

27.118 magnetic anomaly value (VALLMA)

Magnetic anomaly value: IHO Definition: The value of the deviation from the normal magnetic variation. (Adapted from S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.228, November 2000).

Attribute Type: Real

Unit: minute (')

Resolution: 0.1'

Format: xxx.x

Example: **30.3** for a deviation of 30·3 minutes

Remarks:

- The deviation is assumed to be positive and negative by default. The plus/minus character must not be encoded.

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27.141 reference direction

Reference direction: IHO Definition: A direction used as a basis for comparison of other directions. (IHO Hydrographic Dictionary – S-32).

Attribute Type: Enumeration

5) **east**

13) **west**

Remarks:

- No remarks.

Teh Stand
NOTE: I have chosen not to include the definitions, which are bearing sectors related to the compass being broken up into 16 segments.

DCEG SUB-GROUP APPROVED: PIPELINE PYLON

International Hydrographic Organization

6.11 Pylon/bridge support

IHO Definition: **PYLON/BRIDGE SUPPORT**. A vertical construction consisting, for example, of a steel framework or pre-stressed concrete to carry cables, a bridge, etc. (S-57 Edition 3.1, Appendix A – Chapter 1, Page 1.125, November 2000).

S-101 Geo Feature: Pylon/Bridge Support (PYLONS)

Primitives: Point, Surface

Real World	*Paper Chart Symbol*	*ECDIS Symbol*

S-101 Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
category of pylon	(CATPYL)	1 : power transmission pylon/pole 2 : telephone/telegraph pylon/pole 3 : aerial cableway pylon 4 : bridge pylon/tower 5 : bridge pier 6 : pipeline pylon	EN	1,1

the attributes **category of pipe** and **product** must not be encoded.

- Where a pipeline has radar reflectors at known positions, they must be encoded as separate **Radar Reflector** features (see clause 20.17). If the whole pipeline is radar conspicuous, the maximum display scale for the ENC data is too small to show individual reflectors, or the positions of the radar reflectors are not known, the **Pipeline Overhead** should be encoded with attribute **radar conspicuous**.
- In navigable water, overhead pipeline supports must be encoded, where possible, using a **Pylon/Bridge Support** feature (see clause 6.11), with attribute **category of pylon** = *6* (pipeline pylon).
- If available and considered important for route planning and/or monitoring, the vertical uncertainty associated with encoded vertical clearance values should also be encoded.

DCEG SUB-GROUP APPROVED: BERTHS

International Hydrographic Organization

Proposal to re-define the term "Berth" (Jonathan – refer to Paper submitted to the meeting):

DCEG Clause: 8.13

Discussion/Action:

- Proposal is to redefine the term "Berth" in the IHO GI Registry and IHO Hydrographic Dictionary (and consequently in S-101) so as to harmonize with common usage by IMO, other organizations, and industry groups.
- The proposal was generally supported, however the Sub-Group agreed to "endorse" the proposal rather than "approve", as approval is at the discretion of the Register Domain Control Body.
- It was suggested that, due to the change in definition, the modelling for berths and berth-type features in general in S-101 may need a future review.

Action:

- **Clarification proposal to be submitted to the Concept Register proposing to amend the definition of the term "Berth" in accordance with the recommendation in the Paper (Raphael). [Complete]**
- **Register Manager to acknowledge the endorsement of the proposal by the DCEG Sub-Group when processing the Registry proposal and submitting to the Register Domain Control Body (IHO Sec). [Complete]**
- **Amend DCEG clause 8.13 to reflect the revised definition [NOTE: This amendment is made in anticipation of approval of the revised definition by the Register Domain Control Body and implementation in the Data Dictionary Register] (IHO Sec). [Complete]**

27.123 minimum berth depth *(DRVAL1)*

Minimum berth depth: IHO Definition: The least depth of the body of water at the berth or in a berth pocket adjacent to the berth. (IHO Nautical Information Provision Working Group, 2022).
Attribute Type: Real
Unit: Metre (m)
Resolution: 0.1m
Format: xx.x
Example: **14.6** for a minimum berth depth of 14.6 metres
Remarks:
- No remarks.

Teh Stand
Note proposal to the Concept Register (for S-131) for new concept **Minimum Berth Depth**. Consider that, if approved, this should replace **depth range minimum value**. Refer to S-101 Documentation and FC issue #39.

8.13 Berth

IHO Definition: **BERTH**. A place, generally named or numbered, where a vessel may moor or anchor. (IHO Dictionary – S-32).

S-101 Geo Feature: Berth (BERTHS)

Primitives: Point, Curve, Surface

Real World	*Paper Chart Symbol*	*ECDIS Symbol*

S-101 Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
feature name			C	1,*
display name			(S) BO	0,1
language		ISO 639-2/T	(S) TE	0,1
name	*(OBJNAM)* *(NOBJNM)*		(S) TE	1,1
fixed date range		See clause 2.4.8	C	0,1
date end	(DATEND)		(S) TD	0,1 †
date start	(DATSTA)		(S) TD	0,1 †
horizontal clearance length			RE	0,1
horizontal clearance width			RE	0,1
maximum permitted draught	*(INFORM)* *(NINFOM)*		RE	0,1
minimum berth depth	*(DRVAL1)*		RE	0,1
periodic date range		See clause 2.4.8	C	0,*
date end	*(PEREND)*		(S) TD	1,1

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Note proposal to the Concept Register (for S-131) for new concept **Minimum Berth Depth**. Consider that, if approved, this should replace **depth range minimum value**. Refer to S-101 Documentation and FC issue #39.

DCEG SUB-GROUP APPROVED: SOUNDING MULTIPLICATION FACTOR

International Hydrographic Organization

11.3.1 Soundings (see S-4 – B-412 and B-413.1)

A sounding associated with a rock or coral pinnacle which is an obstruction to navigation must be encoded using the feature **Underwater/Awash Rock** (INT1 – K14, see clause 13.4) with attribute **value of sounding** populated with the value of the sounding.

The geometry of soundings and no bottom found depths (see clause 11.8) is held in a 3 dimensional array (latitude, longitude, depth). In the interests of efficiency, multiple soundings should be encoded in one spatial type (known as "grouping" of soundings), provided that all the spatial and geo feature attributes are common to the group.

As the sounding multiplication factor (CMFZ) for ENC is 10, soundings may 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 clauses 13.1 and 13.2.

Population of the attributes **quality of vertical measurement**, **source date** and the spatial attribute **quality of horizontal measurement** are described in the Table below:

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11.8.1 No bottom found depths (see S-4 – B-412.3)

If it is required to encode a depth at a point at which it is indicated as having no bottom found at the value shown, it must be done using the feature **Depth – No Bottom Found**.

The geometry of soundings (see clause 11.3.1) and no bottom found depths is held in a 3 dimensional array (latitude, longitude, depth). In the interests of efficiency, multiple no bottom found depths should be encoded in one spatial type, provided that all the spatial and geo feature attributes are common to the group.

Even though the sounding multiplication factor (CMFZ) for ENC is {10}, no bottom found depths must be encoded to a whole metre value.

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DCEG SUB-GROUP APPROVED: OBSTRUCTIONS (DESCRIPTION)

International Hydrographic Organization

For each instance of **information**, at least one of the sub-attributes **file reference** or **text** must be populated.

INT 1 Reference: C 32, K 1, 31, 40-43, 46; L 21, 23; Q 42

13.6.1 Obstructions and foul areas (see S-4 – B-312.4, B-327.5, B-420.1, B-422.8-9, B-431.6, B-445.1, B-447.5 and B-447.7)

If it is required to encode features considered to be an obstruction or hazard to surface navigation that cannot be encoded using any other S-101 specific feature (for example **Underwater Rock**, **Wreck**), it must be done using the feature **Obstruction**.

Population of the attributes **quality of vertical measurement**, **technique of vertical measurement** and **water level effect** are described in Table 13.4 below.

In the following Table, the symbol '/' indicates that this attribute is not relevant for the obstruction instance and therefore must not be encoded. A blank indicates that the encoder may choose a relevant value for the attribute.

28/09/22.

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Deleted: snags, stumps, wellheads, diffusers, cribs, fish havens, foul areas, booms, ice booms, sites of cleared platforms, ground tackle, wave energy devices, underwater turbines, subsurface ocean data acquisition systems, artificial reefs, or active submarine volcanos…

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- Active submarine volcanos can be a significant navigational hazard; and harmful concentrations of volcanic gases emanating from active submarine volcanos can cover an extensive area (see S-4 – clause B-428.4). If it is required to encode an active submarine volcano, it must be done using an **Obstruction** feature of type point, with attributes **category of obstruction** = *21* (active submarine volcano), **exposition of sounding** = *2* (shoaler than the range of depth of the surrounding depth area) and **quality of vertical measurement** = *2* (depth or least depth unknown). To indicate the unpredictable nature of the volcano (it may be periodically submerged or extend above the surface), the mandatory attributes **value of sounding** and **water level effect** must be populated with an empty (null) value. In order to raise the level of indication of the hazard in the ECDIS to the mariner so as to generate an alarm, a small **Depth Area** feature having attribute **depth range minimum value** = *0* may also be encoded. The area that can be potentially covered by harmful volcanic gases, which may cover an area of up to 10 NM from the volcano, should be encoded using a **Caution Area** feature (see clause 16.10), having the complex attribute **information** (see clause 2.4.6), sub-attributes **text** = *Volcanic activity* and **file reference** carrying a reference to an appropriate cautionary note similar to:

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Refer to S-101 Portrayal GitHub issue #71. New S-101 Documentation and FC issue #32 opened 21/09/22.

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DCEG SUB-GROUP APPROVED: OFFSHORE PRODUCTION AREA – ADDITION OF WATER LEVEL EFFECT

International Hydrographic Organization

14.6 Offshore production area

IHO Definition: **OFFSHORE PRODUCTION AREA**. An area at sea within which there are production facilities. (S-57 Edition 3.1, Appendix A – Chapter 1, Page 1.113, November 2000).

S-101 Geo Feature: Offshore Production Area (OSPARE)

Primitives: Surface

Real World	*Paper Chart Symbol*	*ECDIS Symbol*

S-101 Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
category of offshore production area		1 : wind farm 2 : wave farm 3 : current farm 4 : tank farm 5 : seabed material extraction area 6 : solar farm	EN	0,1
condition	(CONDTN)	1 : under construction 2 : ruined 4 : wingless 5 : planned construction	EN	0,1
visual prominence	(CONVIS)	1 : visually conspicuous 2 : not visually conspicuous 3 : prominent	EN	0,1
water level effect	(WATLEV)	2 : always dry 3 : always under water/ submerged 4 : covers and uncovers 7 : floating	EN	0,1
scale minimum	(SCAMIN)	See clause 2.5.9	IN	0,1
information		See clause 2.4.6	C	0,*
file locator			(S) TE	0,1
file reference	*(TXTDSC)* *(NTXTDS)*		(S) TE	0,1 †
headline			(S) TE	0,1
language		ISO 639-2/T	(S) TE	0,1
text	*(INFORM)* *(NINFOM)*		(S) TE	0,1 †

Teh Stand
Note that offshore wind turbines may be fixed or floating. Wave and current turbines may be always submerged(?). Consider adding attribute water level effect to feature **Offshore Production Area**.
IHO Sec: Consider that this may be relevant information at smaller scales where the individual structures within the production area may not be encoded.

Refer to 5-101 Documentation and FC issue #44 opened 28/09/22.

NOTE: Values listed need to be discussed/confirmed.

DCEG SUB-GROUP APPROVED: SPOIL GROUNDS

International Hydrographic Organization

- Disused dumping grounds for harmful materials are considered dangerous for an indefinite period and must therefore be encoded on the largest maximum display scale ENC datasets, with attribute **status** = *4* (not in use). The date when the area ceased to be used may be populated using the attribute **date disused**, if known.

16.6.2 Spoil grounds, dredging areas (see S-4 – B-446)

Spoil grounds are areas set aside, clear of shipping channels and in deep water where possible, for the disposal of material (spoil) generally obtained by dredging. Their significance to the mariner is that very large quantities of material may be dumped, decreasing the depth of water available. Where possible, charts should be updated in a timely manner so as to include the latest survey information covering the spoil ground.

Extraction (or dredging) areas are those areas where a concentration of dredging vessels may be encountered, taking up sand or shingle to be brought ashore (for example for construction purposes). Their significance is primarily as a collision hazard, although they also indicate the likelihood of finding a greater depth of water than charted. Channels dredged to provide an adequate depth of water for navigation are "dredged areas", not to be confused with "dredging areas".

If it is required to encode a spoil ground, it must be done using a **Dumping Ground** feature, with attribute **category of dumping ground** = *5* (spoil ground).

If it is required to encode a dredging area, it must be done using a **Restricted Area Navigational** feature (see clause 17.8) or **Restricted Area Regulatory** feature (see clause 17.9), with attribute **category of restricted area** = *21* (dredging area). An area in which seabed material (for example sand, shingle) is being extracted for purposes such as construction must be encoded, where required, using the feature **Offshore Production Area** (see clause 14.6), with attribute **category of production area** = *13* (seabed material extraction area).

Remarks:

- Within a spoil ground; if the depths within the area are liable to be very much less than charted after the discharge of spoil and post-dumping surveys are not available, they may be treated as unsurveyed areas (see clause 11.10), in which case soundings and depth contours may be omitted from the area. Alternatively, an indication of the discrepancy between charted depth information and the actual depths within the spoil ground may be provided by downgrading the information included in the underlying **Quality of Bathymetric Data** feature (see clause 3.7).

Distinction: Dredged Area.

Teh Stand
Refer to S-101 Portrayal GitHub issue #44. New S-101 Documentation and FC issue #33 opened 21/09/22.

Teh Stand September 21, 2022
Deleted: <#>Within a spoil ground; if the depths within the area are liable to be very much less than charted after the discharge of spoil, they may be treated as unsurveyed areas (see clause 11.10), in which case soundings and depth contours may be omitted from the area,¶

DCEG SUB-GROUP APPROVED: TOPMARKS/DAYMARKS

International Hydrographic Organization

18 Geo Features – Aids to Navigation – Overview

18.1 Geo features forming parts of navigational aids

Aids to navigation are composed of fixed or floating structure features established specifically as an aid to navigation, which may carry equipment features.

When identifying relationships (associations) between aids to navigation and associated geo features within this document, three "base classes" are used to define the aids to navigation geo features included in the relevant association. These "base classes" are:

Remarks:

- Structures that have not been established specifically as an aid to navigation may also carry aids to navigation as equipment features. These include **Bridge**, **Building**, **Cable Overhead**, **Conveyor**, **Crane**, **Floating Dock**, **Fortified Structure**, **Fishing Facility**, **Hulk**, **Landmark**, **Mooring/Warping Facility**, **Offshore Platform**, **Pipeline Overhead**, **Pontoon**, **Pylon/Bridge Support**, **Obstruction**, **Shoreline Construction**, **Silo/Tank**, **Span Fixed**, **Span Opening**, **Wind Turbine**, **Wreck**. If it is required to encode such supporting structures at the same location as an equipment feature, it must be encoded as a separate feature, and share the same spatial type as (for point structures), or cover the location of (for structures of type curve or area) the equipment feature.
- Topmarks are encoded as part of the navigational aid structure, using the complex attribute **topmark** (see clause 29.34). If it is required to encode an aid to navigation that may be considered to be a topmark but has multiple colours that are considered important for navigation, this must be done using the feature **Daymark** (see clause 20.13).

Teh Stand October 12, 2022
Refer to S-101 Documentation and FC issue #48 opened 30/09/22.

Reply Resc

DCEG SUB-GROUP APPROVED: TEXT PLACEMENT

International Hydrographic Organization

23.1 Text placement

IHO Definition: **TEXT PLACEMENT**. The Text Placement feature is used in association with the Feature Name attribute or a light description to optimise text positioning in ECDIS.
S-101 Cartographic Feature: Text Placement
Primitives: Point

Real World	*Paper Chart Symbol*	*ECDIS Symbol*

S-101 Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
orientation value			RE	1,1
text			TE	0,1 †
text offset mm			IN	1,1
text type		1 : name 2 : light characteristic	EN	0,1 †
scale minimum	(SCAMIN)	See clause 2.5.9	IN	0,1

† Only one of the attributes **text** or **text type** must be populated for each instance of **Text Placement**.

INT 1 Reference:

23.1.1 Text placement

If it is required to place text on an ENC to improve clarity of display, it must be done using the cartographic feature **Text Placement**. The **Text Placement** feature must be associated with the relevant geo feature using the composition **Text Association** (see clause 25.16).

NOTE: Where an associated instance of **Text Placement** has not been related to a feature having the attribute **name** and/or the attributes associated with the characteristics of a light populated, the text will be positioned in the ECDIS display in accordance with the default position for text strings defined in the Portrayal

Teh Stand
See S-101 Documentation and FC GitHub issue #7.

Markup A

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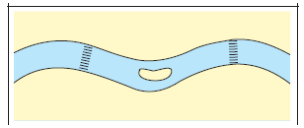
Deleted: [NOTE: This modelling for the **Text Placement** cartographic feature is intended for implementation and testing purposes only. Complete implementation of this modelling is dependant on pending amendments to S-100 Part 9 to be included in S-100 Edition 5.0.0.]¶

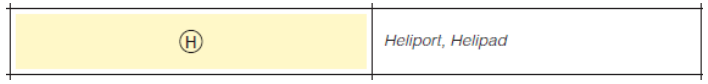
OUTCOMES OF NCWG8

International Hydrographic Organization

- Point to be removed as allowable geometric primitive for **Rapids**.



- New symbol to be developed for heliport/helipad.



- Adopt MARSHES1 area fill pattern for depiction of reed beds and possibly develop new symbol for reed bed point.

- New symbol to be developed for **Waterfall** of type point.
- Remove requirement for **Sloping Ground** to be identified as radar conspicuous from portrayal instructions.

Prominent sandhills or dunes adjacent to the coast should be portrayed:

C8

- Further discussion on requirement for indicating “synthetic” AIS AtoNs to be further investigated (IALA/IMO).

- Lower priority activity to begin addressing inconsistencies between S-4 and S-101.

ONGOING ACTIVITIES

- Resolution of outstanding identified discussion items (GitHub).
- Resolution of alternate encoding options based on testing (**Quality of Bathymetric Data**).
- Further development of cartographic feature **Text Placement** based on implementation and testing outcomes.
- Review of guidance related to associations based on change made in S-100 Edition 5.0.0.
- Amendments to be applied based on outcomes of NCWG8.

ACTIONS REQUESTED OF S-101PT

- **Note** the progress in the development of S-101 DCEG Edition 1.1.0.
- **Discuss** the merits of retaining the depth-related attributes for the feature **Foul Ground**.
- **Discuss** and the purpose of the meta feature **Update Information** in regard to ECDIS performance.
- **Approve** the draft DCEG Edition 1.1.0 for publication, pending any further amendments as identified by the PT.
- **Initiate** further action as required.

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THANK YOU