

# INTERNATIONAL HYDROGRAPHIC ORGANIZATION



## MARINE PROTECTED AREA PRODUCT SPECIFICATION

### IHO Publication S-122

#### Appendix C Feature Catalogue

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# 1 Catalogue header information

Name: Feature Catalogue for S-122

Scope: Global coverage of maritime areas

Field of Application: Marine Navigation

Version Number: 1.0.0

Version date: 2017-08-31

Producer information:

Individual name:

Organization name: International Hydrographic Organization

Position Name:

Contact Information:

Phone:

Address:

<b>deliveryPoint</b>	<b>city</b>	<b>administrativeArea</b>	<b>postalCode</b>	<b>country</b>	<b>electronicMailAddress</b>
International Hydrographic Organization, 4 quai Antoine 1er, B.P. 445			MC 98011 MONACO CEDEX		

Online resource information:

Hours of Service:

Contact Instructions: Contact IHO NIPWG Chair

Role: pointOfContact

Classification: unclassified

## 2 Definition Sources

No definition sources in catalogue

## 3 Simple Attributes

### 3.1 Administrative Division

Name: Administrative Division

Definition: Administrative division is a generic term for an administrative region within a country at a level below that of the sovereign state.

Code: 'administrativeDivision'

Remarks:

Aliases: (none)

Value Type: text

### 3.2 Application profile

Name: Application profile

Definition: name of an application profile that can be used with the online resource (ISO 19115)

Code: 'applicationProfile'

Remarks:

Aliases: (none)

Value Type: text

### 3.3 Ballast

Name: Ballast

Definition: Whether the vessel is in ballast

Code: 'ballast'

Remarks:

Aliases: (none)

Value Type: boolean

### 3.4 Call Name

Name: Call Name

Definition: The designated call name of a station, e.g. radio station, radar station, pilot.

Code: 'callName'

Remarks: This is the name used when calling a radio station by radio i.e. "Singapore Pilots".

Aliases: (none)

Value Type: text

### 3.5 Call sign

Name: Call sign

Definition: The designated call-sign of a radio station.

Code: 'callSign'

Remarks:

Aliases: CALSGN

Value Type: text

### 3.6 Cardinal direction

Name: Cardinal direction

Definition: Principal and intermediate compass points.

Code: 'cardinalDirection'

Remarks:

Aliases: CARDIR

Value Type: enumeration

#### Listed Values

Label	Definition	Code	Remarks
'N' Aliases: (none)	north	1	
'NNE' Aliases: (none)	northnortheast	2	
'NE' Aliases: (none)	Northeast	3	
'ENE' Aliases: (none)	eastnortheast	4	
'E' Aliases: (none)	east	5	
'ESE' Aliases: (none)	eastsoutheast	6	
'SE' Aliases: (none)	southeast	7	
'SSE' Aliases: (none)	southsoutheast	8	
'S' Aliases: (none)	south	9	
'SSW' Aliases: (none)	southsouthwest	10	
'SW' Aliases: (none)	southwest	11	
'WSW' Aliases: (none)	westsouthwest	12	
'W' Aliases: (none)	west	13	
'WNW' Aliases: (none)	westnorthwest	14	
'NW' Aliases: (none)	northwest	15	
'NNW' Aliases: (none)	northnorthwest	16	

## 3.7 Category of authority

Name: Category of authority

Definition: The type of person, government agency or organisation granted powers of managing or controlling access to and/or activity in an area

Code: 'categoryOfAuthority'

Remarks:

Aliases: CATAUT

Value Type: enumeration

## Listed Values

Label	Definition	Code	Remarks
'customs' Aliases: (none)	The agency or establishment for collecting duties, tolls. (Merriam-Websters online Dictionary 23rd February 2006, amended).	1	
'border control' Aliases: (none)	The administration to prevent or detect and prosecute violations of rules and regulations at international boundaries (adapted from Merriam-Websters online Dictionary 23rd February 2006).	2	
'police' Aliases: (none)	The department of government, or civil force, charged with maintaining public order. (Adapted from OED)	3	
'port' Aliases: (none)	Person or corporation, owners of, or entrusted with or invested with the power of managing a port. May be called a Harbour Board, Port Trust, Port Commission, Harbour Commission, Marine Department (NP 100 8th Edition 14 Oct 2004)	4	
'immigration' Aliases: (none)	The authority controlling people entering a country.	5	
'health' Aliases: (none)	The authority with responsibility for checking the validity of the health declaration of a vessel and for declaring free pratique.	6	
'coast guard' Aliases: (none)	Organisation keeping watch on shipping and coastal waters according to governmental law; normally the authority with responsibility for search and rescue.	7	
'agricultural' Aliases: (none)	The authority with responsibility for preventing infection of the agriculture of a country and for the protection of the agricultural interests of a country.	8	
'military' Aliases: (none)	A military authority which provides control of access to or approval for transit through designated areas or airspace.	9	
'private company' Aliases: (none)	A private or publicly owned company or commercial enterprise which exercises control of facilities, for example a callibration area.	10	
'maritime police' Aliases: (none)	A governmental or military force with jurisdiction in territorial waters. Examples could include Gendarmerie Maritime, Carabinerie, and Guardia Civil.	11	
'environmental' Aliases: (none)	An authority with responsibility for the protection of the environment.	12	
'fishery' Aliases: (none)	An authority with responsibility for the control of fisheries.	13	
'finance' Aliases: (none)	an authority with responsibility for the control and movement of money.	14	
'maritime' Aliases: (none)	A national or regional authority charged with administration of maritime affairs.	15	

### 3.8 Category of cargo

Name: Category of cargo

Definition: Classification of the different types of cargo that a ship may be carrying

Code: 'categoryOfCargo'

Remarks:

Aliases: CATCGO

Value Type: enumeration

## Listed Values

Label	Definition	Code	Remarks
'bulk'	Normally dry cargo which is transported to and from the vessel on conveyors or	1	

Label	Definition	Code	Remarks
Aliases: (none)	grabs		
'container' Aliases: (none)	One of a number of standard sized cargo carrying units, secured using standard corner attachments and bars	2	
'general' Aliases: (none)	Break bulk cargo normally loaded by crane	3	
'category of cargo liquid' Aliases: (none)	Any cargo loaded by pipeline	4	
'passenger' Aliases: (none)	A fee paying traveller	5	
'livestock' Aliases: (none)	Live animals carried in bulk	6	
'dangerous or hazardous' Aliases: (none)	Dangerous or hazardous cargo as described by the IMO International Maritime Dangerous Goods code	7	

### 3.9 Category of communication preference

Name: Category of communication preference

Definition: Classification of frequencies, VHF channels, telephone numbers, or other means of communication based on preference.

Code: 'categoryOfCommPref'

Remarks:

Aliases: (none)

Value Type: enumeration

#### Listed Values

Label	Definition	Code	Remarks
'preferred calling' Aliases: (none)	the first choice channel or frequency to be used when calling a radio station	1	
'alternate calling' Aliases: (none)	a channel or frequency to be used for calling a radio station when the preferred channel or frequency is busy or is suffering from interference	2	
'preferred working' Aliases: (none)	the first choice channel or frequency to be used when working with a radio station	3	
'alternate working' Aliases: (none)	a channel or frequency to be used for working with a radio station when the preferred working channel or frequency is busy or is suffering from interference	4	

### 3.10 Category of dangerous or hazardous cargo

Name: Category of dangerous or hazardous cargo

Definition: Classification of dangerous goods or hazardous materials based on the International Maritime Dangerous Goods Code (IMDG Code)

Code: 'categoryOfDangerousOrHazardousCargo'

Remarks:

Aliases: (none)

Value Type: enumeration

#### Listed Values

Label	Definition	Code	Remarks
'IMDG Code Class 1 Div. 1.1' Aliases: (none)	Explosives, Division 1: substances and articles which have a mass explosion hazard	1	
'IMDG Code Class 1 Div. 1.2' Aliases: (none)	Explosives, Division 2: substances and articles which have a projection hazard but not a mass explosion hazard	2	
'IMDG Code Class 1 Div. 1.3' Aliases: (none)	Explosives, Division 3: substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard	3	
'IMDG Code Class 1 Div. 1.4' Aliases: (none)	Explosives, Division 4: substances and articles which present no significant hazard	4	
'IMDG Code Class 1 Div. 1.5' Aliases: (none)	Explosives, Division 5: very insensitive substances which have a mass explosion hazard	5	
'Class 1: Division 1.6' Aliases: (none)	Explosives, Division 6: extremely insensitive articles which do not have a mass explosion hazard	6	
'IMDG Code Class 2 Div. 2.1' Aliases: (none)	Gases, flammable gases	7	
'IMDG Code Class 2 Div. 2.2' Aliases: (none)	Gases, non-flammable, non-toxic gases	8	
'IMDG Code Class 2 Div. 2.3' Aliases: (none)	Gases, toxic gases	9	
'IMDG Code Class 3' Aliases: (none)	flammable liquids	10	
'IMDG Code Class 4 Div. 4.1' Aliases: (none)	flammable solids, self-reactive substances and desensitized explosives	11	
'IMDG Code Class 4 Div. 4.2' Aliases: (none)	substances liable to spontaneous combustion	12	
'IMDG Code Class 4 Div. 4.3' Aliases: (none)	substances which, in contact with water, emit flammable gases	13	
'IMDG Code Class 5 Div. 5.1' Aliases: (none)	oxidizing substances	14	
'IMDG Code Class 5 Div. 5.2' Aliases: (none)	organic peroxides	15	
'IMDG Code Class 6 Div. 6.1' Aliases: (none)	toxic substances	16	

Label	Definition	Code	Remarks
'IMDG Code Class 6. Div. 6.2' Aliases: (none)	infectious substances	17	
'IMDG Code Class 7' Aliases: (none)	Radioactive material	18	
'IMDG Code Class 8' Aliases: (none)	Corrosive substances	19	
'IMDG Code Class 9' Aliases: (none)	Miscellaneous dangerous substances and articles	20	
'Harmful Substances in packaged form' Aliases: (none)	Harmful substances are those substances which are identified as marine pollutants in the International Maritime Dangerous Goods Code (IMDG Code). Packaged form is defined as the forms of containment specified for harmful substances in the IMDG Code. (MARPOL (73/78) Annex III)	21	

## 3.11 Category of marine protected area

Name: Category of marine protected area

Definition: Classification of marine protected areas based on IUCN (International Union for Conservation of Nature and Natural Resources) categories

Code: 'categoryOfMarineProtectedArea'

Remarks:

Aliases: (none)

Value Type: S100\_CodeList

### Listed Values

Label	Definition	Code	Remarks
'IUCN Category Ia' Aliases: (none)	Strict Nature Reserve: protected area managed mainly for science.	1	Area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring. (International Union for Conservation of Nature and Natural Resources publication “Guidelines for Protected Area Management Categories”, IUCN, 1994)
'IUCN Category Ib' Aliases: (none)	Wilderness Area: protected area managed mainly for wilderness protection.	2	Large area of unmodified or slightly modified land, and/or sea retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition. (International Union for Conservation of Nature and Natural Resources publication “Guidelines for Protected Area Management Categories”, IUCN, 1994)
'IUCN Category II' Aliases: (none)	National Park: protected area managed mainly for ecosystem protection and recreation. Natural area of land and/or sea, designated to (a) protect the ecological	3	Natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible. (International Union for Conservation of Nature and Natural Resources publication “Guidelines for Protected Area



Label	Definition	Code	Remarks
			Management Categories”, IUCN, 1994)
'IUCN Category III' Aliases: (none)	Natural Monument: protected area managed mainly for conservation of specific natural features	4	Area containing one, or more, specific natural or natural/cultural feature which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities or cultural significance. (International Union for Conservation of Nature and Natural Resources publication “Guidelines for Protected Area Management Categories”, IUCN, 1994)
'IUCN Category IV' Aliases: (none)	Habitat/Species Management Area: protected area managed mainly for conservation through management intervention	5	Area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species. (International Union for Conservation of Nature and Natural Resources publication “Guidelines for Protected Area Management Categories”, IUCN, 1994)
'IUCN Category V' Aliases: (none)	Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation	6	Area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area. (International Union for Conservation of Nature and Natural Resources publication “Guidelines for Protected Area Management Categories”, IUCN, 1994)
'IUCN Category VI' Aliases: (none)	Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems	7	Area containing predominantly unmodified natural systems, managed to ensure long term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs. (International Union for Conservation of Nature and Natural Resources publication “Guidelines for Protected Area Management Categories”, IUCN, 1994)

## 3.12 Category of relationship

Name: Category of relationship

Definition: Expresses constraints or requirements on vessel actions or activities in relation to a geographic feature, facility, or service

Code: 'categoryOfRelationship'

Remarks:

Aliases: (none)

Value Type: enumeration

### Listed Values

Label	Definition	Code	Remarks
'prohibited' Aliases: (none)	use of facility, waterway or service is forbidden	1	
'not recommended' Aliases: (none)	use of facility, waterway or service is not recommended	2	
'permitted'	use of facility, waterway, or service is permitted but not required	3	

Label	Definition	Code	Remarks
Aliases: (none)			
'recommended' Aliases: (none)	use of facility, waterway, or service is recommended	4	
'required' Aliases: (none)	use of facility, waterway, or service is required	5	
'not required' Aliases: (none)	use of facility, waterway, or service is not required	6	

### 3.13 Category of restricted area

Name: Category of restricted area

Definition: The official legal status of each kind of restricted area defines the kind of restriction(s), e.g., the restriction for a 'game preserve' may be 'entering prohibited', the restriction for an 'anchoring prohibition area' is 'anchoring prohibited'.

Code: 'categoryOfRestrictedArea'

Remarks: Permitted values for status should be reviewed, some are probably irrelevant to MPAs without wrecks, obstructions, or any navigation aids

Aliases: CATREA

Value Type: enumeration

#### Listed Values

Label	Definition	Code	Remarks
'nature reserve' Aliases: (none)	a tract of land managed so as to preserve it's flora, fauna, physical features, etc.	4	
'bird sanctuary' Aliases: (none)	a place where birds are bred and protected.	5	
'game reserve' Aliases: (none)	a place where wild animals or birds hunted for sport or food are kept undisturbed for private use.	6	
'seal sanctuary' Aliases: (none)	a place where seals are protected.	7	
'historic wreck area' Aliases: (none)	an area around certain wrecks of historical importance to protect the wrecks from unauthorized interference by diving, salvage or deposition (including anchoring).	10	
'research area' Aliases: (none)	an area where marine research takes place.	20	
'fish sanctuary' Aliases: (none)	a place where fish are protected.	22	
'ecological reserve' Aliases: (none)	a tract of land managed so as to preserve the relation of plants and living creatures to each other and to their surroundings.	23	
'environmentally sensitive sea area' Aliases: (none)	A generic term which may be used to describe a wide range of areas, considered sensitive for a variety of environmental reasons.	27	
'particularly sensitive sea area' Aliases: (none)	An area that needs special protection through action by IMO because of its significance for regional ecological, socio-economic or scientific reasons and because it may be vulnerable to damage by international shipping activities.	28	
'coral sanctuary' Aliases: (none)	A place where coral is protected.	31	

Label	Definition	Code	Remarks
'recreation area' Aliases: (none)	An area within which recreational activities regularly take place and therefore vessel movement may be restricted.	32	(Adapted from S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.76, November 2000).

## 3.14 Category of ship report

Name: Category of ship report

Definition: Classification of ship reports based on IMO standard report formats.

Code: 'categoryofShipReport'

Remarks: Through Resolution A.851(20), the IMO encourages authorities to require standard formats and procedures for ship reporting specified at ID 1 to 7 above but recognises that some authorities require amended formats and these cases are covered by ID 8 "any other report". (Appendix to IMO Resolution A.851(20) GENERAL PRINCIPLES FOR SHIP REPORTING SYSTEMS AND SHIP REPORTING REQUIREMENTS, INCLUDING GUIDELINES FOR REPORTING INCIDENTS INVOLVING DANGEROUS GOODS, HARMFUL SUBSTANCES AND/OR MARINE POLLUTANTS.)

Aliases: (none)

Value Type: enumeration

### Listed Values

Label	Definition	Code	Remarks
'sailing plan' Aliases: (none)	before or as near as possible to the time of departure from a port within a system or when entering the area covered by a system [for instance A, B, J, X etc.)	1	
'position report' Aliases: (none)	when necessary to ensure effective operation of the system	2	
'deviation report' Aliases: (none)	when the ship's position varies significantly from the position that would have been predicted from previous reports, when changing the reported route, or as decided by the master	3	
'final report' Aliases: (none)	on arrival at the destination or on leaving the area covered by the system	4	
'dangerous goods report' Aliases: (none)	when an incident takes place involving the loss or likely loss overboard of packaged dangerous goods, including those in freight containers, portable tanks, road and rail vehicles and shipborne barges, into the sea	5	
'harmful substances report' Aliases: (none)	when an incident takes place involving the discharge or probable discharge of oil (Annex I of MARPOL 73/78) or noxious liquid substances in bulk (Annex II of MARPOL 73/78)	6	
'marine pollutants report' Aliases: (none)	in the case of the loss or likely loss overboard of harmful substances in packaged form, including those in freight containers, portable tanks, road and rail vehicles and shipborne barges identified in the International Maritime Goods Code as marine pollutants (Annex III of MARPOL 73/78).	7	
'any other report' Aliases: (none)	any other report should be made in accordance with the system procedures as notified in accordance with paragraph 9 of the general principles	8	

## 3.15 Category of temporal variation

Name: Category of temporal variation

Definition: An assessment of the likelihood of change within an area since last survey.

Code: 'categoryOfTemporalVariation'

Remarks:

Aliases:

Value Type: enumeration

Listed Values

Label	Definition	Code	Remarks
'extreme event' Aliases: (none)	No new hydrographic survey conducted after an event (e.g. hurricane, earthquake, volcanic eruption, landslide, etc), which is considered likely to have changed the seafloor significantly.	1	
'likely to change' Aliases: (none)	Continuous or frequent change (e.g. river siltation, sand waves, seasonal storms, icebergs, etc).	2	
'unlikely to change' Aliases: (none)	Significant change to the seafloor is not expected.	4	
'unassessed' Aliases: (none)	Temporal variation not assessed or cannot be determined.	5	

## 3.16 Category of text

Name: Category of text

Definition: Classification of completeness of textual information in relation to the source.

Code: 'categoryOfText'

Remarks:

Aliases: (none)

Value Type: enumeration

Listed Values

Label	Definition	Code	Remarks
'abstract or summary' Aliases: (none)	A statement summarizing the important points of a text	1	
'extract' Aliases: (none)	An excerpt or excerpts from a text	2	
'full text' Aliases: (none)	The whole text	3	

## 3.17 Category of vessel registry

Name: Category of vessel registry

Definition: The locality of vessel registration or enrolment relative to the nationality of a port, territorial sea, administrative area, exclusive zone or other location.

Code: 'categoryOfVesselRegistry'

Remarks:

Aliases: (none)

Value Type: enumeration

Listed Values

Label	Definition	Code	Remarks
'domestic' Aliases: (none)	The vessel is registered or enrolled under the same national flag as the port, harbour, territorial sea, exclusive economic zone, or administrative area in which the object that possesses this attribute applies or is located.	1	
'foreign' Aliases: (none)	The vessel is registered or enrolled under a national flag different from the port, harbour, territorial sea, exclusive economic zone, or other administrative area in	2	

Label	Definition	Code	Remarks
	which the object that possesses this attribute applies or is located.		

## 3.18 Category of vessel traffic service

Name: Category of vessel traffic service

Definition: Classification of vessel traffic services based on the nature of the control or services provided.

Code: 'categoryOfVesselTrafficService'

Remarks:

Aliases: (none)

Value Type: enumeration

### Listed Values

Label	Definition	Code	Remarks
'Information Service' Aliases: (none)	A service to ensure that essential information becomes available in time for on-board navigational decision-making	1	IMO Resolution A.857(20)
'Traffic Organisation Service' Aliases: (none)	A service to assist on-board navigational decision-making and to monitor its effects	2	IMO Resolution A.857(20)
'Navigational Assistance Service' Aliases: (none)	A service to prevent the development of dangerous maritime traffic situations and to provide for the safe and efficient movement of vessel traffic within the VTS area	3	IMO Resolution A.857(20)
'Ship Reporting Service' Aliases: (none)	A service established by a relevant authority consisting of one or more reporting points or lines at which ships are required to report their identity, course, speed and other data to the monitoring authority	4	
'Local Port Service' Aliases: (none)	A service established to provide port information without interaction between the customer and the service provider. This information could be inter alia berthing information, availability of port services, shipping schedules, meteorological and hydrological data.	5	adapted IMO e-Navigation SIP

## 3.19 City name

Name: City name

Definition: The name of a town or city.

Code: 'cityName'

Remarks:

Aliases: (none)

Value Type: text

## 3.20 Communication channel

Name: Communication channel

Definition: A channel number assigned to a specific radio frequency, frequencies or frequency band.

Code: 'communicationChannel'

Remarks: The expected input is the specific VHF-Channel. The attribute 'communication channel' encodes the various VHF-channels used for communication.

Aliases: COMCHA

Value Type: text

## 3.21 Comparison Operator

Name: Comparison Operator

Definition: Numerical comparison

Code: 'comparisonOperator'

Remarks: The definition of COMPOP provides the relation between the value given in the model and the real ship's value.

Aliases: (none)

Value Type: enumeration

#### Listed Values

Label	Definition	Code	Remarks
'greater than' Aliases: (none)	The value of the left value is greater than that of the right.	1	
'greater than or equal to' Aliases: (none)	The value of the left expression is greater than or equal to that of the right.	2	
'less than' Aliases: (none)	The value of the left expression is less than that of the right.	3	
'less than or equal to' Aliases: (none)	The value of the left expression is less than or equal to that of the right.	4	
'equal to' Aliases: (none)	The two values are equivalent.	5	
'not equal to' Aliases: (none)	The two values are not equivalent.	6	

## 3.22 Contact instructions

Name: Contact instructions

Definition: Instructions provided on how to contact a particular person, organisation or service.

Code: 'contactInstructions'

Remarks:

Aliases: (none)

Value Type: text

## 3.23 Country

Name: Country

Definition: The name of a nation. (Adapted from The American Heritage Dictionaries)

Code: 'country'

Remarks:

Aliases: (none)

Value Type: text

## 3.24 Data assessment

Name: Data assessment

Definition: The categorisation of the assessment level of bathymetric data for an area.

Code: 'dataAssessment'

Remarks:

Aliases: (none)

Value Type: enumeration

#### Listed Values

Label	Definition	Code	Remarks
'assessed' Aliases: (none)	The quality of the bathymetric data has been assessed.	1	
'oceanic' Aliases: (none)	The quality of oceanic bathymetric data has been assessed or is not required.	2	
'unassessed' Aliases: (none)	Not having been assessed.	3	

## 3.25 Day Of Week

Name: Day Of Week

Definition: The days of the week

Code: 'dayOfWeek'

Remarks: This is an ordered enumeration

Aliases: (none)

Value Type: enumeration

### Listed Values

Label	Definition	Code	Remarks
'monday' Aliases: (none)	the day of the week before Tuesday and following Sunday	1	
'tuesday' Aliases: (none)	the day of the week before Wednesday and following Monday	2	
'wednesday' Aliases: (none)	the day of the week before Thursday and following Tuesday	3	
'thursday' Aliases: (none)	the day of the week before Friday and following Wednesday	4	
'friday' Aliases: (none)	the day of the week before Saturday and following Thursday	5	
'saturday' Aliases: (none)	the day of the week before Sunday and following Friday (together with Sunday forms part of the weekend)	6	
'sunday' Aliases: (none)	the day of the week before Monday and following Saturday (together with Saturday forms part of the weekend)	7	

## 3.26 Day of week is range

Name: Day of week is range

Definition: A statement expressing if the days of the week identified define a range or not.

Code: 'dayOfWeekIsRange'

Remarks:

Aliases: (none)

Value Type: boolean

## 3.27 Date end

Name: Date end

Definition: The latest date on which an object (e.g., a buoy) will be present.

Code: 'dateEnd'

Remarks: This attribute is to be used to indicate the removal or cancellation of an object at a specific date in the future. See also 'periodic

date end' (PEREND).  
 Aliases: DATEND  
 Value Type: S100\_TruncatedDate

## 3.28 Date fixed

Name: Date fixed  
 Definition: The date when a festival or national holiday recurs on the same day each year in the Gregorian calendar.  
 Code: 'dateFixed'  
 Remarks:  
 Aliases: (none)  
 Value Type: S100\_TruncatedDate

## 3.29 Date start

Name: Date start  
 Definition: The earliest date on which an object (e.g., a buoy) will be present.  
 Code: 'dateStart'  
 Remarks: This attribute is to be used to indicate the deployment or implementation of an object at a specific date in the future. See also 'periodic date start' (PERSTA).  
 Aliases: DATSTA  
 Value Type: S100\_TruncatedDate

## 3.30 Date variable

Name: Date variable  
 Definition: A day which is not fixed in the Gregorian calendar.  
 Code: 'dateVariable'  
 Remarks: Examples: The fourth Thursday in November; new moon day of Kartika (Diwali); Easter Sunday.  
 Aliases: (none)  
 Value Type: date

## 3.31 Delivery point

Name: Delivery point  
 Definition: Details of where post can be delivered such as the apartment, name and/or number of a street, building or PO Box.  
 Code: 'deliveryPoint'  
 Remarks:  
 Aliases: (none)  
 Value Type: text

## 3.32 Direction uncertainty

Name: Direction uncertainty  
 Definition: The best estimate of the accuracy of a bearing.  
 Code: 'directionUncertainty'  
 Remarks:  
 Aliases: (none)  
 Value Type: real

Unit of measure name: degrees    definition: degrees of arc    symbol: °

Quantity specification: planeAngle

Constraints



string Length	text Pattern	range		precision
(not specified)	(none)	lowerBound	0.0	1
		upperBound	360.0	
		closure	closedInterval	

For real values, precision is the number of digits after the decimal point.

## 3.33 Display name

Name: Display name

Definition: A statement expressing if a feature name is to be displayed in certain system display settings or not

Code: 'displayName'

Remarks:

Aliases: (none)

Value Type: boolean

## 3.34 Distance

Name: Distance

Definition: A linear extent of space

Code: 'distance'

Remarks:

Aliases: (none)

Value Type: real

Unit of measure name: nautical miles    definition: Nautical mile    symbol: NM

Quantity specification: length

Constraints

string Length	text Pattern	range	precision
(not specified)	(none)	(not specified)	1

For real values, precision is the number of digits after the decimal point.

## 3.35 File Locator

Name: File Locator

Definition: The string encodes the location of a fragment of text or other information in a support file.

Code: 'fileLocator'

Remarks:

Aliases: (none)

Value Type: text

## 3.36 File Reference

Name: File Reference

Definition: The string encodes the file name of an external text file that contains the text in English

Code: 'fileReference'

Remarks:

Aliases: (none)

Value Type: text

## 3.37 Fixed Date

Name: Fixed Date

Definition: The date when a festival or national holiday recurs on the same day each year in the Gregorian calendar.

Code: 'fixedDate'

Remarks:

Aliases: (none)

Value Type: date

## 3.38 Flip bearing

Name: Flip bearing

Definition: The bearing at which text is re-located to the opposite side of a feature when screen display is oriented away from true north.

Code: 'flipBearing'

Remarks:

Aliases: (none)

Value Type: real

Unit of measure name: degrees definition: degrees of arc symbol: (none)

Quantity specification: planeAngle

### Constraints

string Length	text Pattern	range		precision
(not specified)	(none)	lowerBound	0	0
		upperBound	1	
		closure	closedInterval	

For real values, precision is the number of digits after the decimal point.

## 3.39 Frequency Shore Station Receives

Name: Frequency Shore Station Receives

Definition: The shore station receiver frequency expressed in kHz to one decimal place.

Code: 'frequencyShoreStationReceives'

Remarks: Examples: 4379.1 kHz becomes 043791; 13162.8 kHz becomes 131628

Aliases: (none)

Value Type: integer

Unit of measure name: kHz definition: Kilohertz to 1 decimal place converted to an integer symbol: kHz

Quantity specification: frequency

### Constraints

string Length	text Pattern	range		precision
(not specified)	(none)	lowerBound	1	1
		upperBound	(none)	
		closure	gtSemiInterval	

For real values, precision is the number of digits after the decimal point.

## 3.40 Frequency Shore Station Transmits

Name: Frequency Shore Station Transmits

Definition: The shore station transmitter frequency expressed in kHz to one decimal place.

Code: 'frequencyShoreStationTransmits'

Remarks: Examples: 4379.1 kHz becomes 043791; 13162.8 kHz becomes 131628

Aliases: (none)

Value Type: integer

Unit of measure name: kHz definition: Kilohertz to 1 decimal place converted to an integer symbol: kHz

Quantity specification: frequency

### Constraints

string Length	text Pattern	range		precision
(not specified)	(none)	lowerBound	1	1
		upperBound	(none)	
		closure	gtSemiInterval	

For real values, precision is the number of digits after the decimal point.

## 3.41 Headline

Name: Headline

Definition: Words set at the head of a passage or page to introduce or categorize

Code: 'headline'

Remarks:

Aliases: (none)

Value Type: text

## 3.42 Horizontal distance uncertainty

Name: Horizontal distance uncertainty

Definition: The best estimate of the horizontal accuracy of horizontal clearances and distances.

Code: 'horizontalDistanceUncertainty'

Remarks: the error is assumed to be positive and negative. The plus/minus character must not be encoded.

Aliases: HORACC

Value Type: real

Unit of measure name: metres definition: SI Metres symbol: m

Quantity specification: length

#### Constraints

string Length	text Pattern	range		precision
(not specified)	(none)	lowerBound	0	1
		upperBound	(none)	
		closure	geSemiInterval	

For real values, precision is the number of digits after the decimal point.

## 3.43 Horizontal length

Name: Horizontal length

Definition: A measurement of the longer of two linear axis.

Code: 'horizontalLength'

Remarks: The unit of measure is defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of the M\_UNIT meta object class, e.g., metre (m). The resolution is 0.1 m or 0.1 ft.

Aliases: HORLEN

Value Type: real

Unit of measure name: metres definition: SI Metres symbol: m

#### Constraints

string Length	text Pattern	range		precision
(not specified)	(none)	lowerBound	0.0	1
		upperBound	(none)	
		closure	geSemiInterval	

For real values, precision is the number of digits after the decimal point.

## 3.44 IMO format for reporting

Name: IMO format for reporting

Definition: Whether a report must be in an IMO standard format

Code: 'imoFormatForReporting'

Remarks:

Aliases: (none)

Value Type: boolean

## 3.45 Jurisdiction

Name: Jurisdiction

Definition: The jurisdiction applicable to an administrative area.

Code: 'jurisdiction'

Remarks:

Aliases: JRSDTN

Value Type: enumeration

#### Listed Values

Label	Definition	Code	Remarks
'international' Aliases: (none)	involving more than one country covering more than one national area.	1	
'national' Aliases: (none)	an area administered or controlled by a single nation.	2	
'national sub-division' Aliases: (none)	an area smaller than the nation in which it lies.	3	

## 3.46 Language

Name: Language

Definition: The method of human communication, either spoken or written, consisting of the use of words in a structured and conventional way

Code: 'language'

Remarks: (S-122)Remarks: The language is encoded by a character code following ISO 639-3

Aliases: (none)

Value Type: text

## 3.47 Logical Connectives

Name: Logical Connectives

Definition: Expresses whether all the constraints described by its co-attributes must be satisfied, or only one such constraint need be satisfied.

Code: 'logicalConnectives'

Remarks: This attribute is intended to be used with co-attributes that encode limits on vessel dimensions, type of cargo, and other characteristics. The combination of constraints described by logicalConnective and its co-attributes defines a subset of vessels to which information described by a feature or information type instance applies (or does not apply, is required, recommended, etc.). The relationship between the vessel subset and the information is indicated by an association - see PermissionType and InclusionType). The two listed values of logicalConnective are two of the basic operations of Boolean logic. The third basic operation (not) is not used.

Aliases: (none)

Value Type: enumeration

#### Listed Values

Label	Definition	Code	Remarks
'logical conjunction' Aliases: (none)	all the conditions described by the other attributes of the object, or sub-attributes of the same complex attribute, are true	1	
'logical disjunction' Aliases: (none)	at least one of the conditions described by the other attributes of the object, or sub-attributes of the same complex attributes, is true	2	

## 3.48 Linkage

Name: Linkage

Definition: location (address) for on-line access using a URL/URI address or similar addressing scheme. (Adapted from ISO 19115:2014.)

Code: 'linkage'

Remarks: Adapted from ISO 19115:2014.

Aliases: (none)

Value Type: URL

## 3.49 Membership

Name: Membership

Definition: indicates whether a vessel is included or excluded from the regulation / restriction / recommendation / nautical information

Code: 'membership'

Remarks:

Aliases: (none)

Value Type: enumeration

### Listed Values

Label	Definition	Code	Remarks
'included' Aliases: (none)	Vessels with these characteristics are included in the regulation/restriction/recommendation/nautical information	1	
'excluded' Aliases: (none)	Vessels with these characteristics are excluded from the regulation/restriction/recommendation/nautical information	2	

## 3.50 MMSI Code

Name: MMSI Code

Definition: The Maritime Mobile Service Identity (MMSI) Code is formed of a series of nine digits which are transmitted over the radio path in order to uniquely identify ship stations, ship earth stations, coast stations, coast earth stations, and group calls. These identities are formed in such a way that the identity or part thereof can be used by telephone and telex subscribers connected to the general telecommunications network principally to call ships automatically.

Code: 'mMSICode'

Remarks:

Aliases: (none)

Value Type: integer

## 3.51 Notice time hours

Name: Notice time hours

Definition: The time duration prior to the time the service is needed, when notice must be provided to the service provider.

Code: 'noticeTimeHours'

Remarks:

Aliases: (none)

Value Type: real

Unit of measure name: hour definition: Hour symbol: hrs

Quantity specification: duration

## 3.52 Notice time text

Name: Notice time text

Definition: Text string qualifying the notice time specified in NTCHRS. This may explain the time specification in NTCHRS (e.g., “3 working days” for a NTCHRS value of “72” where NTCTIM is supposed to be “3 working days”) or consist of other language qualifying the time, e.g., “On departure from last port” or “On passing reporting line XY”).

Code: 'noticeTimeText'

Remarks:

Aliases: (none)

Value Type: text

## 3.53 Name

Name: Name

Definition: The individual name of a feature.

Code: 'name'

Remarks:

Aliases: (none)

Value Type: text

## 3.54 Name of resource

Name: Name of resource

Definition: Name of the online resource.

Code: 'nameOfResource'

Remarks:

Aliases: NAMRES

Value Type: text

## 3.55 Online description

Name: Online description

Definition: Detailed text description of what the online resource is/does

Code: 'onlineDescription'

Remarks:

Aliases: (none)

Value Type: text

## 3.56 Operation

Name: Operation

Definition: Indicates whether the minimum or maximum value should be used to describe a condition or in application processing

Code: 'operation'

Remarks:

Aliases: (none)

Value Type: enumeration

Listed Values

Label	Definition	Code	Remarks
'largest value' Aliases: (none)	The numerically largest value computed from the applicable attributes or sub-attributes	1	
'smallest value' Aliases: (none)	The numerically smallest value computed from the applicable attributes or sub-attributes	2	

## 3.57 Orientation uncertainty

Name: Orientation uncertainty

Definition: The best estimate of the accuracy of a bearing.

Code: 'orientationUncertainty'

Remarks:

Aliases: (none)

Value Type: real

## 3.58 Picture caption

Name: Picture caption  
Definition: Short description of the purpose of the image  
Code: 'pictureCaption'  
Remarks:  
Aliases: (none)  
Value Type: text

## 3.59 Picture information

Name: Picture information  
Definition: A set of information to provide credits to picture creator, copyright owner etc.  
Code: 'pictureInformation'  
Remarks:  
Aliases: (none)  
Value Type: text

## 3.60 Postal code

Name: Postal code  
Definition: Known in various countries as a postcode, or ZIP code, the postal code is a series of letters and/or digits that identifies each postal delivery area.  
Code: 'postalCode'  
Remarks:  
Aliases: (none)  
Value Type: text

## 3.61 Protocol

Name: Protocol  
Definition: connection protocol to be used. Example: ftp, http get KVP, http POST, etc.  
Code: 'protocol'  
Remarks:  
Aliases: (none)  
Value Type: text

## 3.62 Protocol request

Name: Protocol request  
Definition: Request used to access the resource. Structure and content depend on the protocol and standard used by the online resource, such as Web Feature Service standard.  
Code: 'protocolRequest'  
Remarks:  
Aliases: (none)  
Value Type: text

## 3.63 Reported date

Name: Reported date  
Definition: The date that the item was observed, done, or investigated  
Code: 'reportedDate'  
Remarks:  
Aliases: (none)  
Value Type: S100\_TruncatedDate

## 3.64 Restriction



Name: Restriction

Definition: The official legal statute of each kind of restricted area.

Code: 'restriction'

Remarks: Defines the kind of restriction(s), e.g., the restriction for 'a game preserve' may be 'entry prohibited', the restriction for an 'anchoring prohibition' is 'anchoring prohibited'. The complete information about the restriction(s), actually held in handbooks or other publications, may be encoded by the attribute 'TXTDSC'. A short explanation may be given by the use of the attribute 'INFORM'.

Aliases: RESTRN

Value Type: enumeration

#### Listed Values

Label	Definition	Code	Remarks
'anchoring prohibited' Aliases: (none)	an area within which anchoring is not permitted.	1	
'anchoring restricted' Aliases: (none)	a specified area designated by appropriate authority, within which anchoring is restricted in accordance with certain specified conditions.	2	
'fishing prohibited' Aliases: (none)	an area within which fishing is not permitted.	3	
'fishing restricted' Aliases: (none)	a specified area designated by appropriate authority, within which fishing is restricted in accordance with certain specified conditions.	4	
'trawling prohibited' Aliases: (none)	an area within which trawling is not permitted.	5	
'trawling restricted' Aliases: (none)	a specified area designated by appropriate authority, within which trawling is restricted in accordance with certain specified conditions.	6	
'entry prohibited' Aliases: (none)	an area within which navigation and/or anchoring is prohibited.	7	
'entry restricted' Aliases: (none)	a specified area designated by appropriate authority, within which navigation is restricted in accordance with certain specified conditions.	8	
'dredging prohibited' Aliases: (none)	an area within which dredging is not permitted.	9	
'dredging restricted' Aliases: (none)	a specified area designated by appropriate authority, within which dredging is restricted in accordance with certain specified conditions.	10	
'diving prohibited' Aliases: (none)	an area within which diving is not permitted.	11	
'diving restricted' Aliases: (none)	a specified area designated by appropriate authority, within which diving is restricted in accordance with certain specified conditions.	12	
'no wake' Aliases: (none)	mariners must adjust the speed of their vessels to reduce the wave or wash which may cause erosion or disturb moored vessels.	13	
'area to be avoided' Aliases: (none)	an IMO designated area to be avoided, defined as a routeing measure.	14	
'construction prohibited' Aliases: (none)	the erection of permanent or temporary fixed structures or artificial islands is prohibited.	15	
'discharging prohibited' Aliases: (none)	an area within which discharging or dumping is prohibited	16	
'discharging restricted' Aliases: (none)	a specified area designated by an appropriate authority, within which discharging or dumping is restricted in accordance with specified conditions.	17	
'industrial or mineral exploration/development'	an area within which industrial or mineral exploration and development are prohibited.	18	

Label	Definition	Code	Remarks
prohibited' Aliases: (none)			
'industrial or mineral exploration/development restricted' Aliases: (none)	a specified area designated by an appropriate authority, within which industrial or mineral exploration and development is restricted in accordance with certain specified conditions.	19	
'drilling prohibited' Aliases: (none)	an area within which excavating a hole on the sea-bottom with a drill is prohibited.	20	
'drilling restricted' Aliases: (none)	a specified area designated by an appropriate authority, within which excavating a hole on the sea-bottom with a drill is restricted in accordance with certain specified conditions.	21	
'removal of historical artifacts prohibited' Aliases: (none)	an area within which the removal of historical artifacts is prohibited.	22	
'cargo transshipment (lightering) prohibited' Aliases: (none)	an area in which cargo transshipment (lightering) is prohibited.	23	
'dragging prohibited' Aliases: (none)	an area in which the dragging of anything along the bottom, e.g. bottom trawling, is prohibited.	24	
'stopping prohibited' Aliases: (none)	an area in which a vessel is prohibited from stopping.	25	
'landing prohibited' Aliases: (none)	an area in which landing is prohibited.	26	
'speed restricted' Aliases: (none)	an area within which speed is restricted.	27	
'swimming prohibited' Aliases: (none)	An area in which swimming is prohibited	28	

## 3.65 Scale maximum

Name: Scale maximum

Definition: The maximum scale at which the object may be used, e.g., for ECDIS presentation.

Code: 'scaleMaximum'

Remarks: The modulus of the scale is indicated, that is 1:25 000 is encoded as 25000.

Aliases: SCAMAX

Value Type: integer

## 3.66 Scale minimum

Name: Scale minimum

Definition: The minimum scale at which the object may be used, e.g., for ECDIS presentation.

Code: 'scaleMinimum'

Remarks: The modulus of the scale is indicated, that is 1:1 250 000 is encoded as 1250000.

Aliases: SCAMIN

Value Type: integer

## 3.67 Source

Name: Source

Definition: An identifier (publication, document, reference work, instrument, vessel, etc) from which information comes or is acquired.

Code: 'source'

Remarks:

Aliases: (none)

Value Type: text

## 3.68 Source type

Name: Source type

Definition: type of the source

Code: 'sourceType'

Remarks:

Aliases: (none)

Value Type: enumeration

### Listed Values

Label	Definition	Code	Remarks
'law or regulation' Aliases: (none)	treaty, convention, or international agreement; law or regulation issued by a national or other authority	1	
'official publication' Aliases: (none)	publication not having the force of law, issued by an international organisation or a national or local administration	2	
'mariner report, confirmed' Aliases: (none)	Reported by mariner(s) and confirmed by another source	7	
'mariner report, not confirmed' Aliases: (none)	reported by mariner(s) but not confirmed	8	
'industry publications and reports' Aliases: (none)	shipping and other industry publication, including graphics, charts and web sites	9	
'remotely sensed images' Aliases: (none)	information obtained from satellite images	10	
'photographs' Aliases: (none)	information obtained from photographs	11	
'products issued by HO services' Aliases: (none)	information obtained from products issued by Hydrographic Offices	12	
'news media' Aliases: (none)	information obtained from news media	13	
'traffic data' Aliases: (none)	information obtained from the analysis of traffic data	14	

## 3.69 Status

Name: Status

Definition: The condition of an object at a given instant in time.

Code: 'status'

Remarks:

Aliases: STATUS

Value Type: enumeration

#### Listed Values

Label	Definition	Code	Remarks
'permanent' Aliases: (none)	intended to last or function indefinitely.	1	
'occasional' Aliases: (none)	acting on special occasions happening irregularly.	2	
'recommended' Aliases: (none)	presented as worthy of confidence, acceptance, use, etc.	3	
'not in use' Aliases: (none)	no longer used for the purpose intended disused.	4	
'periodic/intermittent' Aliases: (none)	recurring at intervals.	5	
'reserved' Aliases: (none)	set apart for some specific use.	6	
'temporary' Aliases: (none)	meant to last only for a time.	7	
'private' Aliases: (none)	not in public ownership or operation.	8	
'mandatory' Aliases: (none)	compulsory enforced.	9	
'extinguished' Aliases: (none)	no longer lit	11	
'illuminated' Aliases: (none)	lit by floodlights, strip lights, etc.	12	
'historic' Aliases: (none)	famous in history of historical interest.	13	
'public' Aliases: (none)	belonging to, available to, used or shared by, the community as a whole and not restricted to private use.	14	
'synchronized' Aliases: (none)	occur at a time, coincide in point of time, be contemporary or simultaneous.	15	
'watched' Aliases: (none)	looked at or observed over a period of time especially so as to be aware of any movement or change.	16	
'un-watched' Aliases: (none)	usually automatic in operation, without any permanently-stationed personnel to superintend it.	17	
'existence doubtful' Aliases: (none)	an object that has been reported but has not been definitely determined to exist.	18	
'buoyed' Aliases: (none)	Marked by buoys	28	

## 3.70 Telecommunication identifier

Name: Telecommunication identifier

Definition: An identifier, such as words, numbers, letters, symbols, or any combination of those used to establish a contact to a particular person, organisation or service.

Code: 'telecommunicationIdentifier'

Remarks:

Aliases: (none)

Value Type: text

## 3.71 Telecommunication carrier

Name: Telecommunication carrier

Definition: The name of a provider or type of carrier for a telecommunication service. This service may include land line based, shore based or satellite based radio connections.

Code: 'telcomCarrier'

Remarks:

Aliases: (none)

Value Type: text

## 3.72 Text

Name: Text

Definition: A non-formatted digital text string

Code: 'text'

Remarks:

Aliases: (none)

Value Type: text

## 3.73 Thickness of ice capability

Name: Thickness of ice capability

Definition: The thickness of ice that the ship can safely transit

Code: 'thicknessOfIceCapability'

Remarks:

Aliases: (none)

Value Type: text

## 3.74 Time reference

Name: Time reference

Definition: Indicates whether a time value is local time or Coordinated Universal Time.

Code: 'timeReference'

Remarks: Local time is the local civil time after daylight savings time (if any) has been applied. For example 0800 local time in New York is the same instant as 1300 UTC on December 1, when DST is not in effect in New York, and 1200 UTC on June 1, when DST is in effect in New York.

Aliases: TIMREF

Value Type: enumeration

Listed Values

Label	Definition	Code	Remarks
'localTime' Aliases: (none)	Local time	1	
'UTC' Aliases: (none)	Universal Coordinated Time	2	

## 3.75 Time of day end

Name: Time of day end  
 Definition: Ending time of day, possibly for a period within the day  
 Code: 'timeOfDayEnd'  
 Remarks:  
 Aliases: (none)  
 Value Type: time

## 3.76 Time of day start

Name: Time of day start  
 Definition: Starting time of day, possibly for a period within the day  
 Code: 'timeOfDayStart'  
 Remarks:  
 Aliases: TIMSTA  
 Value Type: time

## 3.77 Uncertainty fixed

Name: Uncertainty fixed  
 Definition: The best estimate of the fixed vertical accuracy component for depths, heights, vertical distances and vertical clearances.  
 Code: 'uncertaintyFixed'  
 Remarks: The maximum of the one-dimensional error. The error is assumed to be positive and negative. The plus/minus character must not be encoded. Note: Definition may need to be updated if it is used for horizontal measurements too?  
 Aliases: (none)  
 Value Type: real

Unit of measure name: metre definition: SI metre symbol: m

### Constraints

string Length	text Pattern	range	precision
(not specified)	(none)	(not specified)	1

For real values, precision is the number of digits after the decimal point.

## 3.78 Uncertainty variable

Name: Uncertainty variable  
 Definition: The best estimate of the variable vertical accuracy component for depths, heights, vertical distances and vertical clearances.  
 Code: 'uncertaintyVariable'  
 Remarks: The maximum of the one-dimensional error. The error is assumed to be positive and negative. The plus/minus character must not be encoded. Note: Definition may need to be updated if it is used for horizontal measurements too?  
 Aliases: (none)  
 Value Type: real

Unit of measure name: metre definition: SI metre symbol: m

### Constraints

string Length	text Pattern	range	precision
(not specified)	(none)	(not specified)	1

For real values, precision is the number of digits after the decimal point.

## 3.79 Vessels characteristics

Name: Vessels characteristics

Definition: Characteristics of vessels

Code: 'vesselsCharacteristics'

Remarks:

Aliases: (none)

Value Type: enumeration

### Listed Values

Label	Definition	Code	Remarks
'length overall' Aliases: (none)	The maximum length of the ship (L.O.A.). ( <a href="http://en.wikipedia.org/wiki/Ship_measurements">http://en.wikipedia.org/wiki/Ship_measurements</a> ; 24 July 2010)	1	
'length at waterline' Aliases: (none)	The ship's length measured at the waterline (L.W.L.). ( <a href="http://en.wikipedia.org/wiki/Ship_measurements">http://en.wikipedia.org/wiki/Ship_measurements</a> ; 24 July 2010)	2	
'breadth' Aliases: (none)	The width or beam of the vessel.	3	
'draught' Aliases: (none)	The depth of water necessary to float a vessel fully loaded.	4	
'height' Aliases: (none)	The height of the highest point of a vessel's structure (e.g. radar aerial, funnel, cranes, masthead) above her waterline. (UKHO NP100/2009)	5	
'displacement tonnage' Aliases: (none)	A measurement of the weight of the vessel, usually used for warships. (Merchant ships are usually measured based on the volume of cargo space; see tonnage). Displacement is expressed either in long tons of 2,240 pounds or metric tonnes of 1,000 kg. Since the two units are very close in size (2,240 pounds = 1,016 kg and 1,000 kg = 2,205 pounds), it is common not to distinguish between them. To preserve secrecy, nations sometimes misstate a warship's displacement. ( <a href="http://en.wikipedia.org/wiki/Ship_measurements">http://en.wikipedia.org/wiki/Ship_measurements</a> ; 24 July 2010)	6	
'displacement tonnage, light' Aliases: (none)	The weight of the ship excluding cargo, fuel, ballast, stores, passengers, and crew, but with water in the boilers to steaming level. ( <a href="http://en.wikipedia.org/wiki/Ship_measurements">http://en.wikipedia.org/wiki/Ship_measurements</a> ; 24 July 2010)	7	
'displacement tonnage, loaded' Aliases: (none)	The weight of the ship including cargo, passengers, fuel, water, stores, dunnage and such other items necessary for use on a voyage, which brings the vessel down to her load draft. ( <a href="http://en.wikipedia.org/wiki/Ship_measurements">http://en.wikipedia.org/wiki/Ship_measurements</a> ; 24 July 2010)	8	
'deadweight tonnage' Aliases: (none)	The difference between displacement, light and displacement, loaded. A measure of the ship's total carrying capacity. ( <a href="http://en.wikipedia.org/wiki/Ship_measurements">http://en.wikipedia.org/wiki/Ship_measurements</a> ; 24 July 2010)	9	
'gross tonnage' Aliases: (none)	The entire internal cubic capacity of the ship expressed in tons of 100 cubic feet to the ton, except certain spaces with are exempted such as: peak and other tanks for water ballast, open forecastle bridge and poop, access of hatchways, certain light and air spaces, domes of skylights, condenser, anchor gear, steering gear, wheel house, galley and cabin for passengers. ( <a href="http://en.wikipedia.org/wiki/Ship_measurements">http://en.wikipedia.org/wiki/Ship_measurements</a> ; 24 July 2010)	10	
'net tonnage' Aliases: (none)	Obtained from the gross tonnage by deducting crew and navigating spaces and allowances for propulsion machinery. ( <a href="http://en.wikipedia.org/wiki/Ship_measurements">http://en.wikipedia.org/wiki/Ship_measurements</a> ; 24 July 2010)	11	
'Panama Canal/Universal	the Panama Canal/Universal Measurement System (PC/UMS) is based on net tonnage, modified for Panama Canal purposes. PC/UMS is based on a	12	

Label	Definition	Code	Remarks
Measurement System net tonnage' Aliases: (none)	mathematical formula to calculate a vessel's total volume; a PC/UMS net ton is equivalent to 100 cubic feet of capacity. (Adapted from <a href="http://en.wikipedia.org/wiki/Tonnage">http://en.wikipedia.org/wiki/Tonnage</a> 4 Oct 2010)		
'Suez Canal net tonnage' Aliases: (none)	the Suez Canal Net Tonnage (SCNT) is derived with a number of modifications from the former net register tonnage of the Moorsom System and was established by the International Commission of Constantinople in its Protocol of 18 December 1873. It is still in use, as amended by the Rules of Navigation of the Suez Canal Authority, and is registered in the Suez Canal Tonnage Certificate. (Adapted from <a href="http://en.wikipedia.org/wiki/Tonnage">http://en.wikipedia.org/wiki/Tonnage</a> 4 Oct 2010)	13	
'Suez Canal gross tonnage' Aliases: (none)	Suez Canal Gross Tonnage (SCGT) is derived with a number of modifications from the former net register tonnage of the Moorsom System and was established by the International Commission of Constantinople in its Protocol of 18 December 1873. It is still in use, as amended by the Rules of Navigation of the Suez Canal Authority, and is registered in the Suez Canal Tonnage Certificate.	14	

## 3.80 Vessels characteristics unit

Name: Vessels characteristics unit

Definition: the unit used for vessel characteristics attribute

Code: 'vesselsCharacteristicsUnit'

Remarks:

Aliases: (none)

Value Type: enumeration

### Listed Values

Label	Definition	Code	Remarks
'metre' Aliases: (none)	The metre (or meter) is the base unit of length in the International System of Units (SI). It is defined as the distance travelled by light in vacuum in 1/299,792,458 of a second.	1	
'foot' Aliases: (none)	A foot (plural: feet) is a non-SI unit of length in a number of different systems including English units, Imperial units, and United States customary units. The most commonly used foot today is the international foot. There are three feet in a yard and 12 inches in a foot.	2	
'metric ton' Aliases: (none)	The tonne or metric ton (U.S.), often redundantly referred to as a metric tonne, is a unit of mass equal to 1,000 kg (2,205 lb) or approximately the mass of one cubic metre of water at four degrees Celsius. It is sometimes abbreviated as mt in the United States, but this conflicts with other SI symbols. The tonne is not a unit in the International System of Units (SI), but is accepted for use with the SI. In SI units and prefixes, the tonne is a megagram (Mg). The Imperial and US customary units comparable to the tonne are both spelled ton in English, though they differ in mass. Pronunciation of tonne (the word used in the UK) and ton is usually identical, but is not too confusing unless accuracy is important as the tonne and UK long ton differ by only 1.6%.	3	
'ton' Aliases: (none)	Long ton (weight ton or imperial ton) is the name for the unit called the "ton" in the avoirdupois or Imperial system of measurements, as used in the United Kingdom and several other Commonwealth countries. It has been mostly replaced by the tonne, and in the United States by the short ton. One long ton is equal to 2,240 pounds (1,016 kg) or 35 cubic feet (0.9911 m <sup>3</sup> ) of salt water with a density of 64 lb/ft <sup>3</sup> (1.025 g/ml). It has some limited use in the United States, most commonly in measuring the displacement of ships, and was the unit prescribed for warships by the Washington Naval Treaty—for example battleships were limited to a mass of 35,000 long tons (36,000 t; 39,000 ST).	4	



Label	Definition	Code	Remarks
'short ton' Aliases: (none)	The short ton is a unit of weight equal to 2,000 pounds (907.18474 kg). In the United States it is often called simply ton without distinguishing it from the metric ton (tonne, 1,000 kilograms) or the long ton (2,240 pounds / 1,016.0469088 kilograms); rather, the other two are specifically noted. There are, however, some U.S. applications for which unspecified tons normally means long tons (for example, Navy ships) or metric tons (world grain production figures). Both the long and short ton are defined as 20 hundredweights, but a hundredweight is 100 pounds (45.359237 kg) in the U.S. system (short or net hundredweight) and 112 pounds (50.80234544 kg) in the Imperial system (long or gross hundredweight).	5	
'gross ton' Aliases: (none)	Gross tonnage (GT) is a function of the volume of all ship's enclosed spaces (from keel to funnel) measured to the outside of the hull framing. There is a sliding scale factor. So GT is a kind of capacity-derived index that is used to rank a ship for purposes of determining manning, safety and other statutory requirements and is expressed simply as GT, which is a unitless entity, even though its derivation is tied to the cubic meter unit of volumetric capacity. Tonnage measurements are now governed by an IMO Convention (International Convention on Tonnage Measurement of Ships, 1969 (London-Rules)), which applies to all ships built after July 1982. In accordance with the Convention, the correct term to use now is GT, which is a function of the moulded volume of all enclosed spaces of the ship.	6	
'net ton' Aliases: (none)	Net tonnage (NT) is based on a calculation of the volume of all cargo spaces of the ship. It indicates a vessel's earning space and is a function of the moulded volume of all cargo spaces of the ship.	7	
'Panama Canal/Universal Measurement System net tonnage' Aliases: (none)	The Panama Canal/Universal Measurement System (PC/UMS) is based on net tonnage, modified for Panama Canal purposes. PC/UMS is based on a mathematical formula to calculate a vessel's total volume; a PC/UMS net ton is equivalent to 100 cubic feet of capacity.	8	
'Suez Canal Net Tonnage' Aliases: (none)	The Suez Canal Net Tonnage (SCNT) is derived with a number of modifications from the former net register tonnage of the Moorsom System and was established by the International Commission of Constantinople in its Protocol of 18 December 1873. It is still in use, as amended by the Rules of Navigation of the Suez Canal Authority, and is registered in the Suez Canal Tonnage Certificate.	9	
'none' Aliases: (none)	Can be used for net and gross tonnages, including Panama Canal/Universal Measurement System net tonnage and The Suez Canal Net Tonnage.	10	
'cubic metres' Aliases: (none)	Cubic metres	11	
'Suez Canal Gross Tonnage' Aliases: (none)	The Suez Canal Gross Tonnage (SCGT) is derived with a number of modifications from the former net register tonnage of the Moorsom System and was established by the International Commission of Constantinople in its Protocol of 18 December 1873. It is still in use, as amended by the Rules of Navigation of the Suez Canal Authority, and is registered in the Suez Canal Tonnage Certificate.	12	

## 3.81 Vessels characteristics value

Name: Vessels characteristics value

Definition: The value of a particular characteristic such as a dimension or tonnage of a vessel

Code: 'vesselsCharacteristicsValue'

Remarks:

Aliases: (none)

Value Type: real

## 3.82 Vessel performance

Name: Vessel performance

Definition: A description of the required handling characteristics of a vessel including hull design, main and auxilliary machinery, cargo handling equipment, navigation equipment and manoeuvring behaviour.

Code: 'vesselPerformance'

Remarks:

Aliases: (none)

Value Type: text

## 3.83 Quality of horizontal measurement

Name: Quality of horizontal measurement

Definition: The degree of reliability attributed to a position

Code: 'qualityOfHorizontalMeasurement'

Remarks:

Aliases: QUAPOS

Value Type: enumeration

### Listed Values

Label	Definition	Code	Remarks
'surveyed' Aliases: (none)	the position(s) was(were) determined by the operation of making measurements for determining the relative position of points on, above or beneath the earth's surface. Survey implies a regular, controlled survey of any date.	1	
'unsurveyed' Aliases: (none)	survey data is does not exist or is very poor.	2	
'inadequately surveyed' Aliases: (none)	position data is of a very poor quality.	3	
'approximate' Aliases: (none)	a position that is considered to be less than third-order accuracy, but is generally considered to be within 30.5 metres of its correct geographic location. Also may apply to an object whose position does not remain fixed.	4	
'position doubtful' Aliases: (none)	an object whose position has been reported but which is considered to be doubtful.	5	
'unreliable' Aliases: (none)	an object's position obtained from questionable or unreliable data.	6	
'reported (not surveyed)' Aliases: (none)	an object whose position has been reported and its position confirmed by some means other than a formal survey such as an independent report of the same object.	7	
'reported (not confirmed)' Aliases: (none)	an object whose position has been reported and its position has not been confirmed.	8	
'estimated' Aliases: (none)	the most probable position of an object determined from incomplete data or data of questionable accuracy.	9	
'precisely known' Aliases: (none)	a position that is of a known value, such as the position of an anchor berth or other defined object.	10	
'calculated' Aliases: (none)	a position that is computed from data.	11	

## 3.84 Maximum display scale

Name: Maximum display scale

Definition: The largest intended viewing scale for the data.

Code: 'maximumDisplayScale'

Remarks:

Aliases: (none)

Value Type: integer

#### Constraints

string Length	text Pattern	range		precision
(not specified)	(none)	lowerBound	1	(not specified)
		upperBound	(none)	
		closure	geSemiInterval	

For real values, precision is the number of digits after the decimal point.

## 3.85 Minimum display scale

Name: Minimum display scale

Definition: The smallest intended viewing scale for the data.

Code: 'minimumDisplayScale'

Remarks:

Aliases: (none)

Value Type: integer

#### Constraints

string Length	text Pattern	range		precision
(not specified)	(none)	lowerBound	1	(not specified)
		upperBound	(none)	
		closure	geSemiInterval	

For real values, precision is the number of digits after the decimal point.

## 3.86 Orientation value

Name: Orientation value

Definition: The angular distance measured from true north to the major axis of the object.

Code: 'orientationValue'

Remarks:

Aliases: ORIENT

Value Type: real

Unit of measure name: degrees    definition: degrees of arc    symbol: °

Quantity specification: planeAngle

#### Constraints

string Length	text Pattern	range		precision
(not specified)	(none)	lowerBound	0.0	1
		upperBound	360.0	
		closure	closedInterval	

For real values, precision is the number of digits after the decimal point.

## 3.87 Periodic date end

Name: Periodic date end

Definition: The end of the active period for a seasonal object (e.g., a buoy).

Code: 'periodicDateEnd'

Remarks: See also 'date end' (DATEND).

Aliases: PEREND

Value Type: S100\_TruncatedDate

## 3.88 Periodic date start

Name: Periodic date start

Definition: The start of the active period for a seasonal object (e.g., a buoy).

Code: 'periodicDateStart'

Remarks: See also 'date start' (DATSTA).

Aliases: PERSTA

Value Type: S100\_TruncatedDate

## 3.89 Pictorial representation

Name: Pictorial representation

Definition: Indicates whether a pictorial representation of the object is available.

Code: 'pictorialRepresentation'

Remarks: The 'pictorial representation' could be a drawing or a photo. The string encodes the file name of an external graphic file (pixel/vector).

Aliases: PICREP

Value Type: text

## 3.90 Sector bearing

Name: Sector bearing

Definition: A sector is the part of a circle between two straight lines drawn from the centre to the circumference. Sector bearing specifies the limit of the sector. (Adapted from S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.184, November 2000).

Code: 'sectorBearing'

Remarks: -The values given to the common limits of adjacent sectors should be identical. - The orientation of the bearing is from seaward to the central feature. This conforms with the method used in “List of Lights” publications. - A generic term such as “to shore” cannot be used; a specific bearing must be encoded. Where a light sector limit is defined as “to the shore”, it should be encoded using a value that ensures that, when the limit is drawn, it will fall entirely on land.

Aliases: (none)

Value Type: real

Unit of measure name: degrees    definition: degrees of arc    symbol: °

Quantity specification: planeAngle

## Constraints

string Length	text Pattern	range		precision
(not specified)	(none)	lowerBound	0	2
		upperBound	360.00	
		closure	closedInterval	

For real values, precision is the number of digits after the decimal point.

## 3.91 Source date

Name: Source date

Definition: The production date of the source, e.g., the date of measurement.

Code: 'sourceDate'

Remarks:

Aliases: SORDAT

Value Type: text

## 3.92 Variable Date

Name: Variable Date

Definition: A day which is not fixed in the Gregorian calendar.

Code: 'variableDate'

Remarks:

Aliases: (none)

Value Type: text

## 3.93 Action or activity

Name: Action or activity

Definition: The action or activity of a vessel

Code: 'actionOrActivity'

Remarks: codeListType=open enumeration; encoding=other: [something]

Aliases: (none)

Value Type: S100\_CodeList

## Listed Values

Label	Definition	Code	Remarks
'navigating with a pilot' Aliases: (none)	Carrying a qualified pilot as part of the vessel navigation team.	1	
'entering port' Aliases: (none)	Navigating a vessel into a port	2	
'leaving port' Aliases: (none)	Navigating a vessel out of a port.	3	
'berthing' Aliases: (none)	Attaching a vessel to a wharf or jetty	4	
'slipping' Aliases: (none)	Detaching a vessel from a wharf or jetty.	5	

Label	Definition	Code	Remarks
'anchoring' Aliases: (none)	Attaching a vessel to the seabed by means of an anchor and cable.	6	
'weighing anchor' Aliases: (none)	Detaching a vessel from the seabed by recovering an anchor and cable.	7	
'transiting' Aliases: (none)	Navigating a vessel along a route or through a narrow gap, such as under a bridge or through a lock.	8	
'overtaking' Aliases: (none)	Navigating a vessel past another traveling broadly in the same direction.	9	
'reporting' Aliases: (none)	Providing details such as the name, location or intentions of a vessel	10	
'working cargo' Aliases: (none)	Loading or unloading cargo	11	
'landing' Aliases: (none)	Placing crew or passengers on shore	12	
'diving' Aliases: (none)	Placing a swimmer with an air supply below the sea surface.	13	
'fishing' Aliases: (none)	Hunting or catching fish	14	
'discharging overboard' Aliases: (none)	Releasing anything into the sea; often ballast water; or spoil from dredging elsewhere.	15	
'passing' Aliases: (none)	Navigating a vessel past another traveling broadly in the opposite direction.	16	

## 3.94 Category of RxN

Name: Category of RxN

Definition: The principal subject matter of regulations, restrictions, recommendations or nautical information

Code: 'categoryOfRxN'

Remarks: codeListType=open enumeration; encoding=other: [something]

Aliases: (none)

Value Type: S100\_CodeList

### Listed Values

Label	Definition	Code	Remarks
'navigation' Aliases: (none)	pertaining to navigation	1	
'communication' Aliases: (none)	pertaining to communication	2	
'environmental protection' Aliases: (none)	pertaining to environmental protection	3	
'wildlife protection' Aliases: (none)	pertaining to wildlife protection	4	
'security' Aliases: (none)	pertaining to security	5	
'customs'	pertaining to customs	6	

Label	Definition	Code	Remarks
Aliases: (none)			
'cargo operation' Aliases: (none)	pertaining to cargo operation	7	
'refuge' Aliases: (none)	pertaining to a place of safety or refuge	8	
'health' Aliases: (none)	pertaining to health	9	
'natural resources or exploitation' Aliases: (none)	natural resources or exploitation	10	
'port' Aliases: (none)	pertaining to a port	11	
'finance' Aliases: (none)	pertaining to finance	12	
'agriculture' Aliases: (none)	pertaining to agriculture	13	

## 3.95 Category of schedule

Name: Category of schedule

Definition: Describes the type of schedule, e.g., opening, closure, etc.

Code: 'categoryOfSchedule'

Remarks: codeListType=open enumeration; encoding=other: [something]

Aliases: (none)

Value Type: S100\_CodeList

### Listed Values

Label	Definition	Code	Remarks
'normal operation' Aliases: (none)	The service, office, is open, fully manned, and operating normally, or the area is accessible as usual.	1	
'closure' Aliases: (none)	The service, office, or area is closed.	2	
'unmanned operation' Aliases: (none)	The service is available but not manned.	3	

## 3.96 Category of vessel

Name: Category of vessel

Definition: Classification of vessels by function or use.

Code: 'categoryOfVessel'

Remarks: codeListType=open enumeration; encoding=other: [something]

Aliases: (none)

Value Type: S100\_CodeList

### Listed Values

Label	Definition	Code	Remarks
'general cargo vessel'	a vessel designed to carry general cargo	1	

Label	Definition	Code	Remarks
Aliases: (none)			
'container carrier' Aliases: (none)	a vessel designed to carry ISO containers	2	
'tanker' Aliases: (none)	a vessel designed to carry bulk liquid or gas, including LPG and LNG	3	
'bulk carrier' Aliases: (none)	a vessel designed to carry bulk solid material	4	
'passenger vessel' Aliases: (none)	a vessel designed to carry passengers; often a cruise ship	5	
'roll-on roll-off' Aliases: (none)	a vessel designed to allow road vehicles to be driven on and off; often a ferry	6	
'refrigerated cargo vessel' Aliases: (none)	a vessel designed to carry refrigerated cargo	7	
'fishing vessel' Aliases: (none)	a vessel designed to catch or hunt fish	8	
'service' Aliases: (none)	a vessel which provides a service such as a tug, anchor handler, survey or supply vessel	9	
'warship' Aliases: (none)	a vessel designed for the conduct of military operations	10	
'towed or pushed composite unit' Aliases: (none)	either a tug and tow, or any combination of a tug providing propulsion to barges or vessels secured ahead or alongside	11	
'tug and tow' Aliases: (none)	a combination of tug(s) and non-powered tow(s)	12	
'light recreational' Aliases: (none)	A pleasure boat or watercraft, or an excursion vessel used for short cruises such as whale watching	13	
'semi-submersible offshore installation' Aliases: (none)	An installation which is designed to float at all times and which is normally anchored in position when deployed in the offshore gas and oil industry.	14	
'jack-up exploration or project installation' Aliases: (none)	An exploration or project installation with legs which can be raised and lowered. The legs are raised when the installation is repositioned. When stationary the legs are lowered to the sea floor and the working platform is raised clear of the sea surface	15	
'livestock carrier' Aliases: (none)	A vessel designed to carry large quantities of live animals.	16	
'sport fishing' Aliases: (none)	A vessel used in fishing for pleasure or competition.	17	

## 3.97 Online function

Name: Online function

Definition: code for function performed by the online resource

Code: 'onlineFunction'

Remarks: codeListType=open enumeration; encoding=other: [something]

Aliases: (none)



Value Type: S100\_CodeList

## Listed Values

Label	Definition	Code	Remarks
'download' Aliases: (none)	online instructions for transferring data from one storage device or system to another. (ISO 19115:2014)	1	
'information' Aliases: (none)	online information about the resource (ISO 19115:2014)	2	
'offlineAccess' Aliases: (none)	online instructions for requesting the resource from the provider (ISO 19115:2014)	3	
'order' Aliases: (none)	online order process for obtaining the resource (ISO 19115:2014).	4	
'search' Aliases: (none)	online search interface for seeking out information about the resource (ISO 19115:2014).	5	
'completeMetadata' Aliases: (none)	complete metadata provided (ISO 19115:2014).	6	
'browseGraphic' Aliases: (none)	browse graphic provided (ISO 19115:2014).	7	
'upload' Aliases: (none)	online resource upload capability provided (ISO 19115:2014).	8	
'emailService' Aliases: (none)	online email service provided (ISO 19115:2014)	9	
'browsing' Aliases: (none)	online browsing provided (ISO 19115:2014)	10	
'fileAccess' Aliases: (none)	online file access provided (ISO 19115:2014)	11	

## 3.98 Telecommunication service

Name: Telecommunication service

Definition: Classification of methods of communication over a distance by electrical, electronic, or electromagnetic means.

Code: 'telecommunicationService'

Remarks: codeListType=open enumeration; encoding=other: [something]

Aliases: (none)

Value Type: S100\_CodeList

## Listed Values

Label	Definition	Code	Remarks
'voice' Aliases: (none)	The transfer or exchange of information by using sounds that are being made by mouth and throat when speaking	1	
'facsimile' Aliases: (none)	a system of transmitting and reproducing graphic matter (as printing or still pictures) by means of signals sent over telephone lines	2	
'SMS' Aliases: (none)	Short Message Service, a form of text messaging communication on phones and mobile phones	3	
'data' Aliases: (none)	facts or information used usually to calculate, analyze, or plan something	4	
'streamedData' Aliases: (none)	Streamed data is data that that is constantly received by and presented to an end-user while being delivered by a provider.	5	

Label	Definition	Code	Remarks
'telex' Aliases: (none)	a system of communication in which messages are sent over long distances by using a telephone system and are printed by using a special machine (called a teletypewriter)	6	
'telegraph' Aliases: (none)	an apparatus, system, or process for communication at a distance by electric transmission over wire	7	
'email' Aliases: (none)	Messages and other data exchanged between individuals using computers in a network.	8	

## 3.99 Text justification

Name: Text justification

Definition: The anchor point of a text string

Code: 'textJustification'

Remarks:

Aliases: (none)

Value Type: enumeration

### Listed Values

Label	Definition	Code	Remarks
'left' Aliases: (none)	The anchor point is at the start of the text string.	1	
'centred' Aliases: (none)	The anchor point is at the centre of the text string.	2	
'right' Aliases: (none)	The anchor point is at the end of the text string.	3	

## 3.100 Text type

Name: Text type

Definition: The attribute from which a text string is derived.

Code: 'textType'

Remarks: (S-122) Remark: S-122 does not include light features and therefore listed value '2: light characteristic' is omitted from the S-122 application schema.

Aliases: (none)

Value Type: enumeration

### Listed Values

Label	Definition	Code	Remarks
'feature name' Aliases: (none)	The attribute from which a text string is derived.	1	

## 4 Complex Attributes

### 4.1 Bearing information

Name: Bearing information

Definition: A bearing is the direction one object is from another object.

Code: 'bearingInformation'

Remarks:

Aliases: (none)

Sub-Attributes				
Sub-attribute	Type	Mult.	Permitted Values	sequential
cardinalDirection	enumeration	0..1	1: N 2: NNE 3: NE 4: ENE 5: E 6: ESE 7: SE 8: SSE 9: S 10: SSW 11: SW 12: WSW 13: W 14: WNW 15: NW 16: NNW	false
distance	real	0..1		false
sectorBearing	real	0..2		true
information	complex	0..*		false
orientation	complex	0..1		false

### 4.2 Contact address

Name: Contact address

Definition: Direction or superscription of a letter, package, etc., specifying the name of the place to which it is directed, and optionally a contact person or organisation who should receive it. (Oxford English Dictionary, 2nd Ed., adapted).

Code: 'contactAddress'

Remarks:

Aliases: (none)

Sub-Attributes				
Sub-attribute	Type	Mult.	Permitted Values	sequential
deliveryPoint	text	0..*		false
cityName	text	0..1		false
administrativeDivision	text	0..1		false
country	text	0..1		false
postalCode	text	0..1		false

## 4.3 Feature name

Name: Feature name

Definition: The complex attribute provides the name of an entity, defines the national language of the name, and provides the option to display the name at various system display settings.

Code: 'featureName'

Remarks:

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
displayName	boolean	0..1		false
language	text	0..1		false
name	text	1..1		false

## 4.4 Fixed date range

Name: Fixed date range

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

Code: 'fixedDateRange'

Remarks: the sub-attributes date start and date end must be encoded using 4 digits for the calendar year (YYYY) and, optionally, 2 digits for the month (MM) (e.g. 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 (-).

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
dateEnd	S100_TruncatedDate	0..1		false
dateStart	S100_TruncatedDate	0..1		false

## 4.5 Frequency pair

Name: Frequency pair

Definition: A pair of frequencies for transmitting and receiving radio signals. The shore station transmits and receives on the frequencies indicated.

Code: 'frequencyPair'

Remarks:

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
frequencyShoreStationReceives	integer	0..1		false
frequencyShoreStationTransmits	integer	0..1		false

## 4.6 Graphic

Name: Graphic

Definition: Pictorial information such as a photograph, sketch, or other graphic, optionally accompanied by descriptive information about the graphic and the location relative to its subject from which it was made.

Code: 'graphic'

Remarks:

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
pictorialRepresentation	text	1..*		false
pictureCaption	text	0..1		false
sourceDate	text	0..1		false
pictureInformation	text	0..1		false
bearingInformation	complex	0..1		false

## 4.7 Horizontal positional uncertainty

Name: Horizontal positional uncertainty

Definition: The best estimate of the accuracy of a position.

Code: 'horizontalPositionalUncertainty'

Remarks: The expected input is the maximum of the two-dimensional error. The error is assumed to be positive and negative. The plus/minus character shall not be encoded.

Aliases: POSACC

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
uncertaintyFixed	real	1..1		false
uncertaintyVariable	real	0..1		false

## 4.8 Information

Name: Information

Definition: The complex attribute provides additional textual information that cannot be provided using other allowable attributes for the feature, and defines the language of the text string.

Code: 'information'

Remarks: this complex attribute should be used, for example, to hold the information that is shown on paper charts by cautionary and explanatory notes.

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
fileLocator	text	0..1		false
fileReference	text	0..1		false
headline	text	0..1		false
language	text	0..1		false
text	text	0..1		false

## 4.9 Notice time

Name: Notice time

Definition: Span of time, prior to the time the service is needed, for preparations to be made to fulfil the requirement.

Code: 'noticeTime'

Remarks:

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
noticeTimeHours	real	0..*		true
noticeTimeText	text	0..1		false
operation	enumeration	0..1	1: largest value 2: smallest value	false

## 4.10 Online resource

Name: Online resource

Definition: Information about online sources from which a resource or data can be obtained.

Code: 'onlineResource'

Remarks: The complex attribute describes the access to online resources according to ISO 19115.

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
linkage	URL	1..1		false
protocol	text	0..1		false
applicationProfile	text	0..1		false
nameOfResource	text	0..1		false
onlineDescription	text	0..1		false
onlineFunction	S100_CodeList	0..1	1: download 2: information 3: offlineAccess 4: order 5: search 6: completeMetadata 7: browseGraphic 8: upload 9: emailService 10: browsing 11: fileAccess	false
protocolRequest	text	0..1		false

## 4.11 Orientation

Name: Orientation

Definition: The angular distance measured from true north to the major axis of the feature.

Code: 'orientation'

Remarks:

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
orientationUncertainty	real	0..1		false
orientationValue	real	1..1		false

## 4.12 Schedule by day of week

Name: Schedule by day of week

Definition: The nature and timings of a daily schedule by days of the week.

Code: 'scheduleByDoW'

Remarks:

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
categoryOfSchedule	S100_CodeList	0..1	1: normal operation 2: closure 3: unmanned operation	false
tmIntervalsByDoW	complex	1..*		false

## 4.13 Periodic date range

Name: Periodic date range

Definition: The complex attribute describes the active period for a seasonal feature (e.g. a buoy), as the dates between its sub-attributes

Code: 'periodicDateRange'

Remarks: The sub-attributes date start and date end 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 is required (that is, the feature is removed at the same time each year) the following two cases may be considered: - same day each year: ----MMDD - same month each year: ----MM-- This conforms to ISO 8601:2004.

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
dateEnd	S100_TruncatedDate	1..1		false
dateStart	S100_TruncatedDate	1..1		false

## 4.14 Radiocommunications

Name: Radiocommunications

Definition: Detailed radiocommunications description with channels, frequencies, preferences and time schedules

Code: 'radiocommunications'

Remarks:

Aliases: RDOCOM

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
categoryOfCommPref	enumeration	0..1	1: preferred calling 2: alternate calling 3: preferred working 4: alternate working	false
communicationChannel	text	0..*		false
contactInstructions	text	0..1		false
frequencyPair	complex	0..*		false
tmIntervalsByDoW	complex	0..*		false

## 4.15 RxN Code

Name: RxN Code

Definition: A summary of the impact of the most common types of regulation, restriction, recommendation and nautical information on a vessel.

Code: 'rxnCode'

Remarks: This attribute converts the subject, topic, and effects of regulations, etc., from plain text or natural language into a set of categories.

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
categoryOfRxN	S100_CodeList	0..1	1: navigation 2: communication 3: environmental protection 4: wildlife protection 5: security 6: customs 7: cargo operation 8: refuge 9: health 10: natural resources or exploitation 11: port 12: finance 13: agriculture	false
actionOrActivity	S100_CodeList	0..1	1: navigating with a pilot 2: entering port 3: leaving port 4: berthing 5: slipping 6: anchoring 7: weighing anchor 8: transiting 9: overtaking 10: reporting 11: working cargo 12: landing 13: diving	false



Sub-attribute	Type	Mult.	Permitted Values	sequential
			14: fishing 15: discharging overboard 16: passing	
headline	text	0..1		false

## 4.16 Source indication

Name: Source indication

Definition: Information about the source document, publication, or reference from which object data or textual material included or referenced in a dataset are derived

Code: 'sourceIndication'

Remarks:

Aliases: SORIND

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
categoryOfAuthority	enumeration	0..1	1: customs 2: border control 3: police 4: port 5: immigration 6: health 7: coast guard 8: agricultural 9: military 10: private company 11: maritime police 12: environmental 13: fishery 14: finance 15: maritime	false
country	text	0..1		false
reportedDate	S100_TruncatedDate	0..1		false
source	text	0..1		false
sourceType	enumeration	0..1	1: law or regulation 2: official publication 7: mariner report, confirmed 8: mariner report, not confirmed 9: industry publications and reports 10: remotely sensed images 11: photographs 12: products issued by HO services 13: news media 14: traffic data	false
featureName	complex	0..*		true

## 4.17 Survey date range

Name: Survey date range

Definition: The complex attribute describes the period of the hydrographic survey, as the time between its sub-attributes.

Code: 'surveyDateRange'

Remarks:

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
dateEnd	S100_TruncatedDate	1..1		false
dateStart	S100_TruncatedDate	0..1		false

## 4.18 Telecommunications

Name: Telecommunications

Definition: A means or channel of communicating at a distance by electrical or electromagnetic means such as telegraphy, telephony, or broadcasting.

Code: 'telecommunications'

Remarks:

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
categoryOfCommPref	enumeration	0..1	1: preferred calling 2: alternate calling 3: preferred working 4: alternate working	false
telecommunicationIdentifier	text	1..1		false
telcomCarrier	text	0..1		false
contactInstructions	text	0..1		false
telecommunicationService	S100_CodeList	0..*	1: voice 2: facsimile 3: SMS 4: data 5: streamedData 6: telex 7: telegraph 8: email	false
scheduleByDoW	complex	0..*		false

## 4.19 Text content

Name: Text content

Definition: Textual material, or a pointer to a resource providing textual material. May be accompanied by basic information about its source and relationship to the source.

Code: 'textContent'

Remarks: textContent is intended to allow text passages from other publications to be included in, or referenced by, instances of feature or information types. Exactly one of sub-attributes onlineResource or information must be completed in one instance of textContent. Product specifications may restrict the use or content of onlineResource for security. For example, a product specification may forbid populating onlineResource. Product specification authors must consider whether applications using the data product may be prevented from accessing off-system resources by security policies.

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
categoryOfText	enumeration	0..1	1: abstract or summary 2: extract 3: full text	false
information	complex	0..*		false
onlineResource	complex	0..1		false
sourceIndication	complex	0..1		false

## 4.20 Time intervals by day of week

Name: Time intervals by day of week

Definition: Time intervals by days of the week

Code: 'tmIntervalsByDoW'

Remarks:

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
dayOfWeek	enumeration	0..7	1: monday 2: tuesday 3: wednesday 4: thursday 5: friday 6: saturday 7: sunday	true
dayOfWeekIsRange	boolean	0..1		false
timeReference	enumeration	1..1	1: localTime 2: UTC	false
timeOfDayStart	time	0..*		true
timeOfDayEnd	time	0..*		true

## 4.21 Vessels measurements

Name: Vessels measurements

Definition: Terms and definitions specifically related to vessels

Code: 'vesselsMeasurements'

Remarks:

Aliases: (none)

Sub-Attributes

Sub-attribute	Type	Mult.	Permitted Values	sequential
---------------	------	-------	------------------	------------

Sub-attribute	Type	Mult.	Permitted Values	sequential
comparisonOperator	enumeration	0..1	1: greater than 2: greater than or equal to 3: less than 4: less than or equal to 5: equal to 6: not equal to	false
vesselsCharacteristics	enumeration	0..1	1: length overall 2: length at waterline 3: breadth 4: draught 5: height 6: displacement tonnage 7: displacement tonnage, light 8: displacement tonnage, loaded 9: deadweight tonnage 10: gross tonnage 11: net tonnage 12: Panama Canal/Universal Measurement System net tonnage 13: Suez Canal net tonnage 14: Suez Canal gross tonnage	false
vesselsCharacteristicsValue	real	0..1		false
vesselsCharacteristicsUnit	enumeration	0..1	1: metre 2: foot 3: metric ton 4: ton 5: short ton 6: gross ton 7: net ton 8: Panama Canal/Universal Measurement System net tonnage 9: Suez Canal Net Tonnage 10: none 11: cubic metres 12: Suez Canal Gross Tonnage	false

# 5 Roles

## 5.1 The applicable RxN

Name: The applicable RxN

Definition: The applicable regulation, restriction, recommendation or nautical information

Code: 'theApplicableRxN'

Remarks:

Aliases: (none)

## 5.2 Applies in location

Name: Applies in location

Definition: The location in which the information item applies

Code: 'appliesInLocation'

Remarks:

Aliases: (none)

## 5.3 Authority (reference)

Name: Authority (reference)

Definition: A pointer to an Authority object

Code: 'theAuthority'

Remarks:

Aliases: (none)

## 5.4 Authority service hours

Name: Authority service hours

Definition: The authority for which service hours are given

Code: 'theAuthority\_srvHrs'

Remarks:

Aliases: (none)

## 5.5 Contact details (reference)

Name: Contact details (reference)

Definition: A pointer to an Contact Details object

Code: 'theContactDetails'

Remarks:

Aliases: (none)

## 5.6 Control authority

Name: Control authority

Definition: The controlling organization or authority for a geographically located service

Code: 'controlAuthority'

Remarks:

Aliases: (none)

## 5.7 Controlled service

Name: Controlled service

Definition: The service controlled by an organisation or authority

Code: 'controlledService'

Remarks:

Aliases: (none)

## 5.8 Defined for

Name: Defined for

Definition: A pointer to a specific spatial type(s).

Code: 'definedFor'

Remarks:

Aliases: (none)

## 5.9 Defines

Name: Defines

Definition: A pointer to an information type providing spatial quality information.

Code: 'defines'

Remarks:

Aliases: (none)

## 5.10 Identifies

Name: Identifies

Definition: A pointer to a specific feature(s).

Code: 'identifies'

Remarks:

Aliases: (none)

## 5.11 Information provided for

Name: Information provided for

Definition: A pointer to a specific feature(s) for which further information is required.

Code: 'informationProvidedFor'

Remarks:

Aliases: (none)

## 5.12 Is applicable to

Name: Is applicable to

Definition: The object or class of objects to which the regulation, restriction, recommendation, or nautical information applies

Code: 'isApplicableTo'

Remarks:

Aliases: (none)

## 5.13 The information

Name: The information

Definition: Information related to an organisation

Code: 'theInformation'

Remarks:

Aliases: (none)

## 5.14 The marine protected area

Name: The marine protected area

Definition: The marine protected area for which the authority is responsible

Code: 'theMarineProtectedArea'

Remarks:

Aliases: (none)

## 5.15 The organisation

Name: The organisation

Definition: The organisation to which information relates

Code: 'theOrganisation'

Remarks:

Aliases: (none)

## 5.16 Partial working day

Name: Partial working day

Definition: The work hours for a non-standard workday

Code: 'partialWorkingDay'

Remarks:

Aliases: (none)

## 5.17 Permission

Name: Permission

Definition: The permissions for a location

Code: 'permission'

Remarks:

Aliases: (none)

## 5.18 Must be filed by

Name: Must be filed by

Definition: The class (generally, qualifying vessels) which must file the report

Code: 'mustBeFiledBy'

Remarks:

Aliases: (none)

## 5.19 Positions

Name: Positions

Definition: A pointer to a specific cartographically positioned location for text.

Code: 'positions'

Remarks:

Aliases: (none)

## 5.20 Provides information

Name: Provides information

Definition: A pointer to an object that provides more information about the referencing feature or information type.

Code: 'providesInformation'

Remarks:

Aliases: (none)

## 5.21 Report for location

Name: Report for location

Definition: The feature pertaining to a report

Code: 'reptForLocation'

Remarks: Encodable only as a generic association in 3.0.0 datasets as it is an information->feature link. Example: reference to a controlled area which requires a report to be filed upon entry and departure

Aliases: (none)

## 5.22 Report to

Name: Report to

Definition: The organisation or place to which a report is sent.

Code: 'reportTo'

Remarks:

Aliases: (none)

## 5.23 Responsible authority

Name: Responsible authority

Definition: The responsible authority

Code: 'responsibleAuthority'

Remarks:

Aliases: (none)

## 5.24 The RxN

Name: The RxN

Definition: The regulation, restriction, recommendation, or nautical information

Code: 'theRxN'

Remarks:

Aliases: (none)

## 5.25 Service Hours (reference)

Name: Service Hours (reference)

Definition: Service hours for an authority ore service provider

Code: 'theServiceHours'

Remarks:

Aliases: (none)

## 5.26 The service hours for a non-standard workday

Name: The service hours for a non-standard workday

Definition: The usual service hours to which an exception applies

Code: 'theServiceHours\_nsdY'

Remarks:

Aliases: (none)

## 5.27 The ship report

Name: The ship report

Definition: The report to be filed by a vessel

Code: 'theShipReport'

Remarks:

Aliases: (none)

## 5.28 Traffic service report



Name: Traffic service report  
Definition: The report for a traffic service  
Code: 'reptForTrafficServ'  
Remarks:  
Aliases: (none)

## 5.29 Vessel location

Name: Vessel location  
Definition: The location to which the permission statement applies  
Code: 'vslLocation'  
Remarks: Implementations must use between Applicability and PermissionType objects, not to feature instance. The PermissionType->feature link is via a generic inverse association  
Aliases: (none)

# 6 Information Associations

## 6.1 Additional information

Name: Additional information

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

Code: 'additionalInformation'

Remarks: Role informationProvidedFor encodable only as a generic inverse association in feature objects in 3.0.0 datasets

Aliases: (none)

### Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Role: providesInformation informationProvidedFor

## 6.2 Authority contact

Name: Authority contact

Definition: Contact information for an authority

Code: 'authorityContact'

Remarks:

Aliases: (none)

### Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Role: theAuthority theContactDetails

## 6.3 Authority hours

Name: Authority hours

Definition: Service hours for an authority

Code: 'authorityHours'

Remarks:

Aliases: (none)

### Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Role: theAuthority\_srvHrs theServiceHours

## 6.4 Associated RxN

Name: Associated RxN

Definition: Association between a geographic location and a regulation, restriction, recommendation, or nautical information

Code: 'associatedRxN'

Remarks: Role appliesInLocation encodable only as a generic inverse association in 3.0.0 datasets as it is an information->feature link

Aliases: (none)

### Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Role: appliesInLocation theRxN

## 6.5 Exceptional workday

Name: Exceptional workday  
 Definition: Exception to the usual working day  
 Code: 'exceptionalWorkday'  
 Remarks:  
 Aliases: (none)

#### Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Role: theServiceHours\_nsd partialWorkingDay

## 6.6 InclusionType

Name: InclusionType  
 Definition: Association class specifying the relationship between the subset of vessels described by an APPLIC data object and a regulation (restriction, recommendation, or nautical information).  
 Code: 'InclusionType'  
 Remarks:  
 Aliases: (none)

#### Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
membership	enumeration	1..1	1 : included 2 : excluded	false

Role: theApplicableRxN isApplicableTo

## 6.7 PermissionType

Name: PermissionType  
 Definition: Association class for associations describing whether the subsets of vessels determined by the ship characteristics specified in APPLIC may (or must, etc.) transit, enter, or use a feature.  
 Code: 'PermissionType'  
 Remarks:  
 Aliases: (none)

#### Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
categoryOfRelationship	enumeration	1..1	1 : prohibited 2 : not recommended 3 : permitted 4 : recommended 5 : required 6 : not required	false

Role: vsLocation permission

## 6.8 Protected area authority

Name: Protected area authority  
 Definition: Authority responsible for a protected area.  
 Code: 'protectedAreaAuthority'  
 Remarks: There may be more than one such authority depending on how responsibilities are divided.  
 Aliases: (none)

#### Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Role: theMarineProtectedArea responsibleAuthority

## 6.9 Related organisation

Name: Related organisation

Definition: Related organisation

Code: 'relatedOrganisation'

Remarks:

Aliases: (none)

Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Role: theInformation theOrganisation

## 6.10 Reporting authority

Name: Reporting authority

Definition: The authority with which a report must be filed

Code: 'reptAuthority'

Remarks:

Aliases: (none)

Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Role: reportTo theShipReport

## 6.11 Reporting requirement

Name: Reporting requirement

Definition: Association between types of reports and classes of vessels which must file report of the type described

Code: 'reportReqmt'

Remarks:

Aliases: (none)

Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Role: theShipReport mustBeFiledBy

## 6.12 Service control

Name: Service control

Definition: The controlling authority for a service area

Code: 'srvControl'

Remarks: This is an information association linking a location where a service is provided with an information type describing the provider. Contrast to serviceProvisionArea, which is a feature association linking the area served with another feature describing the provider. Role controlledService encodable only as a generic inverse association in 3.0.0 datasets as it is an information->feature link

Aliases: (none)

Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Role: controlledService controlAuthority

## 6.13 Spatial Association

Name: Spatial Association

Definition: An association for the binding between a spatial type and its spatial quality information.

Code: 'spatialAssociation'

Remarks:

Aliases: (none)

#### Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Role: definedFor defines

## 6.14 Traffic service report

Name: Traffic service report

Definition: Association between traffic control service and reports required of vessels pertaining to that area

Code: 'trafficServRept'

Remarks: Role reptForLocation encodable only as a generic inverse association in 3.0.0 datasets as it is an information->feature link

Aliases: (none)

#### Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Role: reptForLocation reptForTrafficServ

# 7 Feature Associations

## 7.1 Text association

Name: Text association

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

Code: 'textAssociation'

Remarks:

Aliases: (none)

### Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Role(s): identifies positions

# 8 Information Types

## 8.1 InformationType

Name: InformationType Abstract type: true

Definition: Generalized information type which carries all the common attributes

Code: 'InformationType'

Remarks:

Aliases: (none)

Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
fixedDateRange	complex	0..1		false
periodicDateRange	complex	0..*		false
featureName	complex	0..*		false
sourceIndication	complex	0..*		false

Information bindings

(Bindings are also inherited from super-types, if any.)

Assoc. Type	Mult.	Name of association	Role of assoc. target	Name of target class
association	0..*	additionalInformation	providesInformation	NauticalInformation

## 8.2 AbstractRxN

Name: AbstractRxN Abstract type: true

Definition: An abstract superclass for information types that encode rules, recommendations, and general information in text or graphic form.

Code: 'AbstractRxN'

Remarks: Subtypes of AbstractRxN carry the same attributes, but differ in the nature of information they encode. There are currently four such subtypes: Regulations, Restrictions, Recommendations, and NauticalInformation.

Aliases: (none) Supertype: InformationType

Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
categoryOfAuthority	enumeration	0..1	1 : customs 2 : border control 3 : police 4 : port 5 : immigration 6 : health 7 : coast guard 8 : agricultural 9 : military 10 : private company 11 : maritime police 12 : environmental 13 : fishery 14 : finance 15 : maritime	false

Attribute	Type	Mult.	Permitted Values	Sequential
textContent	complex	0..*		false
graphic	complex	0..*		false
rxnCode	complex	0..*		false

Information bindings  
(Bindings are also inherited from super-types, if any.)

Assoc. Type	Mult.	Name of association	Role of assoc. target	Name of target class
association	0..*	InclusionType	isApplicableTo	Applicability
association	0..*	relatedOrganisation	theOrganisation	AbstractRxN

## 8.3 Applicability

Name: Applicability

Definition: Describes the relationship between vessel characteristics and: (i) the applicability of an associated information object or feature to the vessel; or, (ii) the use of a facility, place, or service by the vessel; or, (iii) passage of the vessel through an area.

Code: 'Applicability'

Remarks:

Aliases: (none)      Supertype: InformationType

Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
ballast	boolean	0..1		false
categoryOfCargo	enumeration	0..*	1 : bulk 2 : container 3 : general 4 : category of cargo liquid 5 : passenger 6 : livestock 7 : dangerous or hazardous	false
categoryOfDangerousOrHazardousCargo	enumeration	0..*	1 : IMDG Code Class 1 Div. 1.1 2 : IMDG Code Class 1 Div. 1.2 3 : IMDG Code Class 1 Div. 1.3 4 : IMDG Code Class 1 Div. 1.4 5 : IMDG Code Class 1 Div. 1.5 6 : Class 1: Division 1.6 7 : IMDG Code Class 2 Div. 2.1 8 : IMDG Code Class 2 Div. 2.2 9 : IMDG Code Class 2 Div. 2.3 10 : IMDG Code Class 3 11 : IMDG Code Class 4 Div. 4.1 12 : IMDG Code Class 4 Div. 4.2 13 : IMDG Code Class 4 Div. 4.3 14 : IMDG Code Class 5 Div. 5.1 15 : IMDG Code Class 5 Div. 5.2 16 : IMDG Code Class 6 Div. 6.1 17 : IMDG Code Class 6. Div. 6.2 18 : IMDG Code Class 7 19 : IMDG Code Class 8 20 : IMDG Code Class 9	false



Attribute	Type	Mult.	Permitted Values	Sequential
			21 : Harmful Substances in packaged form	
categoryOfVessel	S100_CodeList	0..1	1 : general cargo vessel 2 : container carrier 3 : tanker 4 : bulk carrier 5 : passenger vessel 6 : roll-on roll-off 7 : refrigerated cargo vessel 8 : fishing vessel 9 : service 10 : warship 11 : towed or pushed composite unit 12 : tug and tow 13 : light recreational 14 : semi-submersible offshore installation 15 : jack-up exploration or project installation 16 : livestock carrier 17 : sport fishing	false
categoryOfVesselRegistry	enumeration	0..1	1 : domestic 2 : foreign	false
logicalConnectives	enumeration	0..1	1 : logical conjunction 2 : logical disjunction	false
thicknessOfIceCapability	text	0..1		false
vesselPerformance	text	0..1		false
information	complex	0..*		false
vesselsMeasurements	complex	0..*		false

Information bindings  
(Bindings are also inherited from super-types, if any.)

Assoc. Type	Mult.	Name of association	Role of assoc. target	Name of target class
association	0..*	InclusionType	theApplicableRxN	AbstractRxN
association	0..*	reportReqmt	theShipReport	ShipReport
association	0..*	PermissionType	vslLocation	InformationType

## 8.4 Authority

Name: Authority

Definition: A person or organisation having political or administrative power and control.

Code: 'Authority'

Remarks:

Aliases: (none)      Supertype: InformationType

Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
categoryOfAuthority	enumeration	1..1	1 : customs 2 : border control 3 : police 4 : port	false

Attribute	Type	Mult.	Permitted Values	Sequential
			5 : immigration 6 : health 7 : coast guard 8 : agricultural 9 : military 10 : private company 11 : maritime police 12 : environmental 13 : fishery 14 : finance 15 : maritime	
textContent	complex	0..1		false

Information bindings  
(Bindings are also inherited from super-types, if any.)

Assoc. Type	Mult.	Name of association	Role of assoc. target	Name of target class
association	0..*	authorityContact	theContactDetails	ContactDetails
association	0..*	reptAuthority	theShipReport	ShipReport
association	0..*	relatedOrganisation	theInformation	AbstractRxN
association	0..*	authorityHours	theServiceHours	ServiceHours

## 8.5 Contact details

Name: Contact details

Definition: information on how to reach a person or organisation by postal, internet, telephone, telex and radio systems

Code: 'ContactDetails'

Remarks:

Aliases: (none)      Supertype: InformationType

Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
callName	text	0..1		false
callSign	text	0..1		false
categoryOfCommPref	enumeration	0..1	1 : preferred calling 2 : alternate calling 3 : preferred working 4 : alternate working	false
communicationChannel	text	0..*		false
contactAddress	complex	0..*		false
contactInstructions	text	0..1		false
frequencyPair	complex	0..*		false
information	complex	0..*		false
mMSICode	integer	0..1		false
onlineResource	complex	0..*		false
telecommunications	complex	0..*		false

Information bindings  
(Bindings are also inherited from super-types, if any.)

Assoc. Type	Mult.	Name of association	Role of assoc. target	Name of target class
association	0..*	authorityContact	theAuthority	Authority

## 8.6 Nautical information

Name: Nautical information

Definition: Nautical information about a related area or facility.

Code: 'NauticalInformation'

Remarks: The association ref and role are overloaded since the feature association to this object has the same name, but the informationType element distinguishes it. The info->feature association is not allowed in edition 3.0.0. As a result, the multiplicity of informationProvidedFor role must be 0 because an instance may be associated with either feature or information type.

Aliases: (none)      Supertype: AbstractRxN

Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Information bindings  
(Bindings are also inherited from super-types, if any.)

Assoc. Type	Mult.	Name of association	Role of assoc. target	Name of target class
association	0..*	additionalInformation	informationProvidedFor	InformationType

## 8.7 Non-standard working day

Name: Non-standard working day

Definition: Days when many services are not available. Often days of festivity or recreation when normal working hours are limited, esp. a national or religious festival, etc.

Code: 'NonStandardWorkingDay'

Remarks:

Aliases: (none)      Supertype: InformationType

Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
dateFixed	S100_TruncatedDate	0..*		false
dateVariable	date	0..*		false
information	complex	0..*		false

Information bindings  
(Bindings are also inherited from super-types, if any.)  
(No local bindings, but may inherit bindings from super-types, if any)

## 8.8 Service Hours

Name: Service Hours

Definition: The time when a service is available and known exceptions.

Code: 'ServiceHours'

Remarks:

Aliases: (none)      Supertype: InformationType

#### Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
scheduleByDoW	complex	1..*		false
information	complex	0..*		false

#### Information bindings

(Bindings are also inherited from super-types, if any.)

Assoc. Type	Mult.	Name of association	Role of assoc. target	Name of target class
association	0..*	exceptionalWorkday	partialWorkingDay	NonStandardWorkingDay
association	0..*	authorityHours	theAuthority_srvHrs	Authority

## 8.9 Ship Report

Name: Ship Report

Definition: Describes how a ship should report to a maritime authority, including when to report, what to report and whether the format conforms to the IMO standard.

Code: 'ShipReport'

Remarks:

Aliases: (none)      Supertype: InformationType

#### Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
categoryofShipReport	enumeration	1..*	1 : sailing plan 2 : position report 3 : deviation report 4 : final report 5 : dangerous goods report 6 : harmful substances report 7 : marine pollutants report 8 : any other report	false
imoFormatForReporting	boolean	1..1		false
noticeTime	complex	1..*		false
textContent	complex	0..1		false

#### Information bindings

(Bindings are also inherited from super-types, if any.)

Assoc. Type	Mult.	Name of association	Role of assoc. target	Name of target class
association	0..*	reportReqmt	mustBeFiledBy	Applicability
association	0..*	reptAuthority	reportTo	Authority

## 8.10 Recommendations

Name: Recommendations

Definition: Recommendations for a related area or facility.

Code: 'Recommendations'

Remarks:

Aliases: (none)      Supertype: AbstractRxN

Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Information bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but may inherit bindings from super-types, if any)

## 8.11 Regulations

Name: Regulations

Definition: Regulations for a related area or facility.

Code: 'Regulations'

Remarks:

Aliases: (none)      Supertype: AbstractRxN

Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Information bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but may inherit bindings from super-types, if any)

## 8.12 Restrictions

Name: Restrictions

Definition: Restrictions for a related area or facility.

Code: 'Restrictions'

Remarks:

Aliases: (none)      Supertype: AbstractRxN

Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

Information bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but may inherit bindings from super-types, if any)

## 8.13 Spatial Quality

Name: Spatial Quality

Definition: *Definition required*

Code: 'SpatialQuality'

Remarks: To be defined by DQWG?

Aliases: (none)

## Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
categoryOfTemporalVariation	enumeration	0..1	1 : extreme event 2 : likely to change 4 : unlikely to change 5 : unassessed	false
qualityOfHorizontalMeasurement	enumeration	0..1	1 : surveyed 2 : unsurveyed 3 : inadequately surveyed 4 : approximate 5 : position doubtful 6 : unreliable 7 : reported (not surveyed) 8 : reported (not confirmed) 9 : estimated 10 : precisely known 11 : calculated	false
horizontalPositionalUncertainty	complex	0..1		false

## Information bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but may inherit bindings from super-types, if any)

## 8.14 Spatial Quality Points

Name: Spatial Quality Points

Definition: *Definition required*

Code: 'SpatialQualityPoints'

Remarks: to be finalized by DQWG

Aliases: (none)      Supertype: SpatialQuality

## Attribute Bindings

(No local bindings, but will inherit bindings from super-types if any)

## Information bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but may inherit bindings from super-types, if any)

# 9 Feature Types

## 9.1 FeatureType

Name: FeatureType Abstract type: true

Definition: Generalized feature type which carries all the common attributes

Code: 'FeatureType'

Remarks:

Aliases: (none)

Feature use type: geographic

Permitted primitives: noGeometry

Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
fixedDateRange	complex	0..1		false
periodicDateRange	complex	0..*		false
featureName	complex	0..*		false
sourceIndication	complex	0..1		false
textContent	complex	0..1		false

Information bindings

(Bindings are also inherited from super-types, if any.)

Assoc. Type	Mult.	Name of association	Role of assoc. target	Name of target class
association	0..*	PermissionType	permission	Applicability
association	0..*	associatedRxN	theRxN	AbstractRxN
association	0..*	additionalInformation	providesInformation	NauticalInformation

Feature bindings

(Bindings are also inherited from super-types, if any.)

Assoc. type	Mult.	Name of association	Role of assoc. target	Name of target class
association	0..1	textAssociation	positions	TextPlacement

## 9.2 Marine Protected Area

Name: Marine Protected Area

Definition: Any area of the intertidal or sub-tidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment.

Code: 'MarineProtectedArea'

Remarks: Permitted values for status should be reviewed, some are probably irrelevant to MPAs without wrecks, obstructions, or any navigation aids

Aliases: MPAARE Supertype: FeatureType

Feature use type: geographic

Permitted primitives: curve surface

Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
categoryOfMarineProtectedArea	S100_CodeList	1..1	1 : IUCN Category Ia 2 : IUCN Category Ib 3 : IUCN Category II 4 : IUCN Category III 5 : IUCN Category IV 6 : IUCN Category V 7 : IUCN Category VI	false
categoryOfRestrictedArea	enumeration	0..*	4 : nature reserve 5 : bird sanctuary 6 : game reserve 7 : seal sanctuary 10 : historic wreck area 20 : research area 22 : fish sanctuary 23 : ecological reserve 27 : environmentally sensitive sea area 28 : particularly sensitive sea area 31 : coral sanctuary 32 : recreation area	false
jurisdiction	enumeration	1..1	1 : international 2 : national 3 : national sub-division	false
restriction	enumeration	0..*	1 : anchoring prohibited 2 : anchoring restricted 3 : fishing prohibited 4 : fishing restricted 5 : trawling prohibited 6 : trawling restricted 7 : entry prohibited 8 : entry restricted 9 : dredging prohibited 10 : dredging restricted 11 : diving prohibited 12 : diving restricted 13 : no wake 14 : area to be avoided 15 : construction prohibited 16 : discharging prohibited 17 : discharging restricted 18 : industrial or mineral exploration/development prohibited 19 : industrial or mineral exploration/development restricted 20 : drilling prohibited 21 : drilling restricted 22 : removal of historical artifacts prohibited 23 : cargo transshipment (lightering) prohibited 24 : dragging prohibited 25 : stopping prohibited 26 : landing prohibited 27 : speed restricted 28 : swimming prohibited	false
status	enumeration	0..*	1 : permanent 2 : occasional	false



Attribute	Type	Mult.	Permitted Values	Sequential
			3 : recommended 4 : not in use 5 : periodic/intermittent 6 : reserved 7 : temporary 8 : private 9 : mandatory 11 : extinguished 12 : illuminated 13 : historic 14 : public 15 : synchronized 16 : watched 17 : un-watched 18 : existence doubtful 28 : buoyed	

## Information bindings

(Bindings are also inherited from super-types, if any.)

Assoc. Type	Mult.	Name of association	Role of assoc. target	Name of target class
association	0..*	protectedAreaAuthority	responsibleAuthority	Authority

## Feature bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but will inherit super-type bindings if any)

## 9.3 Restricted area navigational

Name: Restricted area navigational

Definition: A specified area of land or water designated by an appropriate authority within which access or navigation is restricted in accordance with certain specified conditions. A navigational restricted area is an area where the restrictions have a direct impact on the navigation of a vessel in the area.

Code: 'RestrictedAreaNavigational'

Remarks:

Aliases: (none) Supertype: FeatureType

Feature use type: geographic

Permitted primitives: surface

## Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
categoryOfRestrictedArea	enumeration	0..*	4 : nature reserve 5 : bird sanctuary 6 : game reserve 7 : seal sanctuary 10 : historic wreck area 20 : research area 22 : fish sanctuary 23 : ecological reserve 27 : environmentally sensitive sea area 28 : particularly sensitive sea area	false

Attribute	Type	Mult.	Permitted Values	Sequential
			31 : coral sanctuary 32 : recreation area	
restriction	enumeration	0..*	1 : anchoring prohibited 2 : anchoring restricted 7 : entry prohibited 8 : entry restricted 13 : no wake 14 : area to be avoided 25 : stopping prohibited 26 : landing prohibited 27 : speed restricted	false
status	enumeration	0..*	1 : permanent 2 : occasional 3 : recommended 4 : not in use 5 : periodic/intermittent 6 : reserved 7 : temporary 9 : mandatory 18 : existence doubtful 28 : buoyed	false

#### Information bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but may inherit bindings from super-types, if any)

#### Feature bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but will inherit super-type bindings if any)

## 9.4 Restricted area regulatory

Name: Restricted area regulatory

Definition: A specified area of land or water designated by an appropriate authority within which access or navigation is restricted in accordance with certain specified conditions. A regulatory restricted area is an area where the restrictions have no direct impact on the navigation of a vessel in the area, but impact on the activities that can take place within the area.

Code: 'RestrictedAreaRegulatory'

Remarks:

Aliases: (none) Supertype: FeatureType

Feature use type: geographic

Permitted primitives: surface

#### Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
categoryOfRestrictedArea	enumeration	0..*	4 : nature reserve 5 : bird sanctuary 6 : game reserve 7 : seal sanctuary 10 : historic wreck area 20 : research area 22 : fish sanctuary	false

Attribute	Type	Mult.	Permitted Values	Sequential
			23 : ecological reserve 27 : environmentally sensitive sea area 28 : particularly sensitive sea area 31 : coral sanctuary 32 : recreation area	
restriction	enumeration	0..*	1 : anchoring prohibited 2 : anchoring restricted 3 : fishing prohibited 4 : fishing restricted 5 : trawling prohibited 6 : trawling restricted 7 : entry prohibited 8 : entry restricted 9 : dredging prohibited 10 : dredging restricted 11 : diving prohibited 12 : diving restricted 13 : no wake 15 : construction prohibited 16 : discharging prohibited 17 : discharging restricted 18 : industrial or mineral exploration/development prohibited 19 : industrial or mineral exploration/development restricted 20 : drilling prohibited 21 : drilling restricted 22 : removal of historical artifacts prohibited 23 : cargo transshipment (lightering) prohibited 24 : dragging prohibited 25 : stopping prohibited 26 : landing prohibited 27 : speed restricted 28 : swimming prohibited	false
status	enumeration	0..*	1 : permanent 2 : occasional 3 : recommended 4 : not in use 5 : periodic/intermittent 6 : reserved 7 : temporary 9 : mandatory 18 : existence doubtful 28 : buoyed	false

## Information bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but may inherit bindings from super-types, if any)

## Feature bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but will inherit super-type bindings if any)

## 9.5 Vessel Traffic Service Area

Name: Vessel Traffic Service Area

Definition: The area of any service implemented by a relevant authority primarily designed to improve safety and efficiency of traffic flow and the protection of the environment. It may range from simple information messages, to extensive organisation of the traffic involving national or regional schemes.

Code: 'VesselTrafficServiceArea'

Remarks:

Aliases: (none) Supertype: FeatureType

Feature use type: geographic

Permitted primitives: surface

### Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
categoryOfVesselTrafficService	enumeration	1..1	1 : Information Service 2 : Traffic Organisation Service 3 : Navigational Assistance Service 4 : Ship Reporting Service 5 : Local Port Service	false

### Information bindings

(Bindings are also inherited from super-types, if any.)

Assoc. Type	Mult.	Name of association	Role of assoc. target	Name of target class
association	0..1	srvControl	controlAuthority	Authority
association	0..*	trafficServRept	reptForTrafficServ	ShipReport

### Feature bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but will inherit super-type bindings if any)

## 9.6 Data coverage

Name: Data coverage

Definition: A geographical area that describes the coverage and extent of spatial types.

Code: 'DataCoverage'

Remarks:

Aliases: (none)

Feature use type: meta

Permitted primitives: surface

### Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
maximumDisplayScale	integer	1..1		false
minimumDisplayScale	integer	1..1		false

## Information bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but may inherit bindings from super-types, if any)

## Feature bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but will inherit super-type bindings if any)

## 9.7 Quality of NonBathymetric Data

Name: Quality of NonBathymetric Data

Definition: An area within which a uniform assessment of the quality of the non-bathymetric data exists

Code: 'QualityOfNonBathymetricData'

Remarks:

Aliases: (none)

Feature use type: meta

Permitted primitives: surface

## Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
categoryOfTemporalVariation	enumeration	1..1	1 : extreme event 2 : likely to change 4 : unlikely to change 5 : unassessed	false
dataAssessment	enumeration	1..1	1 : assessed 2 : oceanic 3 : unassessed	false
directionUncertainty	real	0..1		false
horizontalDistanceUncertainty	real	0..1		false
horizontalPositionalUncertainty	complex	1..1		false
information	complex	0..*		false
sourceIndication	complex	0..1		false
surveyDateRange	complex	0..1		false

## Information bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but may inherit bindings from super-types, if any)

## Feature bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but will inherit super-type bindings if any)

## 9.8 Text Placement

Name: Text Placement

Definition: The Text Placement feature is used in association with the Feature Name attribute or a light description to optimise text positioning in ECDIS.

Code: 'TextPlacement'

Remarks:

Aliases: (none)

Feature use type: cartographic

Permitted primitives: point

#### Attribute Bindings

Attribute	Type	Mult.	Permitted Values	Sequential
flipBearing	real	0..1		false
scaleMinimum	integer	0..1		false
textJustification	enumeration	1..1	1 : left 2 : centred 3 : right	false
text	text	0..1		false
textType	enumeration	0..1	1 : feature name	false

#### Information bindings

(Bindings are also inherited from super-types, if any.)

(No local bindings, but may inherit bindings from super-types, if any)

#### Feature bindings

(Bindings are also inherited from super-types, if any.)

Assoc. type	Mult.	Name of association	Role of assoc. target	Name of target class
association	1..1	textAssociation	identifies	FeatureType