8th MEETING OF THE S-100 WORKING GROUP

Report on the Review of S-1xx Feature Catalogues

Agenda Item 10.4b

S-100WG-8, Singapore, 13 - 17 November 2023

Introduction

According to action DQWG 17/09, the Working Group has implemented the Cross check of feature catalogues of the following product specifications:

- S-101 Ed 1.1.0
- S-102 Ed 2.1.0
- S-129 1.0.0

DISCUSSION

(1) The aims of the Cross check of S-1xx Feature Catalogues

- 1) Confirm that the Feature Catalogue contents are consistent with the corresponding DCEG document.
- 2) Identify any areas where the S-101 Feature Catalogue is inconsistent with other S-1xx product specifications
- 3) Confirm that the items present in the feature catalogue are consistent with the GI registry contents.
- 4) Confirm that the Feature Catalogue structure and content conforms to the S-100 standard.

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DISCUSSION

(2) Only the published S-1xxs in Route Monitoring Mode were reviewed.

(3) Tool developed by NOAA to convert XML to XLSX format enables inconsistencies within the S-101 Feature Catalogue, as well as inconsistencies with other S-1xx Feature Catalogues to be identified.

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

International Hydrographic Organization

1.The Cross check of S-101 FC and its DCEG

No.	Classification	Feature CatalogueClause No.	DCEG ClauseNo.	Issue Type	Contentsin Feature Catalogue	Contentsin DCEG
1	S	3.78-3.81，3.93/3.161/3.163/3.190	27.76-27.79,27.90/27.144/27.146/27.164	Inconsistent value types	The value type is S100_TruncatedDate.	The attribute type is Truncated Date.

Numb	Name	Value type
3.78	Date Disused	S100_TruncatedDate
3.79	Date End	S100_TruncatedDate
3.80	Date Fixed	S100_TruncatedDate
3.81	Date Start	S100_TruncatedDate

27.76 date disused

Date disused: IHO Definition: The date that an entity ceases to be used. (Adapted from S-4).

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**)

Example: **20160908** for 08 September 2016 as the date an entity ceased to be used.

27.77 date end (DATEND, *PEREND*)

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**)

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

International Hydrographic Organization

1.The Cross check of S-101 FC and its DCEG

No.	Classification	Feature CatalogueClause No.	DCEG ClauseNo.	Issue Type	Contentsin Feature Catalogue	Contentsin DCEG
2	S	Example3.6	Example27.6	Inconsistent attribute types	All attributes of the text are text.	All attributes of the text are free text.

Number	Name	Value type
3.6	Call Sign	text

27.6 call sign (CALSGN)

Call sign: IHO Definition: The designated call-sign of a station (radio station, radar station, pilot, ...). (S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.9, November 2000 (as amended)).

Attribute Type: Free Text

Remarks:

- No remarks.

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1..

Number	Association	Number	Role reference
6.1	Additional information	5.11	informationProvidedFor
		5.12	providesInformation

1..

25.1 Additional information

Additional Information: IHO Definition: A feature association for the binding between at least one instance of a geo feature and an instance of an information type.

Remarks:

- The features comprising an **Additional Information** association must include at least one of any of the geo features included in the following lists associated to one or more of the corresponding information types.

Role Type	Role	Associated With	Multiplicity
Association	Provides information	**Contact Details, Non-Standard Working Day, Service Hours, Nautical Information**	0,1
		Airport/Airfield, Anchor Berth, Anchorage Area, Berth, Bridge, Building, Checkpoint, Coast Guard Station, Conveyor, Crane, Dock Area, Dry Dock, Floating Dock, Gate, Landmark, Lock Basin, Production/Storage Area, Radio Calling-In Point, Runway, Seaplane Landing Area, Span Fixed, Span Opening	0,* {1,* [C]}
Role Type	**Role**	**Associated With**	**Multiplicity**
Association	Provides information	**Contact Details, Nautical Information**	0,1
		Administration Area, Beacon Cardinal, Beacon Isolated Danger, Beacon Lateral, Beacon Safe Water, Beacon Special Purpose/General, Buoy Cardinal, Buoy Installation, Buoy Isolated Danger, Buoy Lateral, Buoy New Danger Marking, Buoy Safe Water, Buoy Special Purpose/General, Cable Area, Cable Overhead, Cable Submarine, Daymark, Fishing Facility, Fog Signal, Harbour Area (Administrative), Harbour Facility, Land Region, Light All Around, Light Float, Light Sectored, Light Vessel, Marine Farm/Culture, Mooring Trot, Mooring/Warping Facility, Offshore Platform, Offshore Production Area, Pilot Boarding Place, Pipeline Overhead, Pipeline Submarine/On Land, Railway, Rescue Station, Silo/Tank, Small Craft Facility, Submarine Pipeline Area, Tunnel, Vessel Traffic Service Area, Wind Turbine	0,* {1,* [C]}
Role Type	**Role**	**Associated With**	**Multiplicity**
Association	Provides information	**Nautical Information**	0,1
		Archipelagic Sea Lane, Archipelagic Sea Lane Area, Archipelagic Sea Lane Axis, Built-Up Area, Canal, Cargo Transhipment Area, Causeway, Caution Area, Coastline, Collision Regulations Limit, Contiguous Zone, Continental Shelf Area, Current – Non-Gravitational, Custom Zone, Dam, Deep Water Route, Deep Water Route Centreline, Deep Water Route Part, Depth Area, Depth Contour, Depth – No Bottom Found, Discoloured Water, Distance Mark, Dredged Area, Dumping Ground, Dyke, Exclusive Economic Zone, Fairway, Fairway System, Fence/Wall, Ferry Route, Fishery Zone, Fishing Ground, Fortified Structure, Foul Ground, Free Port Area, Gridiron, Hulk, Ice Area, Information Area, Inshore Traffic Zone, Island Group, Lake, Land Area, Land Elevation, Light Air Obstruction, Light Fog Detector, Local Magnetic Anomaly, Log Pond, Magnetic Variation, Marine Pollution Regulations Limit, Military Practice Area, Navigation Line, Obstruction, Oil Barrier, Physical AIS Aid to Navigation, Pile, Pilotage District, Pontoon, Precautionary Area, Pylon/Bridge Support, Radar Line, Radar Range, Radar Reflector, Radar Station, Radar Transponder Beacon, Radio Station, Range System, Rapids, Recommended Route Centreline, Recommended Track, Recommended Traffic Lane Part, Restricted Area Navigational, Restricted Area Regulatory, Retroreflector, River, Road, Sandwave, Sea Area/Named Water Area, Seabed Area, Seagrass, Shoreline Construction, Signal Station Traffic, Signal Station Warning, Slope Topline, Sloping Ground, Sounding, Spring, Straight Territorial Sea Baseline, Submarine Transit Lane, Swept Area, Territorial Sea Area, Tidal Stream Panel Data, Tidal Stream – Flood/Ebb, Tideway, Traffic Separation Line, Traffic Separation Scheme, Traffic Separation Scheme	0,* {1,* [C]}

Number	Information type	Number	Attribute	Type	Number	Attribute	Type
7.1	Contact Details	3.6	*callSign*	S			
		3.74	*communicationChannel [m: {0, ∞}]*	S			
		3.76	*contactInstructions*	S			
		4.4	*fixedDateRange*	C	3.79	*dateEnd*	S
					3.81	*dateStart*	S
		4.5	*frequencyPair [m: {0, ∞}]*	C	3.102	*frequencyShoreStationReceives*	S
					3.103	frequencyShoreStationTransmits	S
		3.138	*mMSICode*	S			
		4.13	*onlineResource [m: {0, ∞}]*	C	3.106	*headline*	S
					3.127	linkage	S
					3.142	*nameOfResource*	S
		4.30	*telecommunications [m: {0, ∞}]*	C	3.76	*contactInstructions*	S
					3.192	telecommunicationIdentifier	S
					3.193	*telecommunicationService*	S
7.2	Service Hours	4.4	*fixedDateRange*	C	3.79	*dateEnd*	S
					3.81	*dateStart*	S

Number	Feature type	Number	Attribute or Role Type	Type
8.1	Quality of Non-Bathymetri	3.65	*categoryOfTemporalVariatio*	S
		3.111	*horizontalDistanceUncertai*	S
		4.8	horizontalPositionUncertai	C
		3.148	*orientationUncertainty*	S
		4.29	*surveyDateRange*	C
		4.41	*verticalUncertainty*	C
		4.9	*information [m: {0, ∞}]*	C
8.2	Data Coverage	3.132	maximumDisplayScale	S
		3.137	minimumDisplayScale	S
		4.9	*information [m: {0, ∞}]*	C
8.3	Navigational System of M	3.131	marksNavigationalSystemOf	S
		4.9	*information [m: {0, ∞}]*	C
8.4	Local Direction of Buoya	3.131	marksNavigationalSystemOf	S
		3.149	orientationValue	S
		3.165	*scaleMinimum*	S
		4.9	*information [m: {0, ∞}]*	C
8.5	Quality of Bathymetric D	3.65	categoryOfTemporalVariation	S

2.4.2 Simple attribute types

Each simple attribute in S-101 is assigned to one of 7 types:

EN — Enumeration: A fixed list of valid identifiers of named literal values. Attributes of an enumerated type may only take values from this list.

BO — Boolean: A value representing binary logic. The value can be either *True* or *False*. The default state for Boolean type attributes (that is, where the attribute is not populated for the feature) is *False*.

RE — Real: A signed Real (floating point) number consisting of a mantissa and an exponent. The representation of a real is encapsulation and usage dependent.

Examples: 23.501, -0.0001234, -23.0, 3.141296

IN — Integer: A signed integer number. The representation of an integer is encapsulation and usage dependent.

Examples: 29, -65547

TE — Free text: A CharacterString, that is an arbitrary-length sequence of characters including accents and special characters from a repertoire of one of the adopted character sets.

TD — Truncated Date: A truncated date allows a partial date to be encoded as an extension to the ISO 8601 compliant date attribute type values for year, month and day according to the Gregorian Calendar. Character encoding of a date is a string which follows the calendar date format (complete representation, basic format) for date specified by See clause 2.4.8. See clause 2.4.8.

Example: 19980918 (YYYYMMDD)

TI — Time: A time is given by an hour, minute and second in the 24-hour clock system. Character encoding of a time shall be a complete representation of the basic format as defined in ISO 8601. Complete representation means that hours, minutes and seconds shall be used. Basic format means that separating characters are omitted.

Time is preferably expressed as Universal Time Coordinated (UTC).

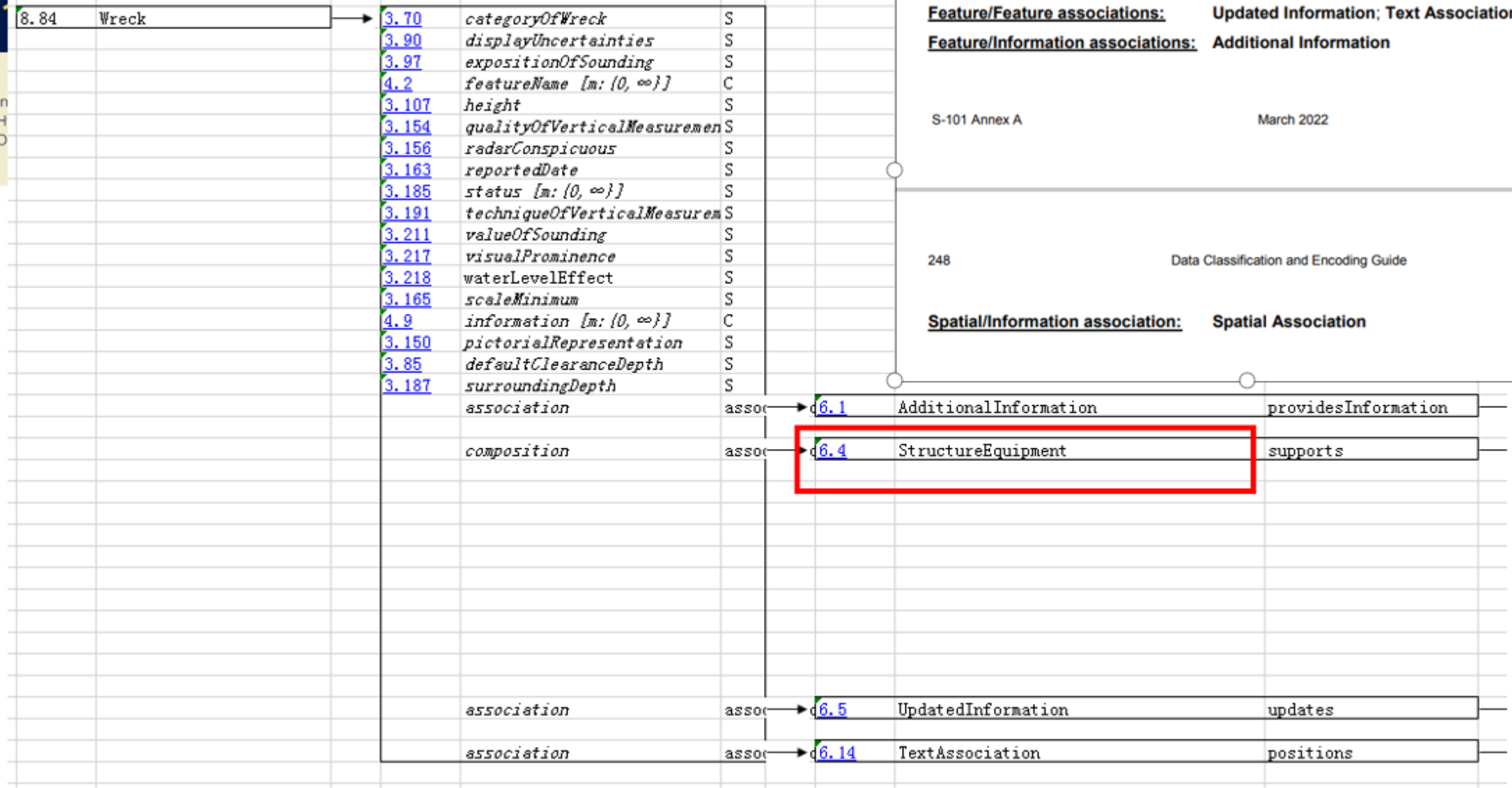
Example: 183059Z

Time may be expressed as a Local Time with a given offset to UTC.

Example: 183059+0100

Time may be expressed as a Local Time without a specified offset to UTC.

Example: 183059



8.84	Wreck	3.70	*categoryOfWreck*	S			
		3.90	*displayUncertainties*	S			
		3.97	*expositionOfSounding*	S			
		4.2	*featureName [m:{0,∞}]*	C			
		3.107	*height*	S			
		3.154	*qualityOfVerticalMeasuremen*	S			
		3.156	*radarConspicuous*	S			
		3.163	*reportedDate*	S			
		3.185	*status [m:{0,∞}]*	S			
		3.191	*techniqueOfVerticalMeasurem*	S			
		3.211	*valueOfSounding*	S			
		3.217	*visualProminence*	S			
		3.218	waterLevelEffect	S			
		3.165	*scaleMinimum*	S			
		4.9	*information [m:{0,∞}]*	C			
		3.150	*pictorialRepresentation*	S			
		3.85	*defaultClearanceDepth*	S			
		3.187	*surroundingDepth*	S			
			association	asso	6.1	AdditionalInformation	providesInformation
			composition	asso	6.4	StructureEquipment	supports
			association	asso	6.5	UpdatedInformation	updates
			association	asso	6.14	TextAssociation	positions

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

Feature/Information associations: **Additional Information**

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Spatial/Information association: **Spatial Association**

Feature/Feature associations: Structure/Equipment; Updated Information; Text Association

Feature/Information associations: Additional Information

Spatial/Information association: Spatial Association

8.161	Buoy New Danger Marking	→	3.4	buoyShap			
			3.72	colour			
			3.73	*colourP*			
			4.2	*feature*			
			4.4	*fixedDa*			
			3.131	*marksNa*			
			3.144	*natureO*			
			3.156	*radarCo*			
			4.34	*topmark*			
			3.214	*vertica*			
			3.165	*scaleMi*			
			4.9	*informa*			
			3.150	*pictori*			
			association	asso	→	6.1	AdditionalInformation	providesInformation	→
			composition	asso	→	6.4	StructureEquipment	supports	→
			association	asso	→	6.5	UpdatedInformation	updates	→
			association	asso	→	6.7	AidsToNavigationAssociation	componentOf	→
			association	asso	→	6.14	TextAssociation	positions	→

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

International Hydrographic Organization

1.The Cross check of S-101 FC and its DCEG

NO.	Classification	Feature CatalogueClause No.	DCEG ClauseNo.	Issue Type	Contentsin Feature Catalogue	Contentsin DCEG
9	F	8.186	25.16	Inconsistent name	Assoiation name is 8.149MarinePollutionRegulationsArea.	Assoiation name is MarinePollutionRegulations Limit.

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

3.186	Text Placement	→	3.149	orientationValue	S		
			3.194	text	S		
			3.195	textOffsetMm	S		
			3.196	textType	S		
			3.165	scaleMinimum	S		
				association	associ →	6.14	TextAssociation	identifies

8.20	LandRegion [m: [0, ∞]]	F
8.155	LightAirObstruction [m: [0, ∞]]	F
8.152	LightAllAround [m: [0, ∞]]	F
8.169	LightFloat [m: [0, ∞]]	F
8.154	LightFogDetector [m: [0, ∞]]	F
8.153	LightSectored [m: [0, ∞]]	F
8.170	LightVessel [m: [0, ∞]]	F
8.11	LocalMagneticAnomaly [m: [0, ∞]]	F
8.64	LockBasin [m: [0, ∞]]	F
8.142	LogPond [m: [0, ∞]]	F
8.89	MarineFarmCulture [m: [0, ∞]]	F
8.149	MarinePollutionRegulationsArea [m: [0, ∞]	F
8.129	MilitaryPracticeArea [m: [0, ∞]]	F
8.65	MooringTrot [m: [0, ∞]]	F
8.58	MooringWarpingFacility [m: [0, ∞]]	F
8.85	Obstruction [m: [0, ∞]]	F
8.90	OffshorePlatform [m: [0, ∞]]	F
8.95	OffshoreProductionArea [m: [0, ∞]]	F
8.143	OilBarrier [m: [0, ∞]]	F
8.174	PhysicalAISAidToNavigation [m: [0, ∞]]	F
8.48	Pile [m: [0, ∞]]	F
8.147	PilotageDistrict [m: [0, ∞]]	F

25.16 Text association

Text Association: IHO Definition: A feature association for the binding between a geo feature and the cartographically positioned location for text.

Remarks:

- A **Text Association** must include one of any of the geo features included in the following list associated to a single **Text Placement** feature..

Role Type	Role	Associated With	Multiplicity
Composition	Positions	**Text Placement**	0,1
	Identifies	**Administration Area, Airport/Airfield, Anchor Berth, Anchorage Area, Archipelagic Sea Lane, Archipelagic Sea Lane Area, Archipelagic Sea Lane Axis, Beacon Cardinal, Beacon Isolated Danger, Beacon Lateral, Beacon Safe Water, Beacon Special Purpose/General, Berth, Bridge, Building, Built-Up Area, Buoy Cardinal, Buoy Emergency Wreck Marking, Buoy Installation, Buoy Isolated Danger, Buoy Lateral, Buoy Safe Water, Buoy Special Purpose/General, Cable Area, Cable Overhead, Cable Submarine, Canal, Cargo Transhipment Area, Causeway, Checkpoint, Coast Guard Station, Coastline, Collision Regulations Limit, Continental Shelf Area, Conveyor, Crane, Current – Non-Gravitational, Dam, Daymark, Deep Water Route, Deep Water Route Centreline, Deep Water Route Part, Distance Mark, Dock Area, Dredged Area, Dry Dock, Dumping Ground, Dyke, Fairway, Fairway System, Fence/Wall, Ferry Route, Fishery Zone, Fishing Facility, Fishing Ground, Floating Dock, Fog Signal, Fortified Structure, Foul Ground, Free Port Area, Gate, Gridiron, Harbour Area (Administrative), Harbour Facility, Hulk, Ice Area, Information Area, Island Group, Lake, Land Area, Land Elevation, Land Region, Landmark, Light Air Obstruction, Light All Around, Light Float, Light Fog Detector, Light Sectored, Light Vessel, Local Magnetic Anomaly, Lock Basin, Log Pond, Marine Farm/Culture, Marine Pollution Regulations Limit, Military Practice Area, Mooring Trot, Mooring/Warping Facility, Obstruction, Offshore Platform, Offshore Production Area, Oil Barrier, Physical AIS Aid to Navigation, Pile, Pilot Boarding Place, Pilotage District, Pipeline Overhead, Pipeline Submarine/On Land, Pontoon, Precautionary Area, Production/Storage Area, Pylon/Bridge Support, Radar Line, Radar Range, Radar Station, Radar Transponder Beacon, Radio Calling-In Point, Radio Station, Railway, Range System, Rapids, Recommended Route Centreline, Recommended Track, Rescue Station, Restricted Area Navigational, Restricted Area Regulatory, River, Road, Runway, Sea Area/Named Water Area, Seabed Area, Seagrass, Seaplane Landing Area, Shoreline Construction, Signal Station Traffic, Signal Station Warning, Silo/Tank, Slope Topline, Sloping Ground, Small Craft Facility, Sounding, Spring, Submarine**	0,1 {1,1 [C]}

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

International Hydrographic Organization

1.The Cross check of S-101 FC and its DCEG

No.	Classification	Feature CatalogueClause No.	DCEG ClauseNo.	Issue Type	Contentsin Feature Catalogue	Contentsin DCEG
10	S	3.195(1.0.2)	27.170	Inconsistent	Text Justification has been removed from FC Ed 1.1.0.	In “Summary of Substantive Changes in Edition 1.1.0” of DCEG,it is stated that "Text Justification” has removed, but it still exists in 27.170 actually.

Attribute text justification removed as an allowable attribute for the cartographic feature Text Placement.	23.1, 27.171 (Edition 1.2.0)

27.170 text justification

Text justification: IHO Definition: The anchor point of a text string.

Attribute Type: Enumeration

1) **left**

IHO Definition: Of, relating to, or located on or near the side of a person or thing that is turned toward the

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

1.The Cross check of S-101 FC and its DCEG

NO.	Classification	Feature CatalogueClause No.	DCEG ClauseNo.	Issue Type	Contentsin Feature Catalogue	Contentsin DCEG
11	S	3.220		omission	FC Ed 1.1.0 adds a new content “Category of Cargo”.	There is no corresponding content in the DCEG Ed 1.1.0.

3.220	Category of Cargo	enumeration	→		
				Bulk	1
				Container	2
				General	3
				Liquid	4
				Passenger	5
				Livestock	6
				Dangerous or Hazardous	7
				Heavy Lift	8
				Ballast	9
				Dry Bulk Cargo	10
				Liquid Bulk Cargo	11
				Reefer Container Cargo	12
				Ro-Ro Cargo	13
				Project Cargo	14
				Break Bulk Cargo	15

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

International Hydrographic Organization

1.The Cross check of S-101 FC and its DCEG

NO.	Classification	Feature Catalogue Clause No.	DCEG Clause No.	Issue Type	Contents in Feature Catalogue	Contents in DCEG
12	F	8.177	21.5	omission	FC Ed 1.1.0 adds a new association RangeSystemAggregation.	There is no corresponding content in the DCEG Ed 1.1.0.

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

8.177	Radar Transponder Beacon	→	3.50	categoryOfRadarTransponderBeac	S			
			4.2	*featureName [m: [0, ∞]]*	C			
			4.4	*fixedDateRange*	C			
			4.15	*periodicDateRange [m: [0, ∞]]*	C			
			4.16	*radarWaveLength [m: [0, 2]]*	C			
			4.21	*sectorLimit*	C			
			3.174	*signalGroup*	S			
			4.25	*signalSequence [m: [0, ∞]]*	C			
			3.185	*status [m: [0, ∞]]*	S			
			3.208	*valueOfMaximumRange*	S			
			3.165	*scaleMinimum*	S			
			4.9	*information [m: [0, ∞]]*	C			
				association	associ →			
				composition	associ →			

	association	associ →	6.5	UpdatedInformation	updates	→	8.9	*UpdateInformation*	F
	association	associ →	6.14	TextAssociation	positions	→	8.186	*TextPlacement*	F
	aggregation	associ →	6.13	RangeSystemAggregation	componentOf	→	8.98	*RangeSystem*	F

21.5 Radar transponder beacon

IHO Definition: **RADAR TRANSPONDER BEACON**. A transponder beacon transmitting a coded signal on radar frequency, permitting an interrogating craft to determine the bearing and range of the transponder. Also called racon. (IHO Dictionary – S-32).

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Feature/Feature associations: Structure/Equipment; Updated Information; Text Association

Feature/Information associations: Additional Information

Spatial/Information association: Spatial Association

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

International Hydrographic Organization

2.The Cross check of S-1xx FCs and its DCEG

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No.	Classification	Feature Catalogue Clause No.	DCEG ClauseNo.	Issue Type	Contentsin Feature Catalogue	Contentsin DCEG
1	S	3.6	C.3.5	Spelling	The name of 3.6 is “Maximim Draught”.	The name of C3.5 is “Maximum Draught”

Number	Name	Value type
3.6	Maximim Draught	real

C.3.5 Maximum Draught

Name: Maximum Draught

Definition:

Code: 'maximumDraught'

Remarks:

Aliases:

Value Type: real

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

International Hydrographic Organization

2.The Cross check of S-1xx FCs and its DCEG

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No.	Classification	Feature Catalogue Clause No.	DCEG ClauseNo.	Issue Type	Contentsin Feature Catalogue	Contentsin DCEG
2	S		C.3.6	omission	N	Distance Above UKC Limit

C.3.6 Distance Above UKC Limit

Name: Distance Above UKC Limit

Definition:

Code: 'distanceAboveUKCLimit_m'

Remarks:

Aliases:

Value Type: real

3.20	UnderKeelClearance Calculation Type	enumeration	→	timeWindow	1
				maxDraught	2

C.4.2 UnderKeelClearance Calculation Request

Name: UnderKeelClearance Calculation Request

Definition:

Code: 'UnderKeelClearanceCalculationRequest'

Remarks:

Aliases: (none)

Value Type: Enumeration

Listed Values

Label	Definition	Code	R
'timeWindow' Aliases: (none)	The available time window(s) for a given draught.	1	
'maxDraught' Aliases: (none)	The maximum draught for a given time window.	2	

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Number	Feature type
8.1	Under Keel Clearance Plan

Number	Attribute or Role Type	Type
3.2	*generationTime*	S
3.3	*vesselId*	S
3.4	*sourceRouteName*	S
3.5	*sourceRouteVersion*	S
3.6	*maximumDraught*	S
3.7	*validTimeStart*	S
3.8	*validTimeEnd*	S
3.19	*UnderKeelClearancePurposeType*	S
3.20	*UnderKeelClearanceCalculationType*	S

C.7.1 UnderKeelClearancePlan

Name: UnderKeelClearancePlan

Abstract type: true

Definition: This feature is MetaFeature of UKCM information

Code: 'UKCP'

Remarks:

Aliases: (none)

Supertype: MetaFeatureType

Feature use type: meta

Permitted primitives: noGeometry

Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
generationTime	Simple			false
vesselID	Simple			false
sourceRouteName	Simple			false
sourceRouteVersion	Simple			false
maximumDraught	Simple			false
UnderKeelClearancePurposeType	Enumeration		1: prePlan 2: actualPlan 3: actualUpdate	false
UnderKeelClearanceCalculationRequested	Enumeration		1: timeWindow 2: maxDraught	false
fixedTimeRange	Complex			false

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

2.The Cross check of S-1xx FCs and its DCEG

8.3	Under Keel Clearance Almost Navigable Area	→	3.1	*scaleMinimum*	S

C.7.3 UnderKeelClearanceAlmostNonNavigableArea

Name: UnderKeelClearanceAlmostNonNavigableArea

Abstract type: false

Definition: Almost Non-Navigable Area.

Code: 'UnderKeelClearanceAlmostNonNavigableArea'

Remarks:

Aliases: (none)

Supertype: FeatureType

Feature use type: geographic

Permitted primitives: surface

Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
scaleMinimum	Simple			false
distanceAboveUKCLimit_m	Simple			false

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Number	Feature type
8.4	Under Keel Clearance Control Point

C.7.4 UnderKeelClearanceControlPoint

Name: UnderKeelClearanceControlPoint

Abstract type: false

S-129 June 2019 Edition 1.0.0

Number	Attribute or Role Type	Type
3.10	*name*	S
3.11	*ETA*	S
3.15	*expectedPassingTime*	S
3.16	*expectedPassingSpeed*	S
3.12	*TimeWindowOpen*	S
3.13	*TimeWindowClose*	S

Definition: UnderKeelClearance ControlPoint

Code: 'UnderKeelClearanceControlPoint'

Remarks:

Aliases: (none)

Supertype: FeatureType

Feature use type: geographic

Permitted primitives: point

Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
Name	Simple	0..1		false
distanceAboveUKCLimit_m	Simple	0..1		false
expectedPassingTime	Simple	0..1		false
expectedPassingSpeed	Simple	0..1		false
fixedTimeRange	Complex	0..1		false

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

Number	Name	Value type
3.7	Valid Time Start	dateTime
3.8	Valid Time End	dateTime
3.10	Name	text
3.11	ETA	dateTime
3.12	Time Window Open	dateTime
3.13	Time Window Close	dateTime
3.14	Time Window Pass	dateTime
3.17	Time Start	dateTime
3.18	Time End	dateTime

C.3 Simple Attributes

C.3.1 Generation Time

C.3.2 Vessel ID

C.3.3 Source Route Name

C.3.4 Source Route Version

C.3.5 Maximum Draught

C.3.6 Distance Above UKC Limit

C.3.7 Scale Minimum

C.3.8 Expected Passing Time

C.3.9 Expected Passing Speed

Number	Name	Value type
3.3	Vessel ID	text

C.7 Feature Types

C.7.1 UnderKeelClearancePlan

Name: UnderKeelClearancePlan

Abstract type: true

Definition: This feature is MetaFeature of UKCM information

Code: 'UKCP'

Remarks:

Aliases: (none)

Supertype: MetaFeatureType

Feature use type: meta

Permitted primitives: noGeometry

Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
generationTime	Simple			false
vesselID	Simple			false
sourceRouteName	Simple			false
sourceRouteVersion	Simple			false
maximumDraught	Simple			false

7.2.1 Feature Types

7.2.1.1 UnderKeelClearancePlan

Role	Name	Description	Mult	dataType	Remarks
Class	UnderKeelClearancePlan	A UKC plan calculated for a particular ship and a particular passage		MetaFeatureType	
SimpleAttribute	generationTime	Time the plan was generated	[1]	DateTime	
SimpleAttribute	shipID	Unique identification of the ship used for the calculation	[1]	Text	
SimpleAttribute	sourceRouteName	Identification of the route used as a source for the calculation	[1]	Text	Using the value of S-421.Route.routeInfoName
SimpleAttribute	sourceRouteVersion	Identification of the route used as a source for the calculation	[1]	Integer	Using the value of S-421.RouteHistory.routeHistoryEditionNo
SimpleAttribute	maximumDraught	The maximum ship draught in meters, used as base for the calculation	[1]	Real	
SimpleAttribute	ukcPurpose	The purpose of the current calculation	[1]	underKeelClearancePurposeType	
SimpleAttribute	typeOfCalculation	The type of calculation	[1]	underKeelClearanceCalculationType	
SpatialAttribute	geometry	Boundaries of the Under Keel Clearance management area	[1]	GM_OrientableSurface	geometric object comes from Geometry class in S-100 standard
ComplexAttribute	fixedTimeRange	Time period	[1]	fixedTimeRange	

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

3.The Cross check of S-1XX and S-101 FCs

No.	Publications	S-1xx Clause No.	S-101 Clause No.	Contentsin S-1XX Feature Catalogue	Contentsin S-101 Feature Catalogue
1	S-102	3.1	3.210	Depth	Value of Sounding
2	S-102	3.2	4.41	uncertainty	vertical uncertainty

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

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Number	Name	Value type
3.1	Depth	real
3.2	uncertainty	real

Number	Name	Value type
3.211	Value of Sounding	real

Number	Complex attribute	Number	Attribute	Type
4.41	Vertical Uncertainty	3.203	uncertaintyFixed	S
		3.204	*uncertaintyVariableFactor*	S

Table A-2 – BathymetryCoverage feature attribute parameters

IHO Definition: **depth**. The vertical distance from a given water level to the bottom [IHO S-32].
Unit: metres
Resolution: 0.01
Remarks: • Drying heights (drying depths) are indicated by a negative value.
IHO Definition: **uncertainty**. The interval (about a given value) that will contain the true value of the measurement at a specific confidence level [IHO S44].
Unit: metres
Resolution: 0.01
Remarks: • Represents a +/- value defining the possible range of associated depth. • Expressed a positive number.

27.185 value of sounding (VALSOU)

Value of sounding: IHO Definition: The value of the measurement of a sounding relative to the chart datum. (S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.232, November 2000).

Attribute Type: Real

Unit: Defined as an attribute in the ENC dataset metadata: metre (m)

Resolution: 0·01m

Format: sxxxxx.xx
s: sign, negative values only

Examples: **18.20** for a sounding of 18·2 metres
-2.46 for a drying height of 2·46 metres

Remarks:
• A drying height is indicated by a negative value.

29.41 vertical uncertainty

Vertical uncertainty: IHO Definition: The best estimate of the vertical accuracy of depths, heights, vertical distances and vertical clearances.

Indication: The complex attribute encodes the vertical uncertainty associated with any vertical measurement.

Sub-attributes: **uncertainty fixed** see clause 28.22
uncertainty variable factor see clause 28.23

Remarks:
• No remarks.

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

International Hydrographic Organization

3.The Cross check of S-1XX and S-101 FCs

No.	Publications	S-1xx Clause No.	S-101 Clause No.	Contentsin S-1XX Feature Catalogue	Contentsin S-101 Feature Catalogue
5	S-129	3.6	3.133（27.121）	maximumDraught	Maximum Permitted Draught

Number	Name	Value type
3.6	Maximim Draught	real

Number	Name	Value type
3.133	Maximum Permitted Draught	real

7.2.1.1 UnderKeelClearancePlan

Role	Name	Description	Mult	dataType	Remarks
Class	UnderKeelClearancePlan	A UKC plan calculated for a particular ship and a particular passage		MetaFeatureType	
SimpleAttribute	generationTime	Time the plan was generated	[1]	DateTime	
SimpleAttribute	shipID	Unique identification of the ship used for the calculation	[1]	Text	
SimpleAttribute	sourceRouteName	Identification of the route used as a source for the calculation	[1]	Text	Using the value of S-421.Route.routeInfoName
SimpleAttribute	sourceRouteVersion	Identification of the route used as a source for the calculation	[1]	Integer	Using the value of S-421.RouteHistory.routeHistoryEditionNo
SimpleAttribute	maximumDraught	The maximum ship draught in meters, used as base for the calculation	[1]	Real	

27.122 maximum permitted draught

Maximum permitted draught: IHO Definition: The maximum draught of a vessel permitted along a route, in a channel or dock, at a berth, or over a submerged feature.

Attribute Type: Real

Unit: Defined as an attribute in the ENC dataset metadata: metre (m)

Resolution: 0·1m

Format: xx.x

Example: **14.5** for a maximum permitted draught of 14·5 metres

Remarks:

- No remarks.

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

International Hydrographic Organization

3.The Cross check of S-1XX and S-101 FCs

No.	Publications	S-1xx Clause No.	S-101 Clause No.	Contentsin S-1XX Feature Catalogue	Contentsin S-101 Feature Catalogue
6	S-129	3.17	3.81	Time Start	Date Start

Number	Name	Value type
3.17	Time Start	dateTime

Number	Name	Value type
3.81	Date Start	S100_TruncatedDate

27.79 date start (DATSTA, *PERSTA*)

Date start: IHO Definition: The earliest 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: **20101129** for 29 November 2010 at 000000 hours as starting date.
----02-- for 01 February at 000000 hours annually as starting date.

Remarks:

- The attribute **date start** indicates the earliest date of an event or the start of a date range. This attribute is used to indicate the start of a fixed date range, the start of a periodic date range, or the deployment or implementation of a feature at a specific date in the future.

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

International Hydrographic Organization

3.The Cross check of S-1XX and S-101 FCs

No.	Publications	S-1xx Clause No.	S-101 Clause No.	Contentsin S-1XX Feature Catalogue	Contentsin S-101 Feature Catalogue
7	S-129	3.18	3.79	Time End	Date End

Number	Name	Value type
3.18	Time End	dateTime

Number	Name	Value type	L:
3.79	Date End	S100_TruncatedDate	

27.77 date end (DATEND, *PEREND*)

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 as ending date.

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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Number	Complex attribute		Number	Attribute	Type
4.1	Fixed Time Range	→	3.17	*TimeStart*	S
			3.18	*TimeEnd*	S

C.5 Complex Attributes

C.5.1 Fixed Time Range

Name: Fixed Time Range

Definition:

Code: '`fixedTimeRange`'

Remarks:

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
timeStart	dateTime			false
timeEnd	dateTime			false

Number	Complex attribute		Number	Attribute	Type
4.4	Fixed Date Range	→	3.79	*dateEnd*	S
			3.81	*dateStart*	S

29.4 fixed date range

Fixed date range: IHO Definition: An active period of a single fixed event or occurrence, as the date range between discrete start and end dates.

Indication: The complex attribute describes single fixed period, as the date range between its sub-attributes.

Sub-attributes: **date end** see clause 27.77
date start see clause 27.79

Remarks:

- The sub-attributes **date start** and **date end** must be encoded in the format YYYYMMDD; using 4 digits for the calendar year (YYYY) and, optionally, 2 digits for the month (MM) (for example April = 04) and 2 digits for the day (DD). When no specific month and/or day is required/known, the values are replaced with dashes (-).

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

7.2.1.1 UnderKeelClearancePlan

Role	Name	Description	Mult	dataType	Remarks
Class	UnderKeelClearancePlan	A UKC plan calculated for a particular ship and a particular passage		MetaFeatureType	
SimpleAttribute	generationTime	Time the plan was generated	[1]	DateTime	
SimpleAttribute	shipID	Unique identification of the ship used for the calculation	[1]	Text	
SimpleAttribute	sourceRouteName	Identification of the route used as a source for the calculation	[1]	Text	Using the value of S-421.Route.routeInfoName
SimpleAttribute	sourceRouteVersion	Identification of the route used as a source for the calculation	[1]	Integer	Using the value of S-421.RouteHistory.routeHistoryEditionNo
SimpleAttribute	maximumDraught	The maximum ship draught in meters, used as base for the calculation	[1]	Real	
SimpleAttribute	ukcPurpose	The purpose of the current calculation	[1]	underKeelClearancePurposeType	
SimpleAttribute	typeOfCalculation	The type of calculation	[1]	underKeelClearanceCalculationType	
SpatialAttribute	geometry	Boundaries of the Under Keel Clearance management area	[1]	GM_OrientableSurface	geometric object comes from Geometry class in S-100 standard
ComplexAttribute	fixedTimeRange	Time period	[1]	fixedTimeRange	

15.5 Recommended track

IHO Definition: **RECOMMENDED TRACK**. A route which has been specially examined to ensure so far as possible that it is free of dangers and along which ships are advised to navigate. (IMO Ships' Routeing).

S-101 Geo Feature: Recommended Track (RECTRC)

Primitives: Curve

Real World	*Paper Chart Symbol*	*ECDIS Symbol*

S-101 Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
based on fixed marks	*(CATTRK)*		BO	1,1
depth range minimum value	(DRVAL1)		RE	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 †
maximum permitted draught	*(INFORM)* *(NINFOM)*		RE	0,1
orientation value	*(ORIENT)*		RE	1,1
periodic date range		See clause 2.4.8	C	0,*
date end	*(PEREND)*		(S) TD	1,1
date start	*(PERSTA)*		(S) TD	1,1
quality of vertical measurement	(QUASOU)	1 : depth known	EN	0,*

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

3.The Cross check of S-1XX and S-101 FCs

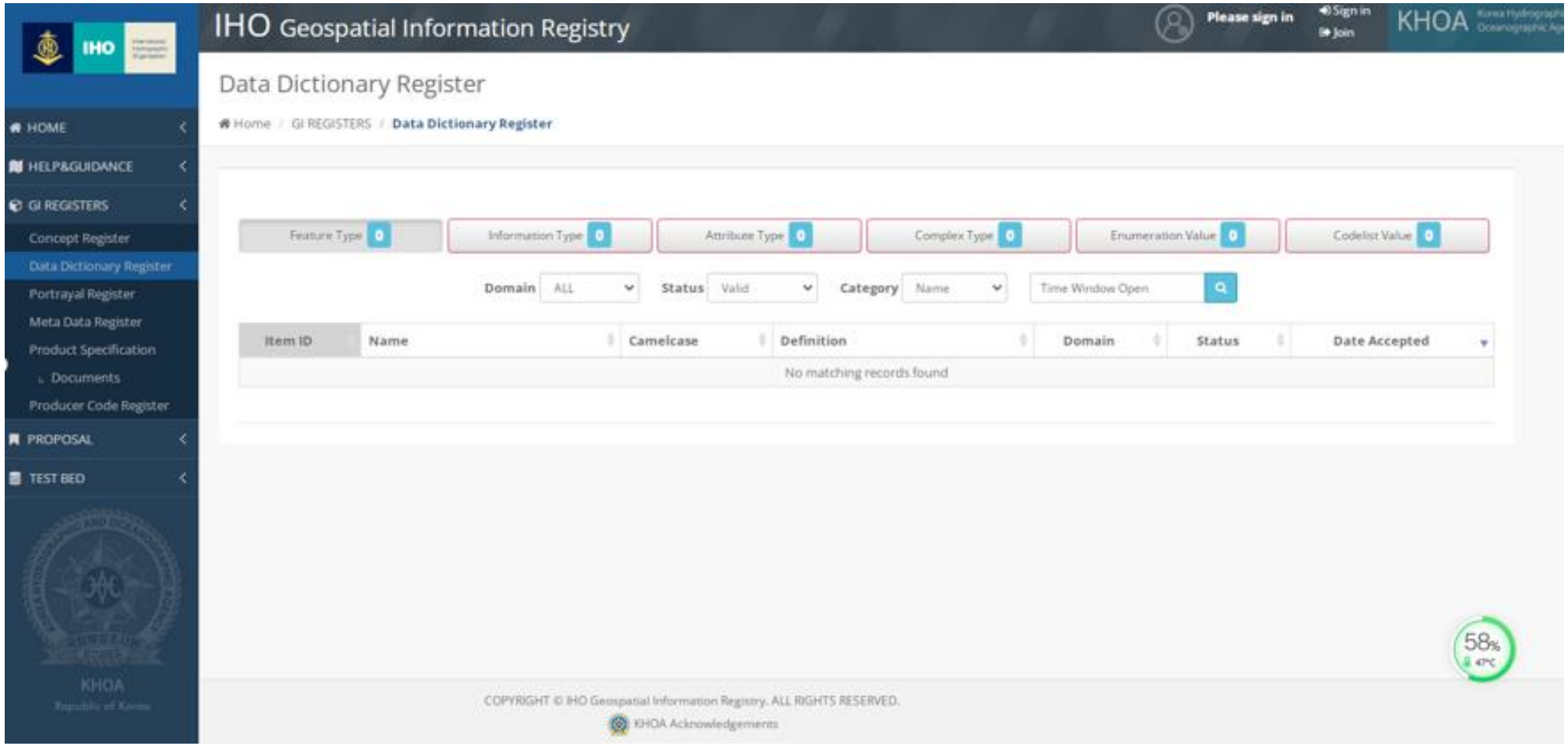
No.	Publications	S-1xx Clause No.	S-101 Clause No.	Contentsin S-1XX Feature Catalogue	Contentsin S-101 Feature Catalogue
9	S-129	3.1,3.9		3.1 and 3.9 are repeated in S-129 FC.	

Number	Name	Value type
3.1	Scale minimum	integer
3.2	Generation Time	dateTime
3.3	Vessel ID	text
3.4	Source Route Name	text
3.5	Source Route Version	text
3.6	Maximim Draught	real
3.7	Valid Time Start	dateTime
3.8	Valid Time End	dateTime
3.9	Scale Mimimum	integer

RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

International Hydrographic Organization

4.The Cross Check of S-1xx FCs and GI registry



RESULTS OF THE CROSS CHECK OF FEATURE CATALOGUES

5.The Cross Check of S-1xx FCs and S-100

- S-100 5.0.0 includes enumerations in simple attributes. S-101, S-102, S-104, and S-111 all follow this.
- S-129 juxtaposes enumerations with simple attributes.

ACTIONS

The S-100WG is requested to:

a. Note the information provided.