S-131

# IHO Marine Harbour Infrastructure (MHI) - Annex A Data Classification and Encoding Guide

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IHO

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## Contents

# 1 Overview

## 1.1 Introduction

The “Data Classification and Encoding Guide” has been developed to provide consistent, standardized instructions for encoding S-100 compliant Marine Harbour Infrastructure (MHI) (S-131) data.

The purpose of the Data Classification and Encoding Guide is to facilitate S-131 encoding to meet IHO standards for the proper display of Marine Harbour Infrastructure information in an ECDIS and other electronic charting displays. This document describes how to encode information that the modeller considers relevant to a Marine Harbour Infrastructure data product. The content of a dataset is at the discretion of the producing authority provided that the conventions described within this document are followed. A “producing authority” is a Hydrographic Office (HO) or other organization authorized by a government, to produce definitive nautical information. The entire S-100 Universal Hydrographic Data Model, including the S-131 MHI Product Specification, is available at the following web site, https://iho.int.

## 1.2 Document Metadata

NOTE: This information uniquely identifies this Data Classification and Encoding Guide to the Product Specification and provides information about its creation and maintenance.

**Table 1-1 — Document metadata**

| Metadata | Content |
|---|---|
| Title: | Marine Harbour Infrastructure, Data Classification and Encoding Guide |
| Version: | 2.0.0 |
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| Identifier: | S-131 Annex A Data Classification and Encoding Guide |
| Maintenance: | Changes to S-131 Annex A; Data Classification and Encoding Guide are coordinated by the IHO Nautical Information Provision Working Group (NIPWG) and must be made available via the IHO web site. |

## 1.3 Terms and definitions

For terms and definitions, see the Marine Harbour Infrastructure Product Specification, Clause 1.4.2.

## 1.4 Abbreviated terms

For a list of abbreviations, see the Marine Harbour Infrastructure Product Specification, Clause 1.4.3.

## 1.5 Use of language

Within this document:

- “Must” indicates a mandatory requirement;
- “Should” indicates an optional requirement, that is the recommended process to be followed, but is not mandatory;
- “May” means “allowed to” or “could possibly”, and is not mandatory, or recommended.

### 1.6 Maintenance

Changes to the Data Classification and Encoding Guide must occur in accordance with the IHO Resolution 2/2007 as amended.

## 2 General

### 2.1 Introduction

This Data Classification and Encoding Guide (DCEG) contains rules and guidance for converting data describing the real world into data products that conform to the S-131 specification.

The S-131 specification contains an application schema (UML model) describing the conceptual domain model in terms of classes and relationships, and a Feature Catalogue (see S-131 Annex C) that specifies the data model, i.e., specifies the data model types and associations corresponding to the various classes and relationships in the application schema.

To simplify the DCEG text, the various data model types will be provided without the suffixes “class”, “type” or “instance”; e.g. the term “feature” should be understood as “feature class” or “feature type” or “feature instance” as best fits the immediate context in which it is used (and where there might be confusion, it is written out in full as feature class/type/instance).The model defines real world entities as a combination of descriptive and spatial characteristics (S-131 Product Specification clause 6).

This clause of the DCEG contains general information needed to understand the encoding rules and describes fundamental common rules and constraints. It also describes datasets and metadata. The data model object types used within S-131 and their encoding rules and guidelines are defined in detail in subsequent clauses of this document.

Within this document the features, information types, associations, and attributes appear in **bold text** or *italic text*, to distinguish them from surrounding words.

### 2.2 Descriptive characteristics

#### 2.2.1 Feature

A feature contains descriptive attributes that characterize real world entities.

The word ‘feature’ as used in the ISO 191xx series and in S-100 based product specifications has two distinct but related senses – ‘feature type’ and ‘feature instance’. A feature instance is a single occurrence of the feature and is represented as an object in a dataset. The location of a feature instance on the Earth’s surface is indicated by a relationship to one or more spatial primitive instances. A feature instance may exist without referencing a spatial primitive instance.

##### 2.2.1.1 Geographic feature class

Geographic (Geo) feature types carry the descriptive characteristics of a real world entity which is provided by a spatial primitive instance.

##### 2.2.1.2 Meta feature class

Meta feature type contains information about other features.

##### 2.2.1.3 Charted background feature

The data product would mostly be visualized as an overlay of an ENC or other GIS applications. Consequently, all necessary descriptive and spatial characteristics to provide a charted background should be provided by the underlying application.

#### 2.2.1.4 Information type

An information type has no geometry and therefore is not associated to any spatial primitives to indicate its location.

An information type may have attributes and can be associated with features or other information types in order to carry information particular to these associated features or information types.

## 2.3 Spatial characteristics

### 2.3.1 Spatial primitives

The allowable spatial primitive for each feature is defined in the Feature Catalogue. Allowable spatial primitives are point, curve, and surface.

Within this document, allowable spatial primitives are included in the description of each feature. For easy reference, Table 2-1 below summarises the allowable spatial primitives for each feature. In the table, abbreviations are as follows: point (P), curve (C), surface (S), and none (N). Abstract features are excluded from this table since they cannot have feature instances in datasets.

**Table 2-1 — Features and their spatial primitives**

| Feature | P | C | S | N |
|---|---|---|---|---|
| AnchorBerth | P | | S | |
| AnchorageArea | P | | S | |
| Berth | P | C | S | |
| BerthPosition | P | | | |
| DockArea | | | S | |
| DryDock | P | | S | |
| DumpingGround | P | | S | |
| FloatingDock | P | | S | |
| Gridiron | P | | S | |
| HarbourAreaAdministrative | P | | S | |
| HarbourAreaSection | P | | S | |
| HarbourBasin | | | S | |
| HarbourFacility | P | | S | |
| MooringWarpingFacility | P | | | |
| OuterLimit | | C | S | |
| PilotBoardingPlace | P | | S | |
| SeaplaneLandingArea | P | | S | |
| Terminal | P | | S | |
| TurningBasin | | | S | |
| WaterwayArea | | | S | |
| DataCoverage | | | S | |
| QualityOfNonBathymetricData | | | S | |

| Feature | P | C | S | N |
|---|---|---|---|---|
| SoundingDatum | | | S | |
| VerticalDatumOfData | | | S | |
| TextPlacement | P | | | |

***EDITORIAL NOTE***

*Table obsolete, to be replaced*

### 2.3.2 Capture density guideline

Coordinate density can have a significant impact on file size and system performance. A rule of thumb is to limit the coordinate density to 0.3 mm at maximum permitted display scale. For a scaleless product, the producer should keep in mind the expected scale range for typical use and the density of coordinates needed to suit the needs of the product.

The capture density will follow the recommendation of the S-101 (ENC) DCEG, which states curves and surface boundaries should not be encoded at a point density greater than 0.3 mm at permitted display scale.

A curve consists of one or more curve segments. Each curve segment is defined as a loxodromic line on WGS84, or as an arc or circle. Long lines may need to have additional coordinates inserted to cater for the effects of projection change.

The presentation of line styles may be affected by curve length. Therefore, the encoder must be aware that splitting a curve into numerous small curves may result in poor symbolization.

## 2.4 Attributes

Attributes may be simple type or complex type. Complex © attributes are aggregates of other attributes that can be simple type or complex type attributes. Simple (S) attributes are assigned to one of the types collected at Clause 2.4.1.

The binding of attributes to a feature, the binding of attributes to attributes to construct complex attributes, and attribute multiplicity are all defined in the Feature Catalogue.

Within this document, the allowable attributes are included in the description of each feature, as well as the allowable values for enumeration type attributes.

### 2.4.1 Simple attribute types

Each simple attribute is assigned one of the attribute datatypes in Table 2-2:

**Table 2-2 — Simple attribute types**

| Abbreviation | Attribute type | Description |
|---|---|---|
| BO | Boolean | A value representing binary logic. The value can be either True or False. The default state for Boolean type attributes (i.e. where the attribute is not populated for the feature) is False. |
| CL | Code List | A type of flexible enumeration (see “EN” below). A code list type is a list of literals which may be extended only in conformance with specified rules. Attributes of a code list type may take values from the list or other values which are defined according to the rules. The rules should be part of the specification of the individual codelist type. A code list could either be closed (fixed) or open (extensible).<br><br>A code list type has the following properties:<br>1. A description of the code list type, |

| Abbreviation | Attribute type | Description |
|---|---|---|
| | | 2. The URI where the list could be found, and<br>3. An encoding instruction. |
| DA | Date | A date provides values for year, month and day according to the Gregorian Calendar.<br>Example (XML/GML): 1998-09-18 (YYYY-MM-DD)<br>S-131 uses only XML-based formats (including GML) and therefore the ISO “basic” format described in S-100 is not used. |
| DT | Date and Time | A DateTime is a combination of a date and a time type.<br>Example (XML/GML): 1985-04-12T10:15:30 (YYYY-MM-DDThh:mm:ss)<br>S-131 uses only XML-based formats (including GML) and therefore the ISO “basic” format described in S-100 is not used. |
| EN | Enumeration | A fixed list of valid identifiers of named literal values. Attributes of an enumerated type may only take values from this list. |
| IN | Integer | A signed integer number. The representation of an integer is encapsulation and usage dependent.<br>Integer attribute values must not be padded by non-significant zeroes. For example, for a number of 19, the value populated for the attribute must be 19 and not 019.<br>Examples: 29, -65547 |
| RE | Real | A signed real (floating point) number consisting of a mantissa and an exponent. The representation of a real is encapsulation and usage dependent.<br>Real attribute values must not be padded by non-significant zeroes. For example, for a signal period of 2.5 seconds, the value populated for the attribute signal period must be 2.5 and not 02.50.<br>Examples: 23.501, -0.0001234, -23.0, 3.141296 |
| TD | Truncated Date | One or more significant components of the modelling date are omitted.<br>Example: A GML dataset would use a GML built-in type and encode it as `<gMonth>--02<gMonth>`<br>S-131 uses only XML-based formats (including GML) and therefore the ISO “basic” format described in S-100 is not used. |
| TE | Free text | An arbitrary-length sequence of characters including accents and special characters from a repertoire of one of the adopted character sets. |
| TI | Time | A time is given by an hour, minute, and second. Time zone according to UTC is optional. Character encoding of a time is a string that follows the local time.<br>Examples (XML/GML): 18:30:59Z; 18:30:59+01:00; 18:30:59 |
| URL | URL | A uniform resource locator (URL) is a URI that provides a means of locating the resource by describing its primary access mechanism (RFC 3986).<br>Example: https://registry.iho.int |
| URN | URN | A persistent, location-independent, resource identifier that follows the syntax and semantics for URNs specified in RFC 2141.<br>Example: urn:mrn:iho:S-131:1:0:0:Regulations |

### 2.4.2 Mandatory attributes

Some attributes are mandatory and must be populated for a given feature. There are some reasons why attribute values may be considered mandatory:

- They are fundamental to the definition of a feature;
- They are required to support the correct portrayal of a feature instance;
- Certain features make no logical sense without specific attributes;
- Some attributes are required for safety of navigation.

Within this document, mandatory attributes are those with a multiplicity of 1,1 or 1,n (n>1) or 1,*. The attribute multiplicity is identified in the description of each feature class.

### 2.4.3 Conditional attributes

The feature classes or information types do not contain conditional attributes.

Complex attributes which are assigned to feature classes or information types have at least one sub-attribute which is mandatory (or conditionally mandatory). Where the sub-attribute of a complex attribute is conditional, this is indicated in the Remarks sub-clause for the relevant feature class entries.

### 2.4.4 Missing attribute values

Where a value of a mandatory attribute is not known, the attribute must be populated with an empty (null) value.

Where the value of a non-mandatory attribute is not known, the attribute must not be included in the dataset.

### 2.4.5 Multiplicity

In order to control the number of allowed attribute values or sub-attribute instances within a complex attribute, S-100 uses the concept of multiplicity. This defines lower and upper limits for the number of values, whether the order of the instances is significant, and if an attribute is mandatory. Common examples are shown in Table 2-3:

Format: MinOccurs, MaxOccurs (a * indicates that infinite instances are possible, the term (ordered) indicates that the order of the provided instances is significant)

**Table 2-3 — Multiplicity of attributes**

| Multiplicity | Explanation |
|---|---|
| 0,1 | An instance is not required; if provided there must only be one instance. |
| 1,1 | An instance is required and there must only be one instance. |
| 0,* | An instance is not required and there can be an infinite number of instances. |
| 1,* | An instance is required and there can be an infinite number of instances. |
| 1,* (ordered) | An instance is required and there can be an infinite number of instances, the order of which is significant. |
| 2,2 | Two instances are required and there must be no more than two. |

### 2.4.6 Spatial attribute types

Spatial attribute types must contain a referenced geometry and may be associated with spatial quality attributes. Each spatial attribute instance must be referenced by a feature instance or another spatial attribute instance.

#### 2.4.6.1 Quality of spatial attributes

The quality of spatial attributes in S-131 is described in a Quality of Non-Bathymetric Data meta-feature (Clause 4.2). This meta-feature defines areas within which uniform assessment exists for the quality. It is described in detail later in this document.

If the spatial quality attributes for an individual instance of a spatial primitive differ from the quality indicated in the overlying Quality of Non-Bathymetric Data meta-feature, the quality attributes for that instance are carried in an information class called spatial quality. Only points and curves can be associated with spatial quality. S-131 does not use multi-points. Currently, no use case for associating surfaces with spatial quality attributes is known, therefore this is prohibited. Vertical uncertainty is prohibited for curves as this dimension is not supported by curves.

NOTE: S-131 does not make use of the S-101 Quality of Bathymetric Data meta-feature since depth range uncertainties are not needed. The Quality of Non-Bathymetric Data meta-feature has all the quality attributes needed by S-131.

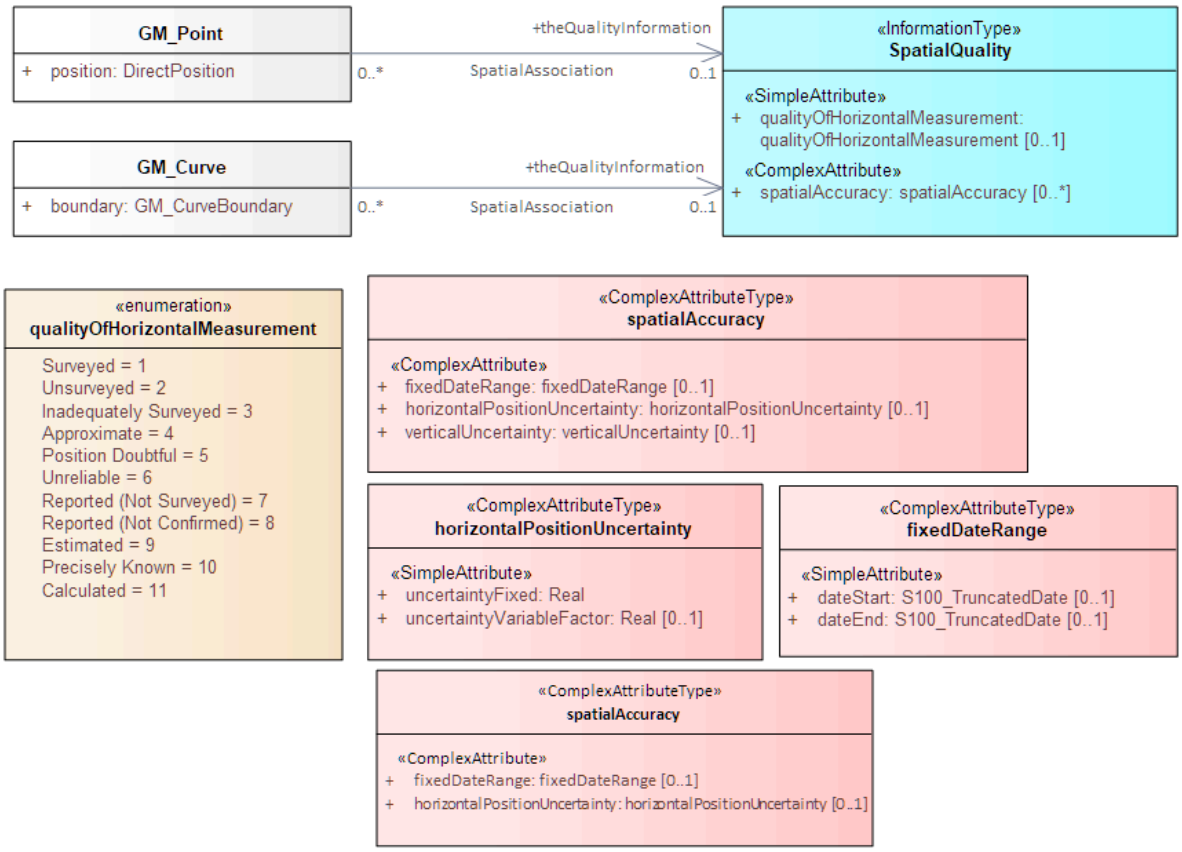


**Figure 2-1 — Spatial quality for spatial primitives**

### 2.4.7 Portrayal feature attributes

Marine Harbour Infrastructure data products will be used within ECDIS where ENC data is displayed based on the rules defined within the S-101 Portrayal Catalogue. While most ECDIS portrayal is based on attributes describing the instance of a particular feature in the real world, certain feature attributes are used in portrayal rules to provide additional functionality in the ECDIS. Table 2-4 provides a list of attributes which have specific influence on portrayal.

***EDITORIAL NOTE***

*To be Updated to align with S-101*

**Table 2-4 — Attributes which have effects on portrayal**

| Attribute | Effects on portrayal |
|---|---|
| displayName | This Boolean attribute determines if the text for a name should be displayed. If not populated the default rules provided in the portrayal catalogue will be used. |
| information | Population of this complex attribute will result in the display of the magenta information symbol to highlight additional information to the user. |
| pictorialRepresentation | The population of this Text attribute will result in the display of the magenta information symbol to highlight additional information to the user. |
| textContent | The population of this complex attribute will result in the display of the magenta information symbol to highlight additional information to the user. |

### 2.4.8 Textual information

Textual information may provide additional information essential to understand the presence of the Marine Harbour Infrastructure and other features of an S-131 product. This information may also provide legal information pertaining to the S-131 product features.

The methods to provide textual information vary from the simple provision of short text, to the more structured provision of extensive text. The length of the text determines the method and the attribute selection, see Clause 2.4.8.2.

#### 2.4.8.1 Specialized information types for common kinds of textual information

The information types Restrictions, Recommendations, Regulations, or NauticalInformation must be used to encode text information when the DCEG allows them to be associated to the feature or information type and the information is of the appropriate kind (a restriction, regulation, etc.).

In exceptional circumstances and only if the use of the information types Restrictions, Recommendations, or Regulations is not sufficient, NauticalInformation can be used to encode additional textual information associated to a feature or a group of features.

In some cases, there may be a specialized attribute that is specifically intended for the data in question. If an appropriate specialized attribute is available, it must be used in preference to information or textContent. For example, feature names will generally be encoded in the name sub-attribute of complex attribute featureName, instead of information→text.

#### 2.4.8.2 Textual information attributes

Textual information which is not appropriate for any of the Text-type attribute (or sub-attribute) allowed for the feature/information type should be encoded using either information or textContent complex attributes. Generally, either information or textContent is allowed, but not both.

#### 2.4.8.3 Languages

Both information and textContent define a language sub-attribute for specifying the language in which the text is encoded.

The exchange language for textual information should be English; therefore it is not required to populate the sub-attribute language for an English version of textual information.

Languages other than English may be used as a supplementary option, for which language must be populated with an appropriate value to indicate the language.

When a national language is used in the textual attributes, the English translation must also exist.

The specification of the language attribute in the IHO GI registry states “The language is encoded by a 3 character code following ISO 639-2/T.” These codes and the corresponding language names may be obtained from the codelist S100_MD_LanguageCode in the S-100 codelists file, which is part of the S-100 schemas distribution, at the URLs below:

- XML file: https://schemas.s100dev.net/schemas/S100/5.2.0/resources/Codelists/cat/codelists.xml
- Web list: https://schemas.s100dev.net/schemas/S100/5.2.0/resources/Codelists/cat/codelists.html

#### 2.4.8.4 Minimal use of generalized text attributes

The complex attributes information and textContent must not be used when it is possible to encode the information by means of any other attribute. The population of these attributes provides symbols on an ECDIS screen. Therefore producers should carefully consider use of these attributes as the symbol may contribute significantly to ECDIS screen clutter and text attributes should be populated only when the content conveys useful information.

#### 2.4.8.5 Short textual information

The text sub-attribute of complex attribute information should generally be used for short notes or to transfer information which cannot be encoded by other attributes, or to give brief information about a feature. The use of the complex attribute information as a stand-alone complex attribute is intentionally limited to the information types ContactDetails, Applicability, NonStandardWorkingDay, and ServiceHours, which do not need the additional attributes defined in textContent. The reason for the limited use of information as a stand-alone complex attribute is to provide a structured and harmonised approach to textual information within the S-131 product data sets.

The text populated in text must not exceed 300 characters. Character strings contained in text sub-attribute must be UTF-8 character encoding.

If the text sub-attribute of information is populated, the headline, fileReference, and fileLocator sub-attributes must not be populated.

#### 2.4.8.6 Complex or lengthy textual information

More complex encodings of text may use either information or textContent. The feature catalogue and the feature/information type definitions in this DCEG indicate whether information or textContent is allowed.

The complex attribute textContent also has information as a complex sub-attribute. If a short note must be encoded in a feature or information type which has only textContent as an attribute, it should be encoded as textContent→information→text.

Complex text information, such as text longer than 300 characters, formatted text, or HTML extracts from shipping regulations, must be encoded in a file named in either information→fileReference or textContent→information→fileReference. The construction textContent→information→fileReference should be used if the feature/information type provides textContent as complex attribute.

The complex attribute information defines an optional sub-attribute headline which may be used for a short title not exceeding 60 characters. The content should be short but informative – if the textual information is divided into sections, the most relevant section header from the referenced content may be a good choice for headline.

The complex attribute textContent defines an optional sub-attribute categoryOfText for indicating whether the text is the full text from the source, an extract from the source, or a summary prepared by the encoder. Populating categoryOfText is recommended whenever the textual information is taken or summarised from a law or regulation.

If it is considered necessary to include a description of the source of the textual information, the sub-attribute sourceIndication of textContent must be used. Encoding a description of the source is strongly recommended for textual information whose source is considered as information the end-user must have, e.g., because the date of issue must be conveyed or because it cites official regulations which are frequently updated.

NOTE: Some government documents are frequently updated, e.g., the U.S. Electronic Code of Federal Regulations, which is currently updated every working day even though a particular section may be stable for years.

### 2.4.9 Attributes referencing external files

#### 2.4.9.1 Predefined derived types

Table 2-5 presents the following predefined derived types which are described in S-100 (clause 1-4.6):

**Table 2-5 — Predefined derived types**

| Name | Description | Derived from |
|---|---|---|
| URI | A uniform resource identifier which character encoding shall follow the syntax rules as defined in RFC 3986.<br>EXAMPLE http://registry.iho.int | CharacterString |
| URL | A uniform resource locator (URL) is a URI that provides a means of locating the resource by describing its primary access mechanism (RFC 3986).<br>EXAMPLE http://registry.iho.int | URI |
| URN | A persistent, location-independent, resource identifier that follows the syntax and semantics for URNs specified in RFC 2141.<br>EXAMPLE urn:iho:s101:1:0:0:AnchorageArea | URI |

#### 2.4.9.2 Reference to textual files

The files referenced by complex attribute information and its sub-attribute fileReference must be *.TXT or *.HTM files, and may contain formatted text. It is up to the Producing Authority to determine the most

suitable means of encoding a particular piece of text (as text or HTML). The format of the reference to the file should be a “file URI” (S-100 1-4.6).

Besides being bound to certain types, the complex attribute information is also a sub-attribute of the complex attribute textContent. This means that any type that binds textContent as an attribute can also contain a reference to a textual file via an information sub-attribute. In S-131, there are several features, information types, and complex attributes that bind either textContent or information.

The exchange language for textual information should be English. The sub-attribute language must be populated with an appropriate value to indicate the language used. Languages other than English may be used as a supplementary option. Generally this means, when a national language is used in the textual attributes, the English translation must also exist.

Files must only use UTF-8 character encoding even when the sub-attribute language is populated with a language other than English.

If it is necessary to indicate a specific section within a large text file, this may be done by encoding the location in the fileLocator sub-attribute of information, as described in Table 2-6.

Producers and application developers should note that the use of the fileLocator attribute enables a single support file to contain separate chunks of text referenced from different features, information types, or complex attribute. Adopting this practice enables producers to reduce the number of external files needed with a dataset.

**Table 2-6 — Locators for external files**

| Format | File extension | Content of fileLocator |
|---|---|---|
| Text | TXT | Locators to text files are not permitted; the file should be split into separate text files or an HTML file used instead. |
| HTML | HTM | The HTML fragment identifier, i.e., the value of the HTML name or id attribute of the target (as defined in the relevant HTML specification). |

#### 2.4.9.3 Reference to external sources

References to Internet sources should be encoded using the onlineResource sub-attribute of *textContent*. Encoders should be aware that systems may not be able to access the Internet, so onlineResource should be used only for non-essential information. Only sources that can be certified as secure and free from malicious downloads should be provided.

#### 2.4.9.4 Reference to graphics

If it is required to indicate a graphic, the complex attribute graphic must be used. The sub-attribute *pictorialRepresentation* must be used to indicate the file name (without the path) of the external graphical file. Graphic files that form part of the data product must be content with the characteristics collected in Table 2-7.

**Table 2-7 — Graphics characteristics**

| Characteristics | Values |
|---|---|
| Recommended Resolution | 96 DPI |
| Minimum Size x,y | 200,200 pixels |
| Maximum Size x,y | 800,800 pixels |
| Bit Depth | 8 Bit Indexed Colour |
| Compression | LZW |
| Format | Tiff 6.0 |

File sizes should consider the maximum permitted sizes of datasets and exchange sets.

Additional information about the graphic file may be encoded in other sub-attributes of attribute graphic, as described in Clause 2.4.12.

### 2.4.10 Dates

Dates may be need to be encoded as complete or truncated values, depending on available information and allowed format for the particular attribute. The definition of the attribute will indicate if it must take a complete value (type Date or DA) or is allowed to take a truncated value (type S100_TruncatedDate or TD). Complete and truncated dates are different value types (see S-100 1-4.5.2 Table 1-2).

For attributes that use the complete date type (type Date or DA), all their components (year, month, and day) must be specified.

For attributes that use the truncated date type (type S100_TruncatedDate or TD), zero, one, or two of the year/month/day components may be omitted. If the year component is included, it must be specified using exactly 4 digits.

#### 2.4.10.1 Complete dates

Dates (except truncated dates, see the following clause) must be encoded in conformance with the Date format as specified in S-100 Clause 1-4.5.2 which is the same as the DA format in Table 2-2 in this document. The data values have to be provided in accordance with the Gregorian Calendar starting with four digits for the year, two digits for the month and two digits for the day.

Example: The date 18 September 2010 is encoded as follows:

In the GML format: <date>2010-09-18</date>

Note that since both discovery metadata and GML datasets are XML files, both will use the “GML format” above.

#### 2.4.10.2 Truncated dates

In Truncated Dates one or more components (year, month, or day) of the date is not specified. Truncated date values must be encoded in conformance with the S100_TruncatedDate format or equivalent as specified in S-100 (clauses 1-4.5.2 and 3-9) which is the same as the TD format in Table 2-2 in this document. If encoding attributes which can take truncated date values (e.g., fixedDateRange, periodicDateRange, reportedDate) and no specific year, month, or day is required, the values must be encoded in conformance with the truncated date format as specified in S-100 (clauses 1-4.5.2 and 3-9), using the format-specific type for XML/GML.

To encode partial dates in the XML/GML data format:

**Table 2-8 — Date encoding format in XML and GML**

| Description | ISO 8211 | GML |
|---|---|---|
| No specific year, same day each year | `----MMDD` | `<gMonthDay>--MM-DD</gMonthDay>` |
| No specific year, same month each year | `----MM--` | `<gMonth>--MM</gMonth>` |
| No specific day | `YYYYMM--` | `<gYearMonth>YYYY-MM</gYearMonth>` |
| No specific month and no specific day | `YYYY----` | `<gYear>YYYY</gYear>` |
| NOTE: YYYY = calendar year; MM = month; DD = day. | | |

The dashes (-) indicating that the year, month, or date which is not specified must be included in the encoding (with no space between the dashes).

#### 2.4.10.3 Start and end of ranges

In accordance with S-100 clause 3-8, the start and end instants of a range or period are included in the range or period.

EXAMPLE 1: If the beginning of a date range is encoded as the complete date 01 January 2016, the period begins at 00:00:00 on 1 January 2016, and the whole of New Year’s Day is included in the period.

If the end of the date range is encoded as 01 January 2016, the period ends at 24:00:00 on 1 January 2016, i.e., again the whole of New Year's Day is included in the period.

EXAMPLE 2: If the beginning of a period is encoded in truncated date format as `----01--` (i.e., year and day not specified), the period begins at 00:00:00 on 1 January each year. If the end of the period is encoded as `----01--`, the period ends at 24:00:00 on 31 January each year.

NOTE (1): Particular care should be taken if the start or end date is 28 or 29 February. S-100 3-8.3 explains the implications for end of February. For example, the truncated date `----02--` will be interpreted as 29 February in leap years and 28 February in non-leap years, while `----0228` will be interpreted as 28 February in every year.

NOTE (2): In accordance with ISO practice at the time S-100 date and time formats were defined, the time `00:00:00` means midnight at the start of a day and `24:00:00` means midnight at the end of a day. This continues to be S-100 usage.

#### 2.4.10.4 Schedules

Weekly service schedules of a feature can be comprehensively described by using the information types ServiceHours and NonStandardWorkingDay.

EXAMPLE: A feature service is available under normal operation status 24 hours/day on Monday and Wednesday and from 08:00 to 16:00 LT from Thursday to Saturday. The service is available by pre-arrangement on public holidays and the 5 of August of each year when they fall on days which would otherwise be normal working days.

```
ServiceHours
 scheduleByDayOfWeek
  categoryOfSchedule =1 (normal operation)
  timeIntervalsByDayofWeek
   dayOfWeek =2(Monday), 4(Wednesday)
   dayOfWeekIsRange =0 (false)
  timeIntervalsByDayofWeek
   dayOfWeek =5(Thursday), 7(Saturday)
   dayOfWeekIsRange =1 (true)
   timeOfDayStart = 08:00:00
   timeOfDayEnd = 16:00:00
NonStandardWorkingDay
 dateFixed = ---08-05 (5 August)
 dateVariable = public holidays
 information.text = "By pre-arrangement"
```

The above example can be encoded as follows:

```
    <S131:ServiceHours gml:id="(GML ID of ServiceHours)">
        <scheduleByDayOfWeek>
            <categoryOfSchedule code="1">Normal Operation</categoryOfSchedule>
            <timeIntervalsByDayOfWeek>
                <dayOfWeek code="2">Monday</dayOfWeek>
                <dayOfWeek code="4">Wednesday</dayOfWeek>
                <dayOfWeekIsRange>0</dayOfWeekIsRange>
                <timeOfDayStart>00:00:00</timeOfDayStart>
                <timeOfDayEnd>24:00:00</timeOfDayEnd>
            </timeIntervalsByDayOfWeek>
            <timeIntervalsByDayOfWeek>
                <dayOfWeek code="5">Thursday</dayOfWeek>
                <dayOfWeek code="7">Saturday</dayOfWeek>
                <dayOfWeekIsRange>0</dayOfWeekIsRange>
                <timeOfDayStart>08:00:00</timeOfDayStart>
                <timeOfDayEnd>16:00:00</timeOfDayEnd>
            </timeIntervalsByDayOfWeek>
        </scheduleByDayOfWeek>
        <partialWorkingDay xlink:href="(reference to NonStandardWorkingDay)"/>
    </S131:ServiceHours>

    <S131:NonStandardWorkingDay gml:id="(GML ID of NonStandardWorkingDay)">
        <dateFixed><gMonthDay>--08-05</gMonthDay></dateFixed>
```

```
        <dateVariable>public holidays</dateVariable>
        <information><text>By pre-arrangement</text></information>
        <theServiceHours_nsdy xlink:href="(reference to ServiceHours)"/>
    </S131:NonStandardWorkingDay>
```

If the days of week are known but the hours of availability are unknown, there is no time attribute. Twenty-four availability is indicated by encoding the availability period as 000000-240000. Special cases such as unknown can be explained in the textContent or information attribute of ServiceHours. To encode two or more periods within the same day, repeat the timeOfDayStart and timeOfDayEnd attributes. If one of the times is not known, it may be nilled as described in Clause 2.4.4.

For example, to encode open hours of 8 a.m. to 12 noon and 1 p.m. to 5 p.m. on Thursdays and Saturdays:

```
timeIntervalsByDayofWeek
 dayOfWeek =5(Thursday), 7(Saturday)
 dayOfWeekIsRange =1 (true)
 timeOfDayStart = 08:00:00
 timeOfDayStart = 13:00:00
 timeOfDayEnd = 12:00:00
 timeOfDayEnd = 17:00:00
```

The order of repeated timeOfDayStart and timeOfDayEnd attributes is significant, since intervals are specified by matching them pairwise in order.

UTC is indicated by the Z suffix. The absence of the Z suffix indicates local time.

The absence of any additional information other than date (fixed or variable) in NonStandardWorkingDay should be interpreted as closure on the specified days. Non-standard working days do not need to be associated with ServiceHours instances categorized as “closure” (categoryOfSchedule=Closure) because the closure is already indicated in the ServiceHours instance.

#### 2.4.10.5 Times

If it is required to provide information of the start time and end time of an active period of a feature, it must be encoded using the attributes timeOfDayStart and timeOfDayEnd. The order has significance.

### 2.4.11 Combination of date schedules and times

Schedule information can also include time of day. The complex attribute timeIntervalsByDayofWeek also includes timeOfDayStart and timeOfDayEnd attributes to encode the daily start and end times of service. Complete instructions on how to encode schedules are described in Clause 2.4.10.4.

### 2.4.12 Graphic information

A graphic file should be appropriate for the purpose and should supplement the information in terms of navigational relevance. Preferably, the graphic should provide perspective relevant to the view of the mariner. Graphics should be such that all the information in the graphic is legible in the application display. Graphic information must be encoded using the complex attribute graphic. The simple sub-attribute pictureInformation should be used to provide credits to the picture creator, copyright owner etc. Assuming that graphic information provides a coastal view, mariners are interested in knowing from which point on sea that graphic has been taken. The complex attribute bearingInformation (see Clause 2.4.12.1) provides all necessary information.

#### 2.4.12.1 Bearing information

The most accurate information should be provided if it is necessary to indicate a position from where a picture has been taken. information is a sub-complex attribute of bearingInformation and should be used to specify that no bearing information can be provided whenever such is the case. The sub-attributes sectorBearing and orientation can be used to describe a certain level of inaccuracy in the position determination.

## 2.5 Associations

### 2.5.1 Introduction

An association expresses a relationship between two classes — features, information types, or a feature and an information type. Objects in the dataset (instances of feature/information types) are related only

if the link between them is encoded in the dataset. An association end may have a multiplicity which describes how many instances the feature or information type instance at the other end is allowed to link to.

### 2.5.2 Association names

The association name is normally provided by the UML diagram at the middle of the connection line/ arrow between the two involved classes and can be obtained from the feature and information type tables provided in this document). Association names may be omitted in the UML diagrams for the following reasons: a) the association is defined by an association class, see 2.5.4 (the name of the association class is used); b) to avoid cluttering the diagram – however, the name is always documented in the feature/information type tables.

### 2.5.3 Association roles

Either or both association ends can have a name (role). Roles may be also omitted from the diagram to reduce clutter – again, the role name is documented in the feature/information type tables. NOTE: Instead of documenting every single role, Product Specifications may describe rules for defining default roles.

### 2.5.4 Association classes

Association classes allow relationships to be characterized by one or more attributes. The attributes of the association class belong to the association itself, not to any of the features or information types it connects. An association class is both an association and a class. Within an S-131 product the association classes Permission Type and Inclusion Type may be used for relating vessel classes to feature and information types.

#### 2.5.4.1 Permission Type

This association class specifies the relationship of the vessel class to a feature, e.g., whether access to a feature (or use of a facility) is prohibited or permitted for a specified class of vessel. The class of vessel is described by the simple and complex attributes of the information type Applicability such as length, cargo, etc. The attributes of the association class describe the nature of the relationship, i.e., whether access to an area is permitted or prohibited, or whether use of a service is required or recommended.

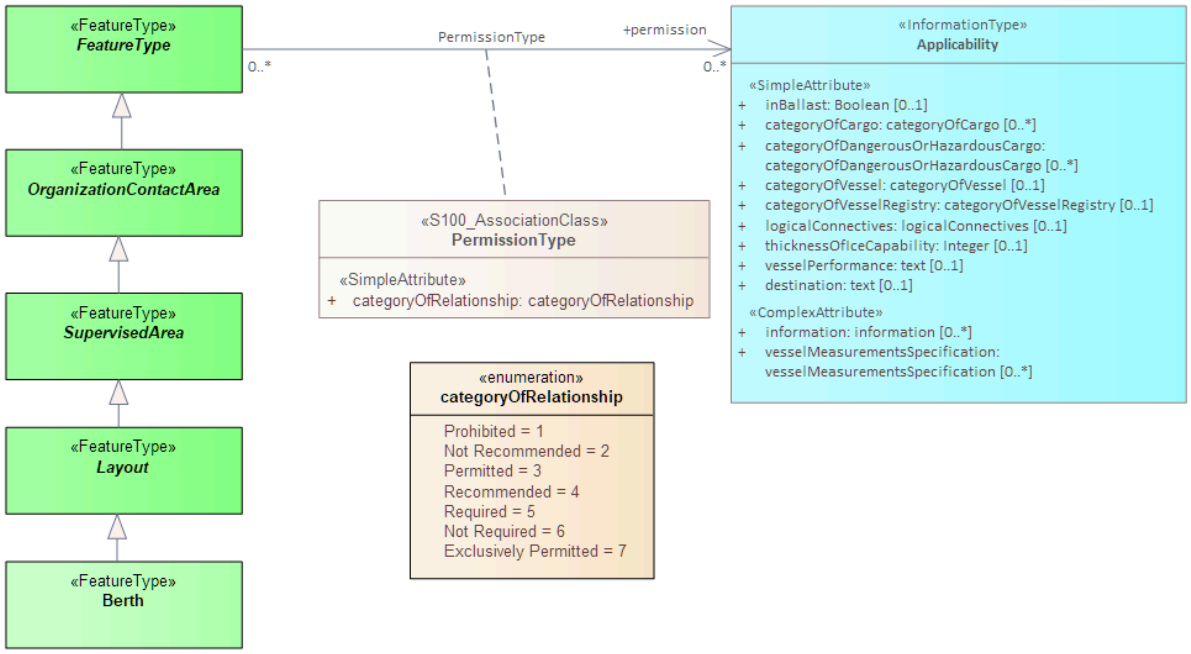


**Figure 2-2 — Association class for hypothetical requirement for non-use of a berth by a vessel carrying hazardous cargo**

EXAMPLE: An association between an Applicability instance with attribute categoryOfDangerousOrHazardousCargo = IMDG Code Class 3 and an instance of feature Berth, with Permission Type's attribute categoryOfRelationship = Prohibited, means that vessels carrying flammable

liquids (hazardous cargo type class 3 in the IMDG Code) cannot use the Berth instance. Note that in this case the relationship is inherited by the Berth instance from the abstract class FeatureType.

#### 2.5.4.2 Inclusion Type

This association class defines whether a specified customer (class of vessels, as described by Applicability) is excluded or included from a particular regulation, recommendation, etc. Again, the attributes of the association class describe the nature of the relationship; in this case whether the vessel is included or excluded from the regulation, etc.

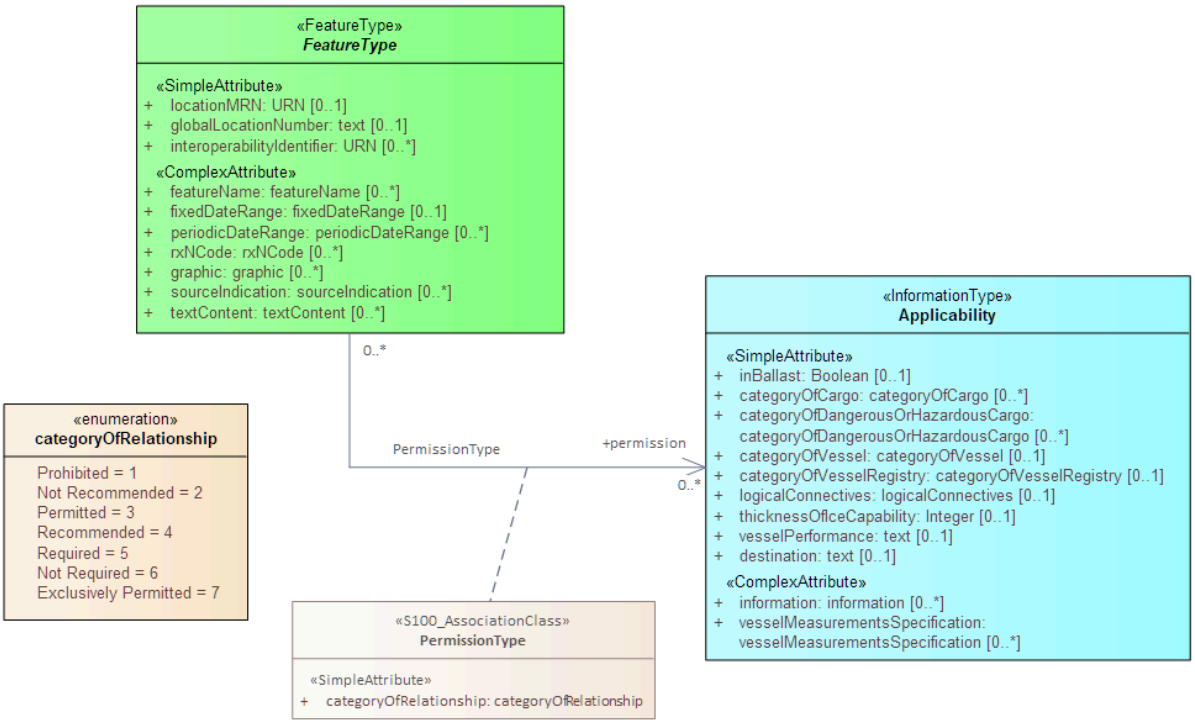


**Figure 2-3 — Association class for inclusion of vessel types in regulations**

EXAMPLE: An association between an Applicability instance with attribute categoryOfDangerousOrHazardousCargo = IMDG Code Class 3, with Inclusion Type's attribute membership = included, and an association of a Regulation instance to the same Inclusion Type, means that the information provided by the Regulation (a sub-type of AbstractRXN) applies to vessels carrying flammable liquids (hazardous cargo type class 3 in the IMDG Code).

NOTE (1): Since AbstractRXN is an abstract type, it cannot have direct instances in the dataset. Only instances of its (non-abstract) sub-types can be used.

NOTE (2): Specific tools may use different presentations in their user interfaces, e.g., as two associations (as described in the text of the example), or one association with an association class also shown (as shown in Figure 2-3).

### 2.5.5 Use of various associations

#### 2.5.5.1 General

In general, associations must be encoded whenever the relationship is useful for navigation, monitoring, voyage or route planning, or reporting purposes, or any other purpose for which the dataset is intended. The multiplicity lower bound of "0" at an association end means only that the absence of a link to the relevant instance does not invalidate the dataset. The encoding instructions for individual feature and information types describe what associations are allowed and whether they are required or optional.

#### 2.5.5.2 Generic association for uncategorized additional information

Unless other associations are specified, information types are associated to the relevant features using the association name AdditionalInformation and the role names providesInformation and informationProvidedFor.

#### 2.5.5.3 Associations to Restrictions, Recommendation, Regulations, and Nautical Information

The Restrictions, Recommendation, Regulations, Nautical Information are associated to the relevant features using the association named AssociatedRxN (inherited from their common abstract super-type). The roles at the ends of this association are appliesInLocation and theRxN (the Restriction, Regulation etc.). If the regulation applies only to a specific class, or if it mentions an exempt class, an additional association to an Applicability object is encoded using the InclusionType association class.

#### 2.5.5.4 Conventional Association

Certain features and information types may be permitted or required to have associations to other feature or information types. The allowed or mandatory associations for a feature/information type are shown in the application schema (clause 4 of the Product Specification) and listed in the documentation for individual types in this Annex (Section 4 — Section 12). Definitions of the associations and roles are also given in the DCEG.

#### 2.5.5.5 Where to Encode Associations

The presentation and management of associations will be determined by the user interface of the encoding software tools. Since S-100 permits feature-information associations to be encoded only from the geographic feature to the information type and not vice versa, the information-to-feature link might be unavailable or treated differently from the feature-to-information link.

## 2.6 Datasets

### 2.6.1 Types of Datasets

A dataset is a grouping of features, attributes, geometry and metadata which comprises a specific coverage. Table 2-9 shows the types of datasets which may be produced and contained within an exchange set:

**Table 2-9 — Dataset types**

| Dataset | Explanations |
|---|---|
| New dataset | Data for an area different (in coverage and/or extent) to existing datasets. |
| New Edition of a dataset | A re-issue plus new information which has not been previously distributed by Updates. Each New Edition of a dataset must have the same name as the dataset that it replaces and should have the same spatial extents. |
| Update dataset | Updated or new information. Contains information about objects being added, modified, or deleted. |

### 2.6.2 Overlay data sets

S-131 datasets are intended to be used together with S-101 ENC (or similar data products) which will act as a base layer. The base layer is expected to provide navigational and visual context. Generally, an overlay dataset like S-131 does not provide “skin of the earth” coverage and there will be large areas with no data coverage because the S-131 application schema does not include any feature for designating a region as “other”, or “not an MHI area” (i.e., there is no S-131 feature equivalent to the S-101 Unsurveyed Area). Further, an overlay dataset does not include features that provide auxiliary information such as bathymetry within a routeing measure area.

### 2.6.3 Data coverage

A Marine Harbour Infrastructure dataset can contain one or more DataCoverage features (see Clause 4.1). The data boundary is defined by the extent of the DataCoverage meta features. Data must only be present within DataCoverage meta features. When a feature extends across datasets of overlapping scale ranges, its geometry must be split at the boundaries of the DataCoverage features and its complete attribute description must be repeated in each dataset. An Update dataset must not extend the data coverage for the base dataset to which it applies. Where the extent of the data coverage for a base dataset is to be changed, this must be done by issuing a New Edition of the dataset.

### 2.6.4 Discovery metadata

Discovery metadata is intended to allow applications to find out important information about datasets and accompanying support files to be examined without accessing the data itself (or without reading the support file). Discovery metadata includes, but is not limited to:

- information identifying the product specification and encoding format;
- edition and version numbers, production/release date, and other details of data creation and updating;
- data coverage of the dataset;
- summary descriptions of content, purpose, use, and limitations;
- identification and contact information for the producer and distributor of the dataset.

Discovery metadata is encoded in the exchange catalogue. S-131 uses the same classes and attributes for discovery metadata as S-100, but adds certain product-specific restrictions. The classes and attributes for generic discovery metadata are defined in S-100 Part 17. Constraints and restrictions specific to S-131 are defined in the S-131 Product Specification. The schema for the exchange catalogue file (CATALOG.XML) for S-131 is the same as the S-100 generic schemas and is available from the schema server (https://schemas.s100dev.net).

### 2.6.5 Dataset header metadata

Dataset header metadata contains structural and discovery metadata that apply to the whole dataset and are encoded in the dataset file. The elements are described in S-100 Part 10b.

### 2.6.6 Dataset units

The depth, height and positional uncertainty units in a dataset must be metres.

### 2.6.7 Dataset Coverage

Marine Harbour Infrastructure datasets are spatially limited.

In areas which include neighbouring producer nations, producing agencies should co-operate to agree on dataset boundaries and ensure no data overlap. Where possible, adjoining nations should agree on common data boundaries within a technical arrangement based on cartographic convenience and benefit to the mariner.

If an MHI feature extends outside the product coverage and the adjoining object does not exist, e.g. due to delay in the production of the neighbouring HO product, an indication should be placed at the outer edge of the product.

### 2.6.8 Overlaps

The DataCoverage features within a dataset must not overlap, however DataCoverage features from different datasets may overlap if they have differing maximum display scales or the datasets are for different ports.

MHI does not envisage multiple datasets for the same port, and does not anticipate overlapping datasets for a single port.

Overlapping datasets are possible in the case where there are two or more ports in close proximity (which may, for example, have overlapping approaches). In the latter case, consideration should be given to creating a single dataset that covers all the ports in the region in question, but overlapping datasets may be created as necessary. In case of overlapping datasets, the ECDIS should display an indicator and allow the user to select one dataset for display.

### 2.6.9 Feature Object Identifiers

Each feature and information instance within a dataset must have a unique universal Feature Object Identifier [FOID]. This is mapped to the gml:id attribute of the feature in the dataset (FOID and gml:id may not be identical due to XML restrictions on the format of gml:id attributes). Where a real-world feature has multiple geometric elements within a single dataset due to the dataset scheme, the same FOID may be used to identify multiple instances of the same feature. Since gml:id attributes in the same file must be unique, the mapping between FOID and gml:id must allow for a one-to-many mapping if needed. Features within a dataset may carry multiple geometries. Features split across multiple datasets may be identified by the same FOID. Features repeated in different scale ranges may be identified by the same FOID.

FOID must not be reused, even when a feature has been deleted. However, the same feature can be deleted and added again later using the same FOID. NOTE (1) (informative): The current format of FOID is defined in S-101 as a concatenation of subfields Producing Agency, Feature Identification Number and Feature Identification Subdivision. The identifier is currently formatted as a string value. The identifier may eventually be replaced with an identifier adhering to the scheme for Maritime Resource Names (MRN) which is based on the format of URNs. NOTE (2): S-131 uses gml:id as a proxy representing FOID. S-131 does not define a rule for the structure or generation of gml:id values or their relation to identifiers in S-57, S-101 or other sources. Producers may generate gml:id values according to any desired scheme or schemes

#### 2.6.10 180° Meridian of Longitude

Datasets must not cross the 180° meridian of longitude.

## 2.7 Geographic names

### 2.7.1 Feature names

If it is required to encode an international or national geographic name, it must be done using complex attribute featureName.

If it is required to encode a geographic name for which there is no existing feature, an appropriate area feature must be created. In order to minimise the data volume, these features should, where possible, use the geometry of existing features.

Geographic names should be encoded with the complex attribute featureName. The complex attribute featureName consists of the simple sub-attributes language, name and a Boolean type to indicate whether that particular name is the displayName or not.

National geographic names can be left in their original national language in a non-English iteration of the complex attribute featureName (but only if the national language can be expressed using lexical level 0 or 1), or transliterated or transcribed and used in an English iteration of the complex attribute featureName, in which case the national name should be populated in an additional iteration of the featureName with sub-attribute language populated with the relevant national language value in accordance with ISO 639-2/T.

All area and point features within a Marine Harbour Infrastructure product should be encoded using featureName if a name is available.

A group of features, associated with a particular geographic name, should have the name encoded using featureName on an aggregation feature (of type surface or point, or no geometry, as appropriate). The name should not be encoded on the individual hydrographic features.

A group of service or forecast areas with the same attribute values associated with the same name should be encoded as spatial attributes of the same feature (so there would be only one feature with multiple spatial attributes for location).

Named features listed in Hydrographic Office's Sailing Directions or other documents that may assist in locating service information should be encoded using feature name on the relevant feature (e.g. WaterwayArea). In all instances, if the exact extent of the feature to be named is known, a feature must be created. If the exact extent is not known, or the area is too small, an existing or specifically encoded point feature should be used to encode the geographic name.

### 2.7.2 Text placement

***EDITORIAL NOTE***

*to be Updated fron S-101 2.0.0*

The cartographic feature TextPlacement is used specifically to place text cartographically. The properties of the TextPlacement feature are described as follows: * Geometry (point) – the spatial point location of the text string. * text type – the attribute (or class) which is to be placed. * orientation value and text offset mm – the bearing and distance (in millimetres in the ECDIS display) used to position the text relative to the feature.

The TextPlacement feature is associated to the feature which carries the text being placed. The attribute textType determines which text string is to be displayed if more than one is present. The TextPlacement feature ensures that as the screen rotates from “north up” (e.g. if display is set to “course up”) text can remain readable, or clear other important charted information.

## 2.8 Scale policy

### 2.8.1 General policy

Marine Harbour Infrastructure data must be compiled in the best applicable scale.

### 2.8.2 Usage of scale attributes in displays (informative)

The attributes scaleMinimum and scaleMaximum define the range of display scales within which features will be portrayed on the display if these scale minimum/maximum functions are enabled in the ECDIS or another GIS device. A geo feature with one or more spatial attributes can utilize the scaleMinimum and scaleMaximum attributes on the link to the spatial object (see the S-100 General Feature Model, S-100 Part 3, Figure 3-1 and 3-5.3.5). There are essentially two ways in which these attributes may be used. 1) A producer may decide to use only a scaleMinimum value. This option is employed when the data producer wishes to turn off the display of a feature above certain scales. This is particularly useful in areas with high data density, and when it is expected that the data will be used a larger scale where data clutter might become an issue. Features are therefore encoded with an applicable value, which represents the scale at which the producer wishes to turn off the feature. 2) A producer may decide to provide several pairs of scaleMinimum and scaleMaximum values. This decision may be based on the fact that for one particular feature different spatial instances in different scale ranges should be provided to supply this particular feature with more detailed geographic representation at larger scales.

An example can be a building which has two spatial objects associated, first one with only scale minimum value encoded at 21999, and the second spatial object encoded with scaleMaximum at 22000 and scaleMinimum encoded with 999999. These values would enable the use of a highly-detailed geometry at larger scales than 22000, and a less detailed geometry at scales of 22000 and less, while the building would be turned off at scales of 999999 and less.

A similar strategy can be followed to enable boundaries to conform to a scale-dependent geometry such as a coastline. Conformance at different scales can achieved by using minimum/maximum scales on spatial attributes to indicate which particular geometry should be used at a given scale.

The meta feature DataCoverage (Clause 4.1) is used to provide ECDIS with the scale information needed for the determination of dataset loading and unloading in relation to the user-selected viewing scale of the ECDIS. The mandatory attribute maximumDisplayScale is used to indicate the largest intended viewing scale for the data. The mandatory attribute minimumDisplayScale is used to indicate the smallest intended viewing scale for the data.

S-131 does not prescribe specific values for maximumDisplayScale and minimumDisplayScale. Instead, producers should refer to the S-101 DCEG for values, and use values appropriate to the S-101 ENCs underlying the S-131 dataset.

### 2.8.3 Scale minimum values

Scale minimum values must be chosen from the list in S-101 to ensure visual compatibility between comparable underlying S-101 ENCs and S-131 data products. The scale minimum values used in the actual comparable underlying ENCs should be used, and in case of differences with the list below, the values in the actual ENCs prevail. “Comparable” ENCs for the purpose of this requirement means ENCs of scales large enough to distinguish berths, terminals, and other features that are part of a port. These will generally have navigationPurpose=port in discovery metadata (see S-100 Part 17) and have maximum and minimum display scales values in the lower end of the scale ranges (i.e., be the larger scale ENCs).

**Table 2-10 — Scale minimum values**

| Scale |
|---|
| 19999999 |

| Scale |
|---|
| 9999999 |
| 4999999 |
| 3499999 |
| 1499999 |
| 999999 |
| 699999 |
| 499999 |
| 349999 |
| 259999 |
| 179999 |
| 119999 |
| 89999 |
| 59999 |
| 44999 |
| 29999 |
| 21999 |
| 17999 |
| 11999 |
| 7999 |
| 3999 |
| 2999 |
| 1999 |
| 999 |

All data within a dataset must have the same minimum display scale, but portions of a dataset can have a different maximum display scale, depending on the best scale required in an area for the operational purpose of the data.

### 2.8.4 Scale policy for feature types

***EDITORIAL NOTE***

*TBD if this is still valid.*

Unlike S-101, S-131 does not define scale minimum values or steps for individual feature types.

## 2.9 Masking

Since a MHI dataset will cover the entire extent of a port, masking at cell boundaries is not required.

## 2.10 Linear surface features

If it is required to encode a linear feature when the only allowable primitive for the relevant feature type is surface (e.g. a service area along a track, or channel), a very narrow surface should be encoded. The suggested extent is 0.3mm wide at viewing scales (keeping in mind that S-100 permits different spatial attributes at different scales.) An edge of this surface should correspond to the position of the line. All other edges should be masked.

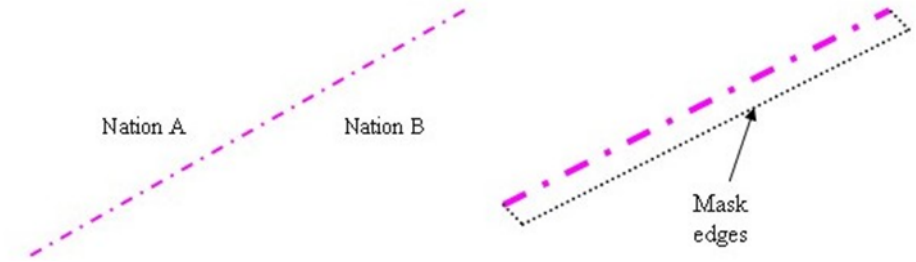


**Figure 2-4 — Linear features**

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# 3 Description of table format for feature and information types

The tables describing feature and information types are based on the template below.

**X.X Feature Name**

| | | | | |
|---|---|---|---|---|
| IHO Definition: (Definition) (followed by Remarks if any) | | | | |
| **S-131 [Geo Feature/Information Type]: S-1XX Feature or Information Type (followed by (Abstract) if abstract type)** | | | | |
| **Super Type: (supertype)** | | | | |
| **Primitives: (allowed spatial primitives)** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| *(Reserved)* | *(Reserved)* | *(Reserved)* | | |
| **S-1XX Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| (This section lists the allowabe **local** attributes) | | (Allowed values for enumeration and codelist attributes) | | |
| **Inherited Attributes** | | | | |
| **S-1XX Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| (attribute) | (supertype where defined) | | | |

| **Feature/information associations (permitted associations)** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| Role of target class | Name of the Association if inherited, “(Inherited from …)” | Name of the target (the feature or information type referenced by the link) | aggregation / composition / aggregation | (How many target instances a single source instance can link to.) |
| If the association is listed in only one of the feature or information types in the asspciation, it means the association is unidirectional, that is, the binding for the association is only in one of the participating features or information types. This is sometimes the case for information associations that link a feature to an information type — the feature type has a binding to the information type, but not vice versa. | | | | |

INT 1 Reference (optional): The INT 1 location(s) of the Feature – by INT1 Section and Section Number.

*(Encoding instructions are provided in sub-clauses following the table.)*

**X.X.X General**

General guidance for encoding.

Introductory remarks. Includes information regarding the real world entity/situation requiring the encoding of the Feature in the product, and where required nautical cartographic principles relevant to the Feature to aid the compiler in determining encoding requirements.

**Remarks:**

Guidance for encoding specific attributes.

**X.X.X.X Sub-clause heading(s)** (if needed) If applicable — S-4 reference

Additional encoding guidance relevant to the feature.

Clauses related to specific encoding scenarios for the Feature (if required).

Remarks:

S-131 Attribute: Indentation of attributes indicates sub-attributes of complex attributes. Complex attributes may also be sub-attributes of complex attributes. Complex sub-attributes are generally not expanded to show their own sub-attributes, because expanding sub-attributes produces tables of inordinate length, but if expansion is done, further levels of indentation are applied to the sub-attributes. Inherited attributes are shown separately from locally defined attributes. Inherited complex attributes are not expanded to show their sub-attributes.

Allowable Encoding Value: For (EN) type attributes, the enumerates listed are only those allowable for the particular occurrence of the attribute relevant to the feature. Allowable values may vary for the attribute depending on the feature to which the attribute is bound. Such bindings are defined in the S-131 Feature Catalogue. The full list of enumerates that may be assigned to an attribute in S-131 can be found in the Simple Attributes section of the printed feature catalogue document.

Type: The prefix **C** indicates that the attribute is a complex attribute. Complex attributes are aggregates of other attributes that can be simple type or complex type. The prefix **S** indicates that the attribute is a sub-attribute of a complex attribute. Complex attributes that are sub-attributes of a complex attribute, and their sub-attributes, are indicated by indentation of the attribute name in the S-131 Attribute column.

Introductory clauses may depict associations using a UML diagram showing the relationships that apply to the class and its super-classes (generalizations). Relationships which are inherited from super-classes are shown by including the super-classes and their associations in the diagram.

The usual UML conventions apply. For explanations of standard UML notations, see S-100 Part 1.

Association ends and multiplicities: A lower bound of 0 in the multiplicity at any end of an association indicates only that the association is not mandatory for any particular instance of the feature at the other end (i.e., it is not mandatory for an instance of “that” feature type to have an association to a feature of “this” type). A lower bound of “1” means that if an instance of “that” type exists, it must be associated to an instance of “this” type. If the association is actually encoded then it amounts to saying that “this relationship exists between these two instances” and there must be an appropriate feature instance at both ends. Associations that are not mandatory should be encoded if and only if they convey useful information.

# 4 Meta-Features

## 4.1 Data Coverage

| IHO Definition: A geographical area that describes the coverage and extent of spatial objects. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: DataCoverage** | | | | |
| **Super Type:** | | | | |
| **Primitives: surface** | | | | |
| *Real World* | *Paper Chart Symbol* | | *ECDIS Symbol* | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Maximum Display Scale | | | IN | 1,1 |
| Minimum Display Scale | | | IN | 1,1 |
| Optimum Display Scale | | | IN | 0,1 |
| Interoperability Identifier | | | URN | 0,* |

| Inherited Attributes | | | |
|---|---|---|---|
| **S-131Attribute** | **Inherited From** | **Type** | **Multiplicity** |
| **No inherited attributes** | | | |

| Information associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |

| Feature associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |

### 4.1.1 General

Encoding instructions to be added

## 4.2 Quality of Non-Bathymetric Data

| IHO Definition: An area within which a uniform assessment of the quality of the non-bathymetric data exists. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: QualityOfNonBathymetricData** | | | | |
| **Super Type:** | | | | |
| **Primitives: surface** | | | | |
| *Real World* | *Paper Chart Symbol* | | *ECDIS Symbol* | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Temporal Variation | | 1: Extreme Event<br>2: Likely to Change and Significant Shoaling Expected<br>3: Likely to Change But Significant Shoaling Not Expected<br>4: Likely to Change<br>5: Unlikely to Change<br>6: Unassessed | EN | 0,1 |
| Horizontal Distance Uncertainty | | | RE | 0,1 |
| Horizontal Position Uncertainty | | | C | 0,1 |
| Uncertainty Fixed | | | (S) RE | 1,1 |
| Uncertainty Variable Factor | | | (S) RE | 0,1 |
| Orientation Uncertainty | | | RE | 0,1 |
| Interoperability Identifier | | | URN | 0,* |
| Source Indication | | | C | 0,1 |
| Category of Authority | | | (S) EN | 0,1 |
| Country Name | | | (S) TE | 0,1 |

| | | | | |
|---|---|---|---|---|
| Source | | | (S) TE | 0,1 |
| Source Type | | 1: Law or Regulation<br>2: Official Publication<br>7: Mariner Report, Confirmed<br>8: Mariner Report, Not Confirmed<br>9: Industry Publications and Reports<br>10: Remotely Sensed Images<br>11: Photographs<br>12: Products Issued by HO Services<br>13: News Media<br>14: Traffic Data | (S) EN | 0,1 |
| Reported Date | | | (S) TD | 0,1 |
| Feature Name | | | (S) C | 0,* |
| Survey Date Range | | | C | 0,1 |
| Date Start | | | (S) TD | 0,1 |
| Date End | | | (S) TD | 1,1 |
| Vertical Uncertainty | | | C | 0,1 |
| Uncertainty Fixed | | | (S) RE | 1,1 |
| Uncertainty Variable Factor | | | (S) RE | 0,1 |
| Information | | | C | 0,* |
| File Locator | | | (S) TE | 0,1 |
| File Reference | | | (S) TE | 0,1 |
| Headline | | | (S) TE | 0,* (ordered) |
| Language | | | (S) TE | 0,1 |
| Text | | | (S) TE | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| **No inherited attributes** | | | | |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |

### 4.2.1 General

Encoding instructions to be added

# 5 Abstract Geo Features

## 5.1 Feature Type

| | | | | |
|---|---|---|---|---|
| IHO Definition: Generalized feature type which carries all the common attributes. | | | | |
| **S-131 Geo Feature: FeatureType (Abstract)** | | | | |
| **Super Type:** | | | | |
| **Primitives:** | | | | |
| *Real World* | *Paper Chart Symbol* | | *ECDIS Symbol* | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Location Maritime Resource Name | | | URN | 0,1 |
| Global Location Number | | | TE | 0,1 |
| Interoperability Identifier | | | URN | 0,* |
| Feature Name | | | C | 0,* |
| Language | | | (S) TE | 1,1 |
| Name | | | (S) TE | 1,1 |
| Name Usage | | 1: Default Name Display<br>2: Alternate Name Display<br>3: No Chart Display | (S) EN | 0,1 |
| Fixed Date Range | | | C | 0,1 |
| Date Start | | | (S) TD | 0,1 |
| Date End | | | (S) TD | 0,1 |
| Periodic Date Range | | | C | 0,* |
| Date Start | | | (S) TD | 1,1 |
| Date End | | | (S) TD | 1,1 |
| RxN Code | | | C | 0,* |
| Category of RxN | | 1: Navigation<br>2: Communication<br>3: Environmental Protection<br>4: Wildlife Protection<br>5: Security<br>6: Customs<br>7: Cargo Operation<br>8: Refuge<br>9: Health<br>10: Natural Resources or Exploitation<br>11: Port<br>12: Finance<br>13: Agriculture | (S) CL | 0,1 |
| Action or Activity | | 1: Navigating With a Pilot<br>2: Entering Port<br>3: Leaving Port<br>4: Berthing<br>5: Slipping | (S) CL | 0,1 |

| | | | | |
|---|---|---|---|---|
| | | 6: Anchoring<br>7: Weighing Anchor<br>8: Transiting<br>9: Overtaking<br>10: Reporting<br>11: Working Cargo<br>12: Landing<br>13: Diving<br>14: Fishing<br>15: Discharging Overboard<br>16: Passing<br>17: Ballast Water Exchange<br>18: Hull Cleaning<br>19: Scientific Research<br>20: Tourism<br>21: Education<br>22: Infrastructure Maintenance | | |
| Headline | | | (S) TE | 0,*<br>(ordered) |
| Graphic | | | C | 0,* |
| Pictorial Representation | | | (S) TE | 1,* |
| Picture Caption | | | (S) TE | 0,1 |
| Source Date | | | (S) DA | 0,1 |
| Picture Information | | | (S) TE | 0,1 |
| Bearing Information | | | (S) C | 0,1 |
| Source Indication | | | C | 0,* |
| Category of Authority | | | (S) EN | 0,1 |
| Country Name | | | (S) TE | 0,1 |
| Source | | | (S) TE | 0,1 |
| Source Type | | 1: Law or Regulation<br>2: Official Publication<br>7: Mariner Report, Confirmed<br>8: Mariner Report, Not Confirmed<br>9: Industry Publications and Reports<br>10: Remotely Sensed Images<br>11: Photographs<br>12: Products Issued by HO Services<br>13: News Media<br>14: Traffic Data | (S) EN | 0,1 |
| Reported Date | | | (S) TD | 0,1 |
| Feature Name | | | (S) C | 0,* |
| Text Content | | | C | 0,* |
| Category of Text | | 1: Abstract or Summary<br>2: Extract<br>3: Full Text | (S) EN | 0,1 |
| Information | | | (S) C | 0,* |
| Online Resource | | | (S) C | 0,1 |

| | | | | |
|---|---|---|---|---|
| Source Indication | | | (S) C | 0,* |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| **No inherited attributes** | | | | |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| permission | PermissionType | Applicability | association | 0,* |
| theRxN | AssociatedRxN | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| theCartographicText | TextAssociation | TextPlacement | association | 0,1 |

### 5.1.1 General

No remarks

# 6 Domain Features

***EDITORIAL NOTE***

*For now this section contains only types not included in other sections.*

## 6.1 Anchor Berth

| IHO Definition: A designated area of water where a vessel, sea plane, etc., may anchor.<br>Remarks: In general the anchor berth is defined by the centre point and a swinging circle radius. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: AnchorBerth** | | | | |
| **Super Type: Layout** | | | | |
| **Primitives: point surface** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Anchorage | | 1: Unrestricted Anchorage<br>2: Deep Water Anchorage<br>3: Tanker Anchorage<br>5: Quarantine Anchorage<br>6: Seaplane Anchorage<br>7: Small Craft Anchorage<br>9: Anchorage for Periods Up To 24 Hours | EN | 0,* |

| | | | | |
|---|---|---|---|---|
| | | 10: Anchorage for a Limited Period of Time<br>14: Waiting Anchorage | | |
| Category of Cargo | | 1: Bulk<br>2: Container<br>3: General<br>4: Liquid<br>5: Passenger<br>6: Livestock<br>7: Dangerous or Hazardous<br>8: Heavy Lift<br>9: Ballast<br>10: Dry Bulk Cargo<br>11: Liquid Bulk Cargo<br>12: Reefer Container Cargo<br>13: Ro-Ro Cargo<br>14: Project Cargo<br>15: Break Bulk Cargo | EN | 0,* |
| Radius | | | RE | 0,1 |

**Inherited Attributes**

| S-131Attribute | Inherited From | Type | Multiplicity |
|---|---|---|---|
| Location Maritime Resource Name | FeatureType | URN | 0,1 |
| Global Location Number | FeatureType | TE | 0,1 |
| Interoperability Identifier | FeatureType | URN | 0,* |
| Feature Name | FeatureType | C | 0,* |
| Fixed Date Range | FeatureType | C | 0,1 |
| Periodic Date Range | FeatureType | C | 0,* |
| RxN Code | FeatureType | C | 0,* |
| Graphic | FeatureType | C | 0,* |
| Source Indication | FeatureType | C | 0,* |
| Text Content | FeatureType | C | 0,* |

**Information associations**

| S-131 Role | S-131 Association Name | Associated to | Type | Multiplicity |
|---|---|---|---|---|
| serviceDescriptionReference | ServiceAvailability | AvailablePortServices | association | 0,1 |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl (inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact (inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType (inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN | AbstractRxN | association | 0,* |

| Information associations | | | | |
|---|---|---|---|---|
| | (inherited from FeatureType) | | | |
| theInformation | AdditionalInformation (inherited from FeatureType) | NauticalInformation | association | 0,* |

| Feature associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| auxiliaryFacility | PrimaryAuxiliaryFacility | MooringWarpingFacility | association | 0,* |
| theCartographicText | TextAssociation (inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.1.1 General

Encoding instructions to be added

## 6.2 Anchorage Area

| IHO Definition: An area in which vessels or seaplanes anchor or may anchor. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: AnchorageArea** | | | | |
| **Super Type: Layout** | | | | |
| **Primitives: point surface** | | | | |
| *Real World* | *Paper Chart Symbol* | | *ECDIS Symbol* | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Anchorage | | 1: Unrestricted Anchorage<br>2: Deep Water Anchorage<br>3: Tanker Anchorage<br>5: Quarantine Anchorage<br>6: Seaplane Anchorage<br>7: Small Craft Anchorage<br>9: Anchorage for Periods Up To 24 Hours<br>10: Anchorage for a Limited Period of Time<br>14: Waiting Anchorage<br>15: Reported Anchorage | EN | 0,* |
| ISPS Level | | 1: ISPS Level 1<br>2: ISPS Level 2<br>3: ISPS Level 3 | EN | 0,1 |
| Category of Cargo | | 1: Bulk<br>2: Container<br>3: General<br>4: Liquid<br>5: Passenger<br>6: Livestock<br>7: Dangerous or Hazardous<br>8: Heavy Lift<br>9: Ballast<br>10: Dry Bulk Cargo | EN | 0,* |

| | | | | |
|---|---|---|---|---|
| | | 11: Liquid Bulk Cargo<br>12: Reefer Container Cargo<br>13: Ro-Ro Cargo<br>14: Project Cargo<br>15: Break Bulk Cargo | | |
| Location by Text | | | TE | 0,1 |
| Depths Description | | | C | 0,1 |
| Category of Depths Description | | 1: Shoal<br>2: General Depth<br>3: Controlling Depth | (S) EN | 1,1 |
| Text Content | | | (S) C | 1,* |
| Marked By | | | C | 0,1 |
| Text Content | | | (S) C | 1,* |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| componentOf | LayoutDivision | HarbourAreaSection | aggregation | 1,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.2.1 General

Encoding instructions to be added

## 6.3 Automated Guided Vehicle

| IHO Definition: Equipment with material handling or operational capabilities, characterised by wheeled (including tracked) mobility, and which autonomously moves along a preset route based on environmental markers or external guidance signals. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: AutomatedGuidedVehicle** | | | | |
| **Super Type: HarbourPhysicalInfrastructure** | | | | |
| **Primitives: point curve surface** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact | ContactDetails | association | 0,* |

| Information associations | | | | |
|---|---|---|---|---|
| | (inherited from OrganizationContactArea) | | | |
| permission | PermissionType (inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN (inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation (inherited from FeatureType) | NauticalInformation | association | 0,* |

| Feature associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| infrastructureLocation | Infrastructure (inherited from HarbourPhysicalInfrastructure) | HarbourAreaSection Terminal | association | 0,1 |
| theCartographicText | TextAssociation (inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.3.1 General

Encoding instructions to be added

## 6.4 Available Port Services

| IHO Definition: Services that are available for a given port. | | | | |
|---|---|---|---|---|
| **S-131 Information Type: AvailablePortServices (Abstract type)** | | | | |
| **Super Type: InformationType** | | | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Firefighting Service | | 1: Shore-Based Firefighting<br>2: Onboard Firefighting<br>3: Firefighting Boat | EN | 0,* |
| Medical Service | | 1: Ambulance<br>2: Fumigation<br>3: Doctor<br>4: Quarantine<br>5: Vaccination Centre | EN | 0,* |
| Repair Service | | 1: Compensation of Magnetic Compass<br>2: Diver Service<br>3: Bridge Equipment Repair<br>4: Engine Repair<br>5: Electronic Equipment Repair<br>6: Hull Repair<br>7: Navigational Equipment Repair<br>8: Propeller Repair<br>9: Salvage Gear Repair<br>10: Shaft Repair | EN | 0,* |
| Technical Port Service | | 1: Compensation of Magnetic Compass<br>2: Degaussing<br>3: Cargo Surveying | EN | 0,* |

| | | | | |
|---|---|---|---|---|
| | | 4: Vetting | | |
| Ship Sanitation Control | | 1: Sanitation Measures Only<br>2: Issue SSCC<br>3: Issue SSCEC | EN | 0,* |
| Transport Connection | | 2: Heliport<br>3: Helipad<br>4: Hired Boat<br>5: Bus Station<br>6: Ferry<br>8: Motorway<br>9: Launch<br>11: Inland Waterway Transport<br>12: Short Sea Transportation<br>13: Marine Highway | CL | 0,* |
| Berthing Assistance | | 1: Berthing Information<br>2: Line Personnel<br>3: Mooring Boat<br>4: Mule<br>5: Tugboat<br>6: Icebreaking Ship | EN | 0,* |
| Cargo Service | | 1: Stevedoring<br>2: Cargo Surveying<br>3: Cargo Lashing<br>4: Draught Survey | EN | 0,* |
| Security-Safety-Emergency Service | | 1: Coast Guard<br>2: Customs<br>3: Environmental Emergency Information Centre<br>4: Emergency Coordination Centre<br>5: Guard and/or Security Service<br>6: Immigration<br>7: Police<br>8: Sea Rescue Control | CL | 0,* |
| Waste Disposal Service | | 1: MARPOL Annex I Oily Bilge Water<br>2: MARPOL Annex I Oily Residues<br>3: MARPOL Annex I Oily Tank Washings<br>4: MARPOL Annex I Dirty Ballast Water<br>5: MARPOL Annex I Scale and Sludge from Tank Cleaning<br>6: MARPOL Annex I Other Oily Waste<br>7: MARPOL Annex II Category X<br>8: MARPOL Annex II Category Y<br>9: MARPOL Annex II Category Z<br>10: MARPOL Annex II Category OS<br>11: MARPOL Annex IV Sewage<br>12: MARPOL Annex V Plastics<br>13: MARPOL Annex V Food Wastes<br>14: MARPOL Annex V Domestic Wastes<br>15: MARPOL Annex V Cooking Oil<br>16: MARPOL Annex V Incinerator Ashes<br>17: MARPOL Annex V Operational Wastes<br>18: MARPOL Annex V Animal Carcasses<br>19: MARPOL Annex V Fishing Gear<br>20: MARPOL Annex V E-Waste<br>21: MARPOL Annex V Cargo Residues — non-HME<br>22: MARPOL Annex V Cargo Residues — HME<br>23: MARPOL Annex VI Ozone-Depleting Substances | EN | 0,* |

| | | | | |
|---|---|---|---|---|
| | | 24: MARPOL Annex VI Exhaust Gas-Cleaning Residues | | |
| Supply Service | | 1: Shore Power<br>2: Fuel Oil Bunkering<br>3: LNG Bunkering<br>4: Lubricants<br>5: Steam<br>6: Potable Water<br>7: International Shore Connection<br>8: Provisions<br>9: Chandler<br>10: Mechanics Workshop | EN | 0,* |
| Tug Information | | | TE | 0,1 |
| Text Content | | | C | 0,* |
| Category of Text | | 1: Abstract or Summary<br>2: Extract<br>3: Full Text | (S) EN | 0,1 |
| Information | | | (S) C | 0,* |
| Online Resource | | | (S) C | 0,1 |
| Source Indication | | | (S) C | 0,* |
| **Inherited Attributes** | | | | |
| **S-131 Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Feature Name | InformationType | | C | 0,* |
| Fixed Date Range | InformationType | | C | 0,1 |
| Periodic Date Range | InformationType | | C | 0,* |
| Graphic | InformationType | | C | 0,* |
| Source Indication | InformationType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |

### 6.4.1 General

Encoding instructions to be added

## 6.5 Berth

| IHO Definition: A place, generally named or numbered, where a vessel may moor or anchor. | | |
|---|---|---|
| **S-131 Geo Feature: Berth** | | |
| **Super Type: Layout** | | |
| **Primitives: point curve surface** | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* |

| S-131 Attribute | S-57 Acronym | Allowable Encoding Value | Type | Multiplicity |
|---|---|---|---|---|
| Available Berthing Length | | | RE | 0,1 |
| Bollard Description | | | TE | 0,1 |
| Safe Working Load | | | RE | 0,1 |
| Minimum Berth Depth | | | RE | 0,1 |
| Elevation | | | RE | 0,1 |
| Cathodic Protection System | | | BO | 0,1 |
| Category of Berth Location | | 1: Wharf Reference Metre Mark<br>2: Wharf Reference Position<br>3: Pier (Jetty)<br>4: Multi-Buoy Mooring Berth | EN | 0,1 |
| Port Facility Number | | | TE | 0,1 |
| Bollard Number | | | TE | 0,2 (ordered) |
| GLN Extension | | | TE | 0,1 |
| Metre Mark Number | | | TE | 0,2 (ordered) |
| Manifold Number | | | TE | 0,2 (ordered) |
| Ramp Number | | | TE | 0,1 |
| Location by Text | | | TE | 0,1 |
| Method of Securing | | 1: Bow to Seaward<br>2: Stern to Seaward<br>3: Mediterranean Mooring<br>4: Baltic Mooring<br>5: Running Mooring<br>6: Standing Mooring<br>7: Single Point Mooring<br>8: Multi-Buoy Mooring<br>9: Ship-to-Ship Mooring<br>10: Spider Buoy Mooring | EN | 0,1 |
| UN Location Code | | | TE | 1,1 |
| Terminal Identifier | | | TE | 0,1 |
| Shore Power Description | | | TE | 0,1 |
| Category of Frequency | | 1: 50Hz<br>2: 60Hz | EN | 0,* |
| Category of Voltage | | 1: 230V<br>2: 400V<br>3: 120V<br>4: 120V or 240V<br>5: 208V<br>6: 440V<br>7: 440V or 690V<br>8: 480V<br>9: 690V<br>10: 6600V | EN | 0,* |

| | | | | |
|---|---|---|---|---|
| | | 11: 6600V or 11000V<br>12: 11000V<br>13: 22000V<br>14: 380V | | |
| Category of Plug | | | TE | 0,* |
| Category of Cargo | | 1: Bulk<br>2: Container<br>3: General<br>4: Liquid<br>5: Passenger<br>6: Livestock<br>7: Dangerous or Hazardous<br>8: Heavy Lift<br>9: Ballast<br>10: Dry Bulk Cargo<br>11: Liquid Bulk Cargo<br>12: Reefer Container Cargo<br>13: Ro-Ro Cargo<br>14: Project Cargo<br>15: Break Bulk Cargo | EN | 0,* |

**Inherited Attributes**

| S-131Attribute | Inherited From | Type | Multiplicity |
|---|---|---|---|
| Location Maritime Resource Name | FeatureType | URN | 0,1 |
| Global Location Number | FeatureType | TE | 0,1 |
| Interoperability Identifier | FeatureType | URN | 0,* |
| Feature Name | FeatureType | C | 0,* |
| Fixed Date Range | FeatureType | C | 0,1 |
| Periodic Date Range | FeatureType | C | 0,* |
| RxN Code | FeatureType | C | 0,* |
| Graphic | FeatureType | C | 0,* |
| Source Indication | FeatureType | C | 0,* |
| Text Content | FeatureType | C | 0,* |

**Information associations**

| S-131 Role | S-131 Association Name | Associated to | Type | Multiplicity |
|---|---|---|---|---|
| serviceDescriptionReference | ServiceAvailability | AvailablePortServices | association | 0,1 |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl (inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact (inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType (inherited from FeatureType) | Applicability | association | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| theRxN | AssociatedRxN (inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation (inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| demarcationIndicator | Demarcation | BerthPosition | association | 0,* |
| componentOf | LayoutDivision | HarbourAreaSection<br>Terminal | aggregation | 1,1 |
| theCartographicText | TextAssociation (inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.5.1 General

Encoding instructions to be added

## 6.6 Berth Position

| IHO Definition: A specific position within a berth where a vessel may be moored or anchored.<br>Remarks: Within a Berth, Anchor Berth or Multiple Buoy Mooring berth, there may be many possible Berth Positions. The space required to berth the vessel may vary depending on its type and size. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: BerthPosition** | | | | |
| **Super Type: Layout** | | | | |
| **Primitives: point** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Bollard Number | | | TE | 0,1 (ordered) |
| GLN Extension | | | TE | 0,1 |
| Metre Mark Number | | | TE | 0,1 (ordered) |
| Manifold Number | | | TE | 0,1 (ordered) |
| Ramp Number | | | TE | 0,1 |
| Location by Text | | | TE | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |

| | | | |
|---|---|---|---|
| Interoperability Identifier | FeatureType | URN | 0,* |
| Feature Name | FeatureType | C | 0,* |
| Fixed Date Range | FeatureType | C | 0,1 |
| Periodic Date Range | FeatureType | C | 0,* |
| RxN Code | FeatureType | C | 0,* |
| Graphic | FeatureType | C | 0,* |
| Source Indication | FeatureType | C | 0,* |
| Text Content | FeatureType | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| demarcatedFeature | Demarcation | Berth | composition | 1,1 |
| auxiliaryFacility | PrimaryAuxiliaryFacility | MooringWarpingFacility | association | 0,* |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.6.1 General

Encoding instructions to be added

## 6.7 Bollard

| IHO Definition: Small shaped post, mounted on a wharf or dolphin used to secure ship's lines. | | |
|---|---|---|
| **S-131 Geo Feature: Bollard** | | |
| **Super Type: HarbourPhysicalInfrastructure** | | |
| **Primitives: point** | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* |

| S-131 Attribute | S-57 Acronym | Allowable Encoding Value | Type | Multiplicity |
|---|---|---|---|---|
| Height | | | RE | 0,1 |
| Vertical Length | | | RE | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| infrastructureLocation | Infrastructure<br>(inherited from HarbourPhysicalInfrastructure) | HarbourAreaSection<br>Terminal | association | 0,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.7.1 General

Encoding instructions to be added

## 6.8 Dock Area

| | | | | |
|---|---|---|---|---|
| IHO Definition: An artificially enclosed area within which ships may moor and which may have gates to regulate water level. | | | | |
| **S-131 Geo Feature: DockArea** | | | | |
| **Super Type: Layout** | | | | |
| **Primitives: surface** | | | | |
| *Real World* | *Paper Chart Symbol* | | *ECDIS Symbol* | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Depths Description | | | C | 0,1 |
| Category of Depths Description | | 1: Shoal<br>2: General Depth<br>3: Controlling Depth | (S) EN | 1,1 |
| Text Content | | | (S) C | 1,* |
| Location by Text | | | TE | 0,1 |
| Marked By | | | C | 0,1 |
| Text Content | | | (S) C | 1,* |
| ISPS Level | | 1: ISPS Level 1<br>2: ISPS Level 2<br>3: ISPS Level 3 | EN | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| serviceDescriptionReference | ServiceAvailability | AvailablePortServices | association | 0,1 |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl | Authority | association | 0,1 |

| **Information associations** | | | | |
|---|---|---|---|---|
| | (inherited from SupervisedArea) | | | |
| theContactDetails | ServiceContact (inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType (inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN (inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation (inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| componentOf | LayoutDivision | HarbourAreaSection | aggregation | 1,1 |
| theCartographicText | TextAssociation (inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.8.1 General

Encoding instructions to be added

## 6.9 Dolphin

| IHO Definition: A post or group of posts, used for mooring or warping a vessel, or as an aid to navigation. The dolphin may be in the water, on a wharf or on the beach. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: Dolphin** | | | | |
| **Super Type: HarbourPhysicalInfrastructure** | | | | |
| **Primitives: point surface** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Dolphin | | 1: Mooring Dolphin<br>2: Deviation Dolphin<br>3: Berthing Dolphin<br>4: Fender or Breasting Dolphin | EN | 1,* |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |

| | | | |
|---|---|---|---|
| Interoperability Identifier | FeatureType | URN | 0,* |
| Feature Name | FeatureType | C | 0,* |
| Fixed Date Range | FeatureType | C | 0,1 |
| Periodic Date Range | FeatureType | C | 0,* |
| RxN Code | FeatureType | C | 0,* |
| Graphic | FeatureType | C | 0,* |
| Source Indication | FeatureType | C | 0,* |
| Text Content | FeatureType | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| infrastructureLocation | Infrastructure<br>(inherited from HarbourPhysicalInfrastructure) | HarbourAreaSection<br>Terminal | association | 0,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.9.1 General

Encoding instructions to be added

## 6.10 Dry Dock

IHO Definition: An artificial basin fitted with a gate or caisson, into which vessels can be floated and the water pumped out to expose the vessel's bottom. Also called graving dock.

| **S-131 Geo Feature: DryDock** | | | | |
|---|---|---|---|---|
| **Super Type: HarbourPhysicalInfrastructure** | | | | |
| **Primitives: point surface** | | | | |
| *Real World* | *Paper Chart Symbol* | | *ECDIS Symbol* | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Sill Depth | | | RE | 0,1 |
| Vertical Clearance Value | | | RE | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl (inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact (inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType (inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN (inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation (inherited from FeatureType) | NauticalInformation | association | 0,* |

| Feature associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| infrastructureLocation | Infrastructure (inherited from HarbourPhysicalInfrastructure) | HarbourAreaSection Terminal | association | 0,1 |
| theCartographicText | TextAssociation (inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.10.1 General

Encoding instructions to be added

## 6.11 Dumping Ground

| IHO Definition: A sea area where dredged material or other potentially more harmful material, for example explosives, chemical waste, is deliberately deposited. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: DumpingGround** | | | | |
| **Super Type: Layout** | | | | |
| **Primitives: surface point** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Depths Description | | | C | 0,1 |
| Category of Depths Description | | 1: Shoal<br>2: General Depth<br>3: Controlling Depth | (S) EN | 1,1 |
| Text Content | | | (S) C | 1,* |
| Location by Text | | | TE | 0,1 |
| Marked By | | | C | 0,1 |
| Text Content | | | (S) C | 1,* |
| ISPS Level | | 1: ISPS Level 1<br>2: ISPS Level 2<br>3: ISPS Level 3 | EN | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |

| | | | |
|---|---|---|---|
| Graphic | FeatureType | C | 0,* |
| Source Indication | FeatureType | C | 0,* |
| Text Content | FeatureType | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| componentOf | LayoutDivision | HarbourAreaSection | aggregation | 1,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.11.1 General

Encoding instructions to be added

## 6.12 Entrance

| IHO Definition: The seaward end of a channel, harbour, dock, etc. | | | | |
|---|---|---|---|---|
| **S-131 Information Type: Entrance (Abstract type)** | | | | |
| **Super Type: InformationType** | | | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Entrance Description | | | TE | 0,1 |
| Associated Feature Name | | | TE | 0,* |
| Local Knowledge Description | | | TE | 0,1 |
| Approach Description | | | TE | 0,1 |
| Marked By | | | C | 0,* |
| Text Content | | | (S) C | 1,* |

| | | | | |
|---|---|---|---|---|
| Landmark Description | | | C | 0,* |
| Text Content | | | (S) C | 1,* |
| Offshore Mark Description | | | C | 0,* |
| Text Content | | | (S) C | 1,* |
| Major Light Description | | | C | 0,* |
| Text Content | | | (S) C | 1,* |
| Useful Mark Description | | | C | 0,* |
| Text Content | | | (S) C | 1,* |
| Text Content | | | C | 0,* |
| Category of Text | | 1: Abstract or Summary<br>2: Extract<br>3: Full Text | (S) EN | 0,1 |
| Information | | | (S) C | 0,* |
| Online Resource | | | (S) C | 0,1 |
| Source Indication | | | (S) C | 0,* |
| **Inherited Attributes** | | | | |
| **S-131 Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Feature Name | InformationType | | C | 0,* |
| Fixed Date Range | InformationType | | C | 0,1 |
| Periodic Date Range | InformationType | | C | 0,* |
| Graphic | InformationType | | C | 0,* |
| Source Indication | InformationType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |

### 6.12.1 General

Encoding instructions to be added

## 6.13 Fender Line

| | | |
|---|---|---|
| IHO Definition: An imaginary line parallel to a face of a berth or quay which touches the seaward face of the fenders. | | |
| **S-131 Geo Feature: FenderLine** | | |
| **Super Type: Layout** | | |
| **Primitives: curve** | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* |

| S-131 Attribute | S-57 Acronym | Allowable Encoding Value | Type | Multiplicity |
|---|---|---|---|---|
| Orientation | | | C | 0,1 |
| Orientation Uncertainty | | | (S) RE | 0,1 |
| Orientation Value | | | (S) RE | 1,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| componentOf | LayoutDivision | HarbourAreaSection | aggregation | 1,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.13.1 General

Encoding instructions to be added

## 6.14 Floating Dock

| IHO Definition: A form of dry dock consisting of a floating structure of one or more sections which can be partly submerged by controlled flooding to receive a vessel, then raised by pumping out the water so that the vessel's bottom can be exposed. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: FloatingDock** | | | | |
| **Super Type: HarbourPhysicalInfrastructure** | | | | |
| **Primitives: point surface** | | | | |
| *Real World* | *Paper Chart Symbol* | | *ECDIS Symbol* | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Sill Depth | | | RE | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl (inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact (inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType (inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN (inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation (inherited from FeatureType) | NauticalInformation | association | 0,* |

| Feature associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| infrastructureLocation | Infrastructure (inherited from HarbourPhysicalInfrastructure) | HarbourAreaSection<br>Terminal | association | 0,1 |
| theCartographicText | TextAssociation (inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.14.1 General

Encoding instructions to be added

## 6.15 Gridiron

| IHO Definition: A structure in the intertidal zone serving as a support for vessels at low stages of the tide to permit work on the exposed portion of the vessel's hull. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: Gridiron** | | | | |
| **Super Type: HarbourPhysicalInfrastructure** | | | | |
| **Primitives: point surface** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Sill Depth | | | RE | 0,1 |
| Vertical Clearance Value | | | RE | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| Information associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |

| **Information associations** | | | | |
|---|---|---|---|---|
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| infrastructureLocation | Infrastructure<br>(inherited from HarbourPhysicalInfrastructure) | HarbourAreaSection<br>Terminal | association | 0,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.15.1 General

Encoding instructions to be added

## 6.16 Harbour Area (Administrative)

| IHO Definition: The area over which a harbour authority has jurisdiction. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: HarbourAreaAdministrative** | | | | |
| **Super Type: Layout** | | | | |
| **Primitives: point surface** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| UN Location Code | | | TE | 0,1 |
| Nationality | | | TE | 0,1 |
| Applicable Load Line Zone | | | TE | 0,1 |
| ISPS Level | | 1: ISPS Level 1<br>2: ISPS Level 2<br>3: ISPS Level 3 | EN | 0,1 |
| Category of Harbour Facility | | 1: RoRo Terminal<br>3: Ferry Terminal<br>4: Fishing Harbour<br>5: Yacht Harbour/Marina<br>6: Naval Base<br>7: Tanker Terminal<br>8: Passenger Terminal | EN | 0,* |

| | | | | |
|---|---|---|---|---|
| | | 9: Shipyard<br>10: Container Terminal<br>11: Bulk Terminal<br>12: Ship Lift<br>13: Straddle Carrier<br>14: Service Harbour<br>15: Pilotage Service | | |
| General Harbour Information | | | C | 0,1 |
| General Port Description | | | (S) C | 0,1 |
| Facilities Layout Description | | | (S) C | 0,1 |
| Limits Description | | | (S) C | 0,1 |
| Construction Information | | | (S) C | 0,1 |
| Cargo Services Description | | | (S) C | 0,1 |
| Weather Resource | | | (S) C | 0,* |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| serviceDescriptionReference | ServiceAvailability | AvailablePortServices | association | 0,1 |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl (inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact (inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType (inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN | AbstractRxN | association | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| | (inherited from FeatureType) | | | |
| theInformation | AdditionalInformation (inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| limitExtent | JurisdictionalLimit | OuterLimit | association | 0,1 |
| layoutUnit | LayoutDivision | HarbourAreaSection | association | 0,* |
| theCartographicText | TextAssociation (inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.16.1 General

Encoding instructions to be added

## 6.17 Harbour Area Section

| IHO Definition: A distinguishable portion of the area over which a harbour authority has jurisdiction.<br>Remarks: Denotes a specific, distinguishable or designated portion of a harbour or port area, as distinct from the entire harbour or port area. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: HarbourAreaSection** | | | | |
| **Super Type: Layout** | | | | |
| **Primitives: point surface** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Port Section | | 1: Port Fairway<br>3: Berth Pocket<br>8: Seaplane Anchorage<br>9: Dredged Basin<br>11: Port Safety Zone<br>12: Lay-by Berth | EN | 0,1 |
| Category of Harbour Facility | | 4: Fishing Harbour<br>5: Yacht Harbour/ Marina<br>6: Naval Base<br>9: Shipyard<br>14: Service Harbour<br>15: Pilotage Service<br>16: Service and Repair<br>17: Quarantine Station | EN | 0,* |
| ISPS Level | | 1: ISPS Level 1<br>2: ISPS Level 2<br>3: ISPS Level 3 | EN | 0,1 |
| Facilities Layout Description | | | C | 0,1 |

| | | | | |
|---|---|---|---|---|
| Text Content | | | (S) C | 1,* |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| serviceDescriptionReference | ServiceAvailability | AvailablePortServices | association | 0,1 |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl (inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact (inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType (inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN (inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation (inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| componentOf | LayoutDivision | HarbourAreaAdministrative | aggregation | 0,1 |
| constitute | Subsection | HarbourAreaSection | aggregation | 0,1 |
| subUnit | Subsection | HarbourAreaSection | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| hasInfrastructure | Infrastructure | HarbourPhysicalInfrastructure | association | 0,* |
| layoutUnit | LayoutDivision | AnchorageArea Berth DockArea DumpingGround FenderLine HarbourBasin PilotBoardingPlace SeaplaneLandingArea Terminal TurningBasin WaterwayArea | association | 0,* |
| theCartographicText | TextAssociation (inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.17.1 General

Encoding instructions to be added

## 6.18 Harbour Basin

| IHO Definition: An enclosed area of water surrounded by quay walls constructed to provide means for the transfer of cargos from and to ships. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: HarbourBasin** | | | | |
| **Super Type: Layout** | | | | |
| **Primitives: surface** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Depths Description | | | C | 0,1 |
| Category of Depths Description | | 1: Shoal<br>2: General Depth<br>3: Controlling Depth | (S) EN | 1,1 |
| Text Content | | | (S) C | 1,* |
| Location by Text | | | TE | 0,1 |
| Marked By | | | C | 0,1 |
| Text Content | | | (S) C | 1,* |
| ISPS Level | | 1: ISPS Level 1<br>2: ISPS Level 2<br>3: ISPS Level 3 | EN | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |

| | | | |
|---|---|---|---|
| Periodic Date Range | FeatureType | C | 0,* |
| RxN Code | FeatureType | C | 0,* |
| Graphic | FeatureType | C | 0,* |
| Source Indication | FeatureType | C | 0,* |
| Text Content | FeatureType | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| componentOf | LayoutDivision | HarbourAreaSection | aggregation | 1,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.18.1 General

Encoding instructions to be added

## 6.19 Harbour Facility

| IHO Definition: A harbour installation with a service or commercial operation of public interest. | | |
|---|---|---|
| **S-131 Geo Feature: HarbourFacility** | | |
| **Super Type: HarbourPhysicalInfrastructure** | | |
| **Primitives: point curve surface** | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* |

| S-131 Attribute | S-57 Acronym | Allowable Encoding Value | Type | Multiplicity |
|---|---|---|---|---|
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| infrastructureLocation | Infrastructure<br>(inherited from HarbourPhysicalInfrastructure) | HarbourAreaSection<br>Terminal | association | 0,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.19.1 General

Encoding instructions to be added

## 6.20 Harbour Physical Infrastructure

| | | | | |
|---|---|---|---|---|
| IHO Definition: The physical installations and facilities that support operations in a port or harbour.<br>Remarks: This generic type can serve as a super-class or aggregation type for classes defining specific feature types. | | | | |
| **S-131 Geo Feature: HarbourPhysicalInfrastructure (Abstract)** | | | | |
| **Super Type: SupervisedArea** | | | | |
| **Primitives:** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| Feature associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| infrastructureLocation | Infrastructure | HarbourAreaSection<br>Terminal | association | 0,1 |
| theCartographicText | TextAssociation (inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.20.1 General

Encoding instructions to be added

## 6.21 Layout

| IHO Definition: The spatial arrangement of areas and other types of locations that are designated for specified purposes or otherwise distinguished from other areas and locations. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: Layout (Abstract)** | | | | |
| **Super Type: SupervisedArea** | | | | |
| **Primitives:** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| Information associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| controlAuthority | ServiceControl (inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact | ContactDetails | association | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| | (inherited from OrganizationContactArea) | | | |
| permission | PermissionType (inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN (inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation (inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| theCartographicText | TextAssociation (inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.21.1 General

Encoding instructions to be added

## 6.22 Lock Basin

| IHO Definition: A wet dock in a waterway, permitting a ship to pass from one level to another. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: LockBasin** | | | | |
| **Super Type: HarbourPhysicalInfrastructure** | | | | |
| **Primitives: point surface** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Sill Depth | | | RE | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| infrastructureLocation | Infrastructure<br>(inherited from HarbourPhysicalInfrastructure) | HarbourAreaSection<br>Terminal | association | 0,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.22.1 General

Encoding instructions to be added

## 6.23 Lock Basin Part

| IHO Definition: A lock basin is divided into several lock basin parts, if this lock basin has one ground level but several gates. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: LockBasinPart** | | | | |
| **Super Type: HarbourPhysicalInfrastructure** | | | | |
| **Primitives: point surface** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Sill Depth | | | RE | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |

| | | | |
|---|---|---|---|
| Feature Name | FeatureType | C | 0,* |
| Fixed Date Range | FeatureType | C | 0,1 |
| Periodic Date Range | FeatureType | C | 0,* |
| RxN Code | FeatureType | C | 0,* |
| Graphic | FeatureType | C | 0,* |
| Source Indication | FeatureType | C | 0,* |
| Text Content | FeatureType | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| infrastructureLocation | Infrastructure<br>(inherited from HarbourPhysicalInfrastructure) | HarbourAreaSection<br>Terminal | association | 0,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.23.1 General

Encoding instructions to be added

## 6.24 Mooring Buoy

IHO Definition: A buoy secured to the bottom by permanent moorings with means for mooring a vessel by use of its anchor chain or mooring lines.

| **S-131 Geo Feature: MooringBuoy** | | | | |
|---|---|---|---|---|
| **Super Type: HarbourPhysicalInfrastructure** | | | | |
| **Primitives: point** | | | | |
| *Real World* | *Paper Chart Symbol* | | *ECDIS Symbol* | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Maximum Permitted Draught | | | RE | 0,1 |
| Maximum Permitted Vessel Length | | | RE | 0,1 |
| Vertical Length | | | RE | 0,1 |
| Visitors Mooring | | | BO | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| Feature associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| infrastructureLocation | Infrastructure (inherited from HarbourPhysicalInfrastructure) | HarbourAreaSection Terminal | association | 0,1 |
| theCartographicText | TextAssociation (inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.24.1 General

Encoding instructions to be added

## 6.25 Mooring/Warping Facility

| IHO Definition: The equipment or structure used to secure a vessel. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: MooringWarpingFacility** | | | | |
| **Super Type: Layout** | | | | |
| **Primitives: point** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Mooring/Warping Facility | | 4: Tie-Up Wall<br>5: Post or Pile<br>6: Mooring Cable | EN | 1,1 |
| ID Code | | | TE | 1,1 |
| Bollard Description | | | TE | 0,1 |
| Safe Working Load | | | RE | 0,1 |
| Heaving Lines From Shore | | | BO | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| serviceDescriptionReference | ServiceAvailability | AvailablePortServices | association | 0,1 |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl (inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact (inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType (inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN (inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation (inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| primaryFacility | PrimaryAuxiliaryFacility | AnchorBerth BerthPosition | association | 0,1 |
| theCartographicText | TextAssociation (inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.25.1 General

Encoding instructions to be added

## 6.26 Onshore Power Facility

| IHO Definition: Facilities or infrastructure providing shore power to berthed vessels. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: OnshorePowerFacility** | | | | |
| **Super Type: HarbourPhysicalInfrastructure** | | | | |
| **Primitives: point** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Shore Power Facility | | 1: High-Voltage Shore Power System<br>2: Low-Voltage Shore Power System<br>3: Hybrid Shore Power System | EN | 0,1 |
| ID Code | | | TE | 1,1 |

| | | | | |
|---|---|---|---|---|
| Shore Power Description | | | TE | 0,1 |
| Category of Voltage | | 1: 230V<br>2: 400V<br>3: 120V<br>4: 120V or 240V<br>5: 208V<br>6: 440V<br>7: 440V or 690V<br>8: 480V<br>9: 690V<br>10: 6600V<br>11: 6600V or 11000V<br>12: 11000V<br>13: 22000V<br>14: 380V | EN | 0,* |
| Category of Frequency | | | EN | 0,* |
| Category of Plug | | | TE | 0,* |
| Shore Power Service Provider | | | TE | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation | NauticalInformation | association | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| | (inherited from FeatureType) | | | |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| infrastructureLocation | Infrastructure<br>(inherited from HarbourPhysicalInfrastructure) | HarbourAreaSection<br>Terminal | association | 0,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.26.1 General

Encoding instructions to be added

## 6.27 Organization Contact Area

| IHO Definition: A feature often associated with contact information for an organization that exercises a management role or offers a service in the location.<br>Remarks: It is not a requirement that every instance of the feature be associated with a management, reporting, or service organization. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: OrganizationContactArea (Abstract)** | | | | |
| **Super Type: FeatureType** | | | | |
| **Primitives:** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| theContactDetails | ServiceContact | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.27.1 General

Encoding instructions to be added

## 6.28 Outer Limit

| IHO Definition: The extent to which a coastal State claims or may claim a specific jurisdiction in accordance with the provisions of International Law. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: OuterLimit** | | | | |
| **Super Type: Layout** | | | | |
| **Primitives: curve surface** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Limits Description | | | C | 0,1 |
| Text Content | | | (S) C | 1,* |
| Marked By | | | C | 0,* |
| Text Content | | | (S) C | 1,* |
| Landmark Description | | | C | 0,* |
| Text Content | | | (S) C | 1,* |
| Offshore Mark Description | | | C | 0,* |
| Text Content | | | (S) C | 1,* |
| Major Light Description | | | C | 0,* |
| Text Content | | | (S) C | 1,* |
| Useful Mark Description | | | C | 0,* |

| | | | | |
|---|---|---|---|---|
| Text Content | | | (S) C | 1,* |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| entranceReference | LimitEntrance | Entrance | association | 0,1 |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| limitReference | JurisdictionalLimit | HarbourAreaAdministrative | association | 1,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.28.1 General

Encoding instructions to be added

## 6.29 Pilot Boarding Place

| | | | | |
|---|---|---|---|---|
| IHO Definition: A location offshore where a pilot may board a vessel in preparation to piloting it through local waters. | | | | |
| **S-131 Geo Feature: PilotBoardingPlace** | | | | |
| **Super Type: Layout** | | | | |
| **Primitives: surface point** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Depths Description | | | C | 0,1 |
| Category of Depths Description | | 1: Shoal<br>2: General Depth<br>3: Controlling Depth | (S) EN | 1,1 |
| Text Content | | | (S) C | 1,* |
| Location by Text | | | TE | 0,1 |
| Pilot Movement | | 1: Embarkation<br>2: Disembarkation<br>3: Pilot Change | EN | 0,3 |
| Marked By | | | C | 0,1 |
| Text Content | | | (S) C | 1,* |
| ISPS Level | | 1: ISPS Level 1<br>2: ISPS Level 2<br>3: ISPS Level 3 | EN | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |

| **Information associations** | | | | |
|---|---|---|---|---|
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| componentOf | LayoutDivision | HarbourAreaSection | aggregation | 1,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.29.1 General

Encoding instructions to be added

## 6.30 Seaplane Landing Area

| IHO Definition: A designated portion of water for the landing and take-off of seaplanes. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: SeaplaneLandingArea** | | | | |
| **Super Type: Layout** | | | | |
| **Primitives: surface point** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Depths Description | | | C | 0,1 |
| Category of Depths Description | | 1: Shoal<br>2: General Depth<br>3: Controlling Depth | (S) EN | 1,1 |
| Text Content | | | (S) C | 1,* |
| Location by Text | | | TE | 0,1 |
| Marked By | | | C | 0,1 |
| Text Content | | | (S) C | 1,* |
| ISPS Level | | 1: ISPS Level 1<br>2: ISPS Level 2<br>3: ISPS Level 3 | EN | 0,1 |

| Inherited Attributes | | | |
|---|---|---|---|
| **S-131Attribute** | **Inherited From** | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | URN | 0,1 |
| Global Location Number | FeatureType | TE | 0,1 |
| Interoperability Identifier | FeatureType | URN | 0,* |
| Feature Name | FeatureType | C | 0,* |
| Fixed Date Range | FeatureType | C | 0,1 |
| Periodic Date Range | FeatureType | C | 0,* |
| RxN Code | FeatureType | C | 0,* |
| Graphic | FeatureType | C | 0,* |
| Source Indication | FeatureType | C | 0,* |
| Text Content | FeatureType | C | 0,* |

| Information associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| Feature associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| componentOf | LayoutDivision | HarbourAreaSection | aggregation | 1,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.30.1 General

Encoding instructions to be added

## 6.31 Ship Lift

| | | | | |
|---|---|---|---|---|
| IHO Definition: A platform powered by synchronous electric motors (for example syncrolift) used to lift vessels (larger than boats) in and out of the water. | | | | |
| **S-131 Geo Feature: ShipLift** | | | | |
| **Super Type: HarbourPhysicalInfrastructure** | | | | |
| **Primitives: point surface** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Vertical Clearance Value | | | RE | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl (inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact (inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType (inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN (inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation (inherited from FeatureType) | NauticalInformation | association | 0,* |

| Feature associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| infrastructureLocation | Infrastructure<br>(inherited from HarbourPhysicalInfrastructure) | HarbourAreaSection<br>Terminal | association | 0,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.31.1 General

Encoding instructions to be added

## 6.32 Straddle Carrier

| IHO Definition: A wheeled vehicle designed to lift and carry containers or vessels within its own framework. It is used for moving, and sometimes stacking, shipping containers and vessels. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: StraddleCarrier** | | | | |
| **Super Type: HarbourPhysicalInfrastructure** | | | | |
| **Primitives: point surface** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| Information associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact | ContactDetails | association | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| | (inherited from OrganizationContactArea) | | | |
| permission | PermissionType (inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN (inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation (inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| infrastructureLocation | Infrastructure (inherited from HarbourPhysicalInfrastructure) | HarbourAreaSection Terminal | association | 0,1 |
| theCartographicText | TextAssociation (inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.32.1 General

Encoding instructions to be added

## 6.33 Supervised Area

| IHO Definition: A location which may be supervised by a responsible or controlling authority.<br>Remarks: It is not a requirement that every feature instance be associated with an authority. Note that having AbstractService as well as SupervisedArea allows the subclasses to link to CONDET both directly and via AUTORI, which may not be desirable because it gives encoders two ways to reach almost the same result. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: SupervisedArea (Abstract)** | | | | |
| **Super Type: OrganizationContactArea** | | | | |
| **Primitives:** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |

| | | | |
|---|---|---|---|
| Graphic | FeatureType | C | 0,* |
| Source Indication | FeatureType | C | 0,* |
| Text Content | FeatureType | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| controlAuthority | ServiceControl | Authority | association | 0,1 |
| theContactDetails | ServiceContact (inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType (inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN (inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation (inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| theCartographicText | TextAssociation (inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.33.1 General

Encoding instructions to be added

## 6.34 Terminal

| IHO Definition: A terminal covers that area on shore which provides buildings and constructions for the transfer of cargo or passengers from and to ships. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: Terminal** | | | | |
| **Super Type: Layout** | | | | |
| **Primitives: point surface** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Port Facility Number | | | TE | 0,1 |
| Category of Terminal | | 1: RoRo Terminal<br>3: Ferry Terminal<br>7: Tanker Terminal<br>8: Passenger Terminal<br>10: Container Terminal<br>11: Bulk Terminal | EN | 0,1 |
| Category of Cargo | | 2: Container | EN | 0,* |

| | | | | |
|---|---|---|---|---|
| | | 5: Passenger<br>6: Livestock<br>7: Dangerous or Hazardous<br>8: Heavy Lift<br>10: Dry Bulk Cargo<br>11: Liquid Bulk Cargo<br>12: Reefer Container Cargo<br>13: Ro-Ro Cargo<br>14: Project Cargo<br>15: Break Bulk Cargo | | |
| Product | | 1: Oil<br>2: Gas<br>4: Stone<br>5: Coal<br>6: Ore<br>7: Chemicals<br>9: Milk<br>10: Bauxite<br>11: Coke<br>12: Iron Ingots<br>13: Salt<br>14: Sand<br>15: Timber<br>16: Sawdust/Wood Chips<br>17: Scrap Metal<br>18: Liquefied Natural Gas<br>19: Liquefied Petroleum Gas<br>20: Wine<br>21: Cement<br>22: Grain | EN | 0,* |
| Terminal Identifier | | | TE | 0,1 |
| SMDG Terminal Code | | | TE | 0,1 |
| UN Location Code | | | TE | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |
| Feature Name | FeatureType | | C | 0,* |
| Fixed Date Range | FeatureType | | C | 0,1 |
| Periodic Date Range | FeatureType | | C | 0,* |
| RxN Code | FeatureType | | C | 0,* |
| Graphic | FeatureType | | C | 0,* |
| Source Indication | FeatureType | | C | 0,* |
| Text Content | FeatureType | | C | 0,* |

| Information associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| serviceDescriptionReference | ServiceAvailability | AvailablePortServices | association | 0,1 |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl (inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact (inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType (inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN (inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation (inherited from FeatureType) | NauticalInformation | association | 0,* |

| Feature associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| componentOf | LayoutDivision | HarbourAreaSection | aggregation | 1,1 |
| layoutUnit | LayoutDivision | Berth | association | 0,* |
| hasInfrastructure | Infrastructure | HarbourPhysicalInfrastructure | association | 0,* |
| theCartographicText | TextAssociation (inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.34.1 General

Encoding instructions to be added

## 6.35 Turning Basin

| IHO Definition: An area of water or enlargement of a channel used for turning vessels. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: TurningBasin** | | | | |
| **Super Type: Layout** | | | | |
| **Primitives: surface** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Depths Description | | | C | 0,1 |
| Category of Depths Description | | 1: Shoal<br>2: General Depth | (S) EN | 1,1 |

| | | | | |
|---|---|---|---|---|
| | | 3: Controlling Depth | | |
| Text Content | | | (S) C | 1,* |
| Location by Text | | | TE | 0,1 |
| Marked By | | | C | 0,1 |
| Text Content | | | (S) C | 1,* |
| ISPS Level | | 1: ISPS Level 1<br>2: ISPS Level 2<br>3: ISPS Level 3 | EN | 0,1 |

**Inherited Attributes**

| S-131Attribute | Inherited From | Type | Multiplicity |
|---|---|---|---|
| Location Maritime Resource Name | FeatureType | URN | 0,1 |
| Global Location Number | FeatureType | TE | 0,1 |
| Interoperability Identifier | FeatureType | URN | 0,* |
| Feature Name | FeatureType | C | 0,* |
| Fixed Date Range | FeatureType | C | 0,1 |
| Periodic Date Range | FeatureType | C | 0,* |
| RxN Code | FeatureType | C | 0,* |
| Graphic | FeatureType | C | 0,* |
| Source Indication | FeatureType | C | 0,* |
| Text Content | FeatureType | C | 0,* |

**Information associations**

| S-131 Role | S-131 Association Name | Associated to | Type | Multiplicity |
|---|---|---|---|---|
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

**Feature associations**

| S-131 Role | S-131 Association Name | Associated to | Type | Multiplicity |
|---|---|---|---|---|
| componentOf | LayoutDivision | HarbourAreaSection | aggregation | 1,1 |
| theCartographicText | TextAssociation | TextPlacement | association | 0,1 |

| Feature associations | | | | |
|---|---|---|---|---|
| | (inherited from FeatureType) | | | |

### 6.35.1 General

Encoding instructions to be added

## 6.36 Vertical Datum of Data

| IHO Definition: Any level surface (for example Mean Sea Level) taken as a surface of reference to which the elevations within a data set are reduced. Also called datum level, reference level, reference plane, levelling datum, datum for heights. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: VerticalDatumOfData** | | | | |
| **Super Type:** | | | | |
| **Primitives: surface** | | | | |
| *Real World* | *Paper Chart Symbol* | *ECDIS Symbol* | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Vertical Datum | | 3: Mean Sea Level<br>13: Low Water<br>16: Mean High Water<br>17: Mean High Water Springs<br>18: High Water<br>19: Approximate Mean Sea Level<br>20: High Water Springs<br>21: Mean Higher High Water<br>24: Local Datum<br>25: International Great Lakes Datum 1985<br>26: Mean Water Level<br>28: Higher High Water Large Tide<br>29: Nearly Highest High Water<br>30: Highest Astronomical Tide<br>44: Baltic Sea Chart Datum 2000 | EN | 1,1 |
| Information | | | C | 0,* |
| File Locator | | | (S) TE | 0,1 |
| File Reference | | | (S) TE | 0,1 |
| Headline | | | (S) TE | 0,* (ordered) |
| Language | | | (S) TE | 0,1 |
| Text | | | (S) TE | 0,1 |

| Inherited Attributes | | | |
|---|---|---|---|
| **S-131Attribute** | **Inherited From** | **Type** | **Multiplicity** |
| **No inherited attributes** | | | |

| Information associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |

| Feature associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |

### 6.36.1 General

Encoding instructions to be added

## 6.37 Waterway Area

| IHO Definition: An area in which uniform general information of the waterway exists. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: WaterwayArea** | | | | |
| **Super Type: Layout** | | | | |
| **Primitives: surface** | | | | |
| *Real World* | *Paper Chart Symbol* | | *ECDIS Symbol* | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Port Section | | 1: Port Fairway<br>3: Berth Pocket<br>8: Seaplane Anchorage<br>9: Dredged Basin<br>11: Port Safety Zone<br>12: Lay-by Berth | EN | 1,1 |
| Depths Description | | | C | 0,1 |
| Category of Depths Description | | 1: Shoal<br>2: General Depth<br>3: Controlling Depth | (S) EN | 1,1 |
| Text Content | | | (S) C | 1,* |
| Location by Text | | | TE | 0,1 |
| Marked By | | | C | 0,1 |
| Text Content | | | (S) C | 1,* |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Location Maritime Resource Name | FeatureType | | URN | 0,1 |
| Global Location Number | FeatureType | | TE | 0,1 |
| Interoperability Identifier | FeatureType | | URN | 0,* |

| | | | |
|---|---|---|---|
| Feature Name | FeatureType | C | 0,* |
| Fixed Date Range | FeatureType | C | 0,1 |
| Periodic Date Range | FeatureType | C | 0,* |
| RxN Code | FeatureType | C | 0,* |
| Graphic | FeatureType | C | 0,* |
| Source Indication | FeatureType | C | 0,* |
| Text Content | FeatureType | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| facilityOperatingHours | LocationHours | ServiceHours | association | 0,1 |
| controlAuthority | ServiceControl<br>(inherited from SupervisedArea) | Authority | association | 0,1 |
| theContactDetails | ServiceContact<br>(inherited from OrganizationContactArea) | ContactDetails | association | 0,* |
| permission | PermissionType<br>(inherited from FeatureType) | Applicability | association | 0,* |
| theRxN | AssociatedRxN<br>(inherited from FeatureType) | AbstractRxN | association | 0,* |
| theInformation | AdditionalInformation<br>(inherited from FeatureType) | NauticalInformation | association | 0,* |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| componentOf | LayoutDivision | HarbourAreaSection | aggregation | 1,1 |
| theCartographicText | TextAssociation<br>(inherited from FeatureType) | TextPlacement | association | 0,1 |

### 6.37.1 General

No remarks

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# 7 Cartographic Features

## 7.1 Text Placement

| IHO Definition: The Text Placement feature is used in association with the Feature Name attribute or a light description to optimize text positioning in ECDIS. | | | | |
|---|---|---|---|---|
| **S-131 Geo Feature: TextPlacement** | | | | |
| **Super Type:** | | | | |
| **Primitives: point** | | | | |
| *Real World* | *Paper Chart Symbol* | | *ECDIS Symbol* | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Text Offset Bearing | | | IN | 1,1 |
| Text Offset Distance | | | IN | 1,1 |
| Text Rotation | | | BO | 0,1 |
| Text Type | | 1: Name | EN | 1,2 |
| Scale Minimum | | | IN | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| **No inherited attributes** | | | | |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |

| **Feature associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| thePositionProvider | TextAssociation | FeatureType | composition | 1,1 |

### 7.1.1 General

Encoding instructions to be added

# 8 Abstract Information Types

## 8.1 Information Type

| IHO Definition: Generalized information type which carries all the common attributes. |
|---|

| **S-131 Information Type: InformationType (Abstract type)** | | | | |
|---|---|---|---|---|
| **Super Type:** | | | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Feature Name | | | C | 0,* |
| Language | | | (S) TE | 1,1 |
| Name | | | (S) TE | 1,1 |
| Name Usage | | 1: Default Name Display<br>2: Alternate Name Display<br>3: No Chart Display | (S) EN | 0,1 |
| Fixed Date Range | | | C | 0,1 |
| Date Start | | | (S) TD | 0,1 |
| Date End | | | (S) TD | 0,1 |
| Periodic Date Range | | | C | 0,* |
| Date Start | | | (S) TD | 1,1 |
| Date End | | | (S) TD | 1,1 |
| Graphic | | | C | 0,* |
| Pictorial Representation | | | (S) TE | 1,* |
| Picture Caption | | | (S) TE | 0,1 |
| Source Date | | | (S) DA | 0,1 |
| Picture Information | | | (S) TE | 0,1 |
| Bearing Information | | | (S) C | 0,1 |
| Source Indication | | | C | 0,* |
| Category of Authority | | | (S) EN | 0,1 |
| Country Name | | | (S) TE | 0,1 |
| Source | | | (S) TE | 0,1 |
| Source Type | | 1: Law or Regulation<br>2: Official Publication<br>7: Mariner Report, Confirmed<br>8: Mariner Report, Not Confirmed<br>9: Industry Publications and Reports<br>10: Remotely Sensed Images<br>11: Photographs<br>12: Products Issued by HO Services<br>13: News Media<br>14: Traffic Data | (S) EN | 0,1 |
| Reported Date | | | (S) TD | 0,1 |
| Feature Name | | | (S) C | 0,* |

| **Inherited Attributes** | | | |
|---|---|---|---|
| **S-131 Attribute** | **Inherited From** | **Type** | **Multiplicity** |
| **No inherited attributes** | | | |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |

### 8.1.1 General

Encoding instructions to be added

## 8.2 AbstractRxN

| IHO Definition: An abstract superclass for information types that encode rules, recommendations, and general information in text or graphic form. | | | | |
|---|---|---|---|---|
| **S-131 Information Type: AbstractRxN (Abstract type)** | | | | |
| **Super Type: InformationType** | | | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Authority | | 2: Border Control<br>3: Police<br>4: Port<br>5: Immigration<br>6: Health<br>7: Coast Guard<br>8: Agricultural<br>9: Military<br>10: Private Company<br>11: Maritime Police<br>12: Environmental<br>13: Fishery<br>14: Finance<br>15: Maritime<br>16: Customs | EN | 0,1 |
| RxN Code | | | C | 0,* |
| Category of RxN | | 1: Navigation<br>2: Communication<br>3: Environmental Protection<br>4: Wildlife Protection<br>5: Security<br>6: Customs<br>7: Cargo Operation<br>8: Refuge<br>9: Health<br>10: Natural Resources or Exploitation<br>11: Port<br>12: Finance<br>13: Agriculture | (S) CL | 0,1 |
| Action or Activity | | 1: Navigating With a Pilot<br>2: Entering Port<br>3: Leaving Port | (S) CL | 0,1 |

| | | | | |
|---|---|---|---|---|
| | | 4: Berthing<br>5: Slipping<br>6: Anchoring<br>7: Weighing Anchor<br>8: Transiting<br>9: Overtaking<br>10: Reporting<br>11: Working Cargo<br>12: Landing<br>13: Diving<br>14: Fishing<br>15: Discharging Overboard<br>16: Passing<br>17: Ballast Water Exchange<br>18: Hull Cleaning<br>19: Scientific Research<br>20: Tourism<br>21: Education<br>22: Infrastructure Maintenance | | |
| Headline | | | (S) TE | 0,* (ordered) |
| Text Content | | | C | 0,* |
| Category of Text | | 1: Abstract or Summary<br>2: Extract<br>3: Full Text | (S) EN | 0,1 |
| Information | | | (S) C | 0,* |
| Online Resource | | | (S) C | 0,1 |
| Source Indication | | | (S) C | 0,* |

**Inherited Attributes**

| S-131 Attribute | Inherited From | Type | Multiplicity |
|---|---|---|---|
| Feature Name | InformationType | C | 0,* |
| Fixed Date Range | InformationType | C | 0,1 |
| Periodic Date Range | InformationType | C | 0,* |
| Graphic | InformationType | C | 0,* |
| Source Indication | InformationType | C | 0,* |

**Information associations**

| S-131 Role | S-131 Association Name | Associated to | Type | Multiplicity |
|---|---|---|---|---|
| isApplicableTo | InclusionType | Applicability | association | 0,* |
| theOrganisation | RelatedOrganisation | Authority | association | 0,* |

### 8.2.1 General

No remarks

# 9 Textual Regulations

## 9.1 Introduction

All geo features may have an association to any of Regulations or its sibling information types. This association is AssociatedRxN and it is inherited from the root feature type FeatureType.

If it is necessary to identify an authority or organization related to a particular regulation (restriction, etc.) object, this may be done using the RelatedOrganisation association between Regulations, etc., and an Authority object.

## 9.2 Regulations applying only to vessels with specific characteristics or cargoes

Regulations applying only to vessels of specified types, exceeding specified dimensions, or carrying specified cargoes (or other limitations which apply only to subsets of vessels) are encoded by defining the subset of vessels using an Applicability instance and associating the Regulations object to that Applicability.

For information on the use of Applicability to define subsets of vessels, see Section 11 in this DCEG and clause 4.2.1.9 in the main PS.

## 9.3 Regulations

| IHO Definition: Regulations for a related area or facility. | | | | |
|---|---|---|---|---|
| **S-131 Information Type: Regulations (Abstract type)** | | | | |
| **Super Type: AbstractRxN** | | | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Inherited Attributes** | | | | |
| **S-131 Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Category of Authority | AbstractRxN | | EN | 0,1 |
| RxN Code | AbstractRxN | | C | 0,* |
| Text Content | AbstractRxN | | C | 0,* |
| Feature Name | InformationType | | C | 0,* |
| Fixed Date Range | InformationType | | C | 0,1 |
| Periodic Date Range | InformationType | | C | 0,* |
| Graphic | InformationType | | C | 0,* |
| Source Indication | InformationType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| isApplicableTo | InclusionType<br>(inherited from AbstractRxN) | Applicability | association | 0,* |
| theOrganisation | RelatedOrganisation<br>(inherited from AbstractRxN) | Authority | association | 0,* |

### 9.3.1 General

Encoding instructions to be added

## 9.4 Restrictions

| IHO Definition: Restrictions for a related area or facility. | | | | |
|---|---|---|---|---|
| **S-131 Information Type: Restrictions (Abstract type)** | | | | |
| **Super Type: AbstractRxN** | | | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Inherited Attributes** | | | | |
| **S-131 Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Category of Authority | AbstractRxN | | EN | 0,1 |
| RxN Code | AbstractRxN | | C | 0,* |
| Text Content | AbstractRxN | | C | 0,* |
| Feature Name | InformationType | | C | 0,* |
| Fixed Date Range | InformationType | | C | 0,1 |
| Periodic Date Range | InformationType | | C | 0,* |
| Graphic | InformationType | | C | 0,* |
| Source Indication | InformationType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| isApplicableTo | InclusionType<br>(inherited from AbstractRxN) | Applicability | association | 0,* |
| theOrganisation | RelatedOrganisation<br>(inherited from AbstractRxN) | Authority | association | 0,* |

### 9.4.1 General

Encoding instructions to be added

## 9.5 Recommendations

| IHO Definition: Recommendations for a related area or facility. |
|---|

| **S-131 Information Type: Recommendations (Abstract type)** | | | | |
|---|---|---|---|---|
| **Super Type: AbstractRxN** | | | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Inherited Attributes** | | | | |
| **S-131 Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Category of Authority | AbstractRxN | | EN | 0,1 |
| RxN Code | AbstractRxN | | C | 0,* |
| Text Content | AbstractRxN | | C | 0,* |
| Feature Name | InformationType | | C | 0,* |
| Fixed Date Range | InformationType | | C | 0,1 |
| Periodic Date Range | InformationType | | C | 0,* |
| Graphic | InformationType | | C | 0,* |
| Source Indication | InformationType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| isApplicableTo | InclusionType<br>(inherited from AbstractRxN) | Applicability | association | 0,* |
| theOrganisation | RelatedOrganisation<br>(inherited from AbstractRxN) | Authority | association | 0,* |

### 9.5.1 General

Encoding instructions to be added

## 9.6 Nautical Information

| IHO Definition: Nautical information about a related area or facility. | | | | |
|---|---|---|---|---|
| **S-131 Information Type: NauticalInformation (Abstract type)** | | | | |
| **Super Type: AbstractRxN** | | | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Inherited Attributes** | | | | |
| **S-131 Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Category of Authority | AbstractRxN | | EN | 0,1 |
| RxN Code | AbstractRxN | | C | 0,* |
| Text Content | AbstractRxN | | C | 0,* |
| Feature Name | InformationType | | C | 0,* |
| Fixed Date Range | InformationType | | C | 0,1 |

| | | | |
|---|---|---|---|
| Periodic Date Range | InformationType | C | 0,* |
| Graphic | InformationType | C | 0,* |
| Source Indication | InformationType | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| isApplicableTo | InclusionType<br>(inherited from AbstractRxN) | Applicability | association | 0,* |
| theOrganisation | RelatedOrganisation<br>(inherited from AbstractRxN) | Authority | association | 0,* |

### 9.6.1 General

Encoding instructions to be added

# 10 Services, Organisations and Schedules

## 10.1 Introduction

## 10.2 Authority

| IHO Definition: A person or organisation having political or administrative power and control. | | | | |
|---|---|---|---|---|
| **S-131 Information Type: Authority (Abstract type)** | | | | |
| **Super Type: InformationType** | | | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Authority | | 2: Border Control<br>3: Police<br>4: Port<br>5: Immigration<br>6: Health<br>7: Coast Guard<br>8: Agricultural<br>9: Military<br>10: Private Company<br>11: Maritime Police<br>12: Environmental<br>13: Fishery<br>14: Finance<br>15: Maritime<br>16: Customs | EN | 1,1 |
| Text Content | | | C | 0,1 |
| Category of Text | | 1: Abstract or Summary<br>2: Extract<br>3: Full Text | (S) EN | 0,1 |
| Information | | | (S) C | 0,* |
| Online Resource | | | (S) C | 0,1 |
| Source Indication | | | (S) C | 0,* |

| **Inherited Attributes** | | | |
|---|---|---|---|
| **S-131 Attribute** | **Inherited From** | **Type** | **Multiplicity** |
| Feature Name | InformationType | C | 0,* |
| Fixed Date Range | InformationType | C | 0,1 |
| Periodic Date Range | InformationType | C | 0,* |
| Graphic | InformationType | C | 0,* |
| Source Indication | InformationType | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| theContactDetails | AuthorityContact | ContactDetails | association | 0,* |
| organisationRelatedRxN | RelatedOrganisation | AbstractRxN | association | 0,* |
| theServiceHours | AuthorityHours | ServiceHours | association | 0,* |

### 10.2.1 General

Remarks to be added

## 10.3 Contact Details

| IHO Definition: Information on how to reach a person or organisation by postal, internet, telephone, telex and radio systems. | | | | |
|---|---|---|---|---|
| **S-131 Information Type: ContactDetails (Abstract type)** | | | | |
| **Super Type: InformationType** | | | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Call Name | | | TE | 0,1 |
| Call Sign | | | TE | 0,1 |
| Category of Communication Preference | | 1: Preferred Calling<br>2: Alternate Calling<br>3: Preferred Working<br>4: Alternate Working | EN | 0,1 |
| Communication Channel | | | TE | 0,* |
| Contact Instructions | | | TE | 0,1 |
| Language | | | TE | 0,* |
| MMSI Code | | | TE | 0,1 |
| Contact Address | | | C | 0,* |
| Delivery Point | | | (S) TE | 0,* (ordered) |
| City Name | | | (S) TE | 0,1 |

| | | | | |
|---|---|---|---|---|
| Administrative Division | | | (S) TE | 0,1 |
| Country Name | | | (S) TE | 0,1 |
| Postal Code | | | (S) TE | 0,1 |
| Frequency Pair | | | C | 0,* |
| Frequency Shore Station Receives | | | (S) IN | 0,1 |
| Frequency Shore Station Transmits | | | (S) IN | 1,1 |
| Information | | | C | 0,* |
| File Locator | | | (S) TE | 0,1 |
| File Reference | | | (S) TE | 0,1 |
| Headline | | | (S) TE | 0,* (ordered) |
| Language | | | (S) TE | 0,1 |
| Text | | | (S) TE | 0,1 |
| Online Resource | | | C | 0,* |
| Linkage | | | (S) URI | 1,1 |
| Protocol | | | (S) TE | 0,1 |
| Application Profile | | | (S) TE | 0,1 |
| Name of Resource | | | (S) TE | 0,1 |
| Online Resource Description | | | (S) TE | 0,1 |
| Online Function | | 1: Download<br>3: Offline Access<br>4: Order<br>5: Search<br>6: Complete Metadata<br>7: Browse Graphic<br>8: Upload<br>9: Email Service<br>10: Browsing<br>11: File Access | (S) EN | 0,1 |
| Protocol Request | | | (S) TE | 0,1 |
| Telecommunications | | | C | 0,* |
| Category of Communication Preference | | 1: Preferred Calling<br>2: Alternate Calling<br>3: Preferred Working<br>4: Alternate Working | (S) EN | 0,1 |
| Telecommunication Identifier | | | (S) TE | 1,1 |
| Telecommunication Carrier | | | (S) TE | 0,1 |
| Contact Instructions | | | (S) TE | 0,1 |
| Telecommunication Service | | 1: Voice<br>2: Facsimile<br>3: SMS<br>4: Data<br>5: Streamed Data<br>6: Telex | (S) EN | 0,* |

| | | | | |
|---|---|---|---|---|
| | | 7: Telegraph<br>8: Email | | |
| **Inherited Attributes** | | | | |
| **S-131 Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Feature Name | InformationType | | C | 0,* |
| Fixed Date Range | InformationType | | C | 0,1 |
| Periodic Date Range | InformationType | | C | 0,* |
| Graphic | InformationType | | C | 0,* |
| Source Indication | InformationType | | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| theAuthority | AuthorityContact | Authority | association | 0,* |

### 10.3.1 General

Encoding instructions to be added

## 10.4 Service Hours

| IHO Definition: The time when a service is available and known exceptions. | | | | |
|---|---|---|---|---|
| **S-131 Information Type: ServiceHours (Abstract type)** | | | | |
| **Super Type: InformationType** | | | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Schedule by Day of Week | | | C | 1,* |
| Category of Schedule | | 1: Normal Operation<br>2: Closure<br>3: Unmanned Operation | (S) EN | 0,1 |
| Text | | | (S) TE | 0,1 |
| Time Intervals by Day of Week | | | (S) C | 1,* |
| Information | | | C | 0,* |
| File Locator | | | (S) TE | 0,1 |
| File Reference | | | (S) TE | 0,1 |
| Headline | | | (S) TE | 0,* (ordered) |
| Language | | | (S) TE | 0,1 |
| Text | | | (S) TE | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131 Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Feature Name | InformationType | | C | 0,* |

| | | | |
|---|---|---|---|
| Fixed Date Range | InformationType | C | 0,1 |
| Periodic Date Range | InformationType | C | 0,* |
| Graphic | InformationType | C | 0,* |
| Source Indication | InformationType | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| partialWorkingDay | ExceptionalWorkday | NonStandardWorkingDay | association | 0,* |
| theAuthority_srvHrs | AuthorityHours | Authority | association | 0,* |

### 10.4.1 General

Encoding instructions to be added

## 10.5 Non-Standard Working Day

| IHO Definition: Days when many services are not available. Often days of festivity or recreation or public holidays when normal working hours are limited, especially a national or religious festival, etc. | | | | |
|---|---|---|---|---|
| **S-131 Information Type: NonStandardWorkingDay (Abstract type)** | | | | |
| **Super Type: InformationType** | | | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Date Fixed | | | TD | 0,* |
| Date Variable | | | TE | 0,* |
| Information | | | C | 0,* |
| File Locator | | | (S) TE | 0,1 |
| File Reference | | | (S) TE | 0,1 |
| Headline | | | (S) TE | 0,* (ordered) |
| Language | | | (S) TE | 0,1 |
| Text | | | (S) TE | 0,1 |
| **Inherited Attributes** | | | | |
| **S-131 Attribute** | **Inherited From** | | **Type** | **Multiplicity** |
| Feature Name | InformationType | | C | 0,* |
| Fixed Date Range | InformationType | | C | 0,1 |
| Periodic Date Range | InformationType | | C | 0,* |
| Graphic | InformationType | | C | 0,* |
| Source Indication | InformationType | | C | 0,* |

| Information associations | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |

### 10.5.1 General

Encoding instructions to be added

# 11 Limitations

## 11.1 Introduction

Certain regulations, recommendations, etc., apply only to vessels of specified dimensions, types, or carrying specified cargo, etc. Similarly, certain features have specific significance for vessels of specified dimensions (e.g., different speed limits for vessels carrying specified cargoes or exceeding specified dimensions, or entry prohibitions for certain vessel types).

## 11.2 Defining subsets of vessels by dimensions, cargo, and other characteristics

This is modelled by first defining the relevant subset of vessels according to the dimension, type, cargo, etc., and then associating that subset to the appropriate feature or information type. The subset of vessels is modelled using the Applicability class, which contains attributes for the most common vessel characteristics used in nautical publications. These include measurements (length, beam, draught), type of cargo, displacement, etc. Constraints which cannot be modelled using the attributes of Applicability can be described in plain text in its information attribute.

***EDITORIAL NOTE***

*Add figure*

Conditions relating to vessel dimensions are modelled by the complex attribute vesselsMeasurements, which has sub-attributes for naming the dimension and indicating the limit (whether the condition applies to a vessel which exceeds or falls below the limit).

***EDITORIAL NOTE***

*Add figure*

## 11.3 Applicability

| IHO 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. | | | | |
|---|---|---|---|---|
| **S-131 Information Type: Applicability (Abstract type)** | | | | |
| **Super Type: InformationType** | | | | |
| **S-131 Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| In Ballast | | | BO | 0,1 |
| Category of Cargo | | 2: Container<br>5: Passenger<br>6: Livestock | EN | 0,* |

| | | | | |
|---|---|---|---|---|
| | | 7: Dangerous or Hazardous<br>8: Heavy Lift<br>10: Dry Bulk Cargo<br>11: Liquid Bulk Cargo<br>12: Reefer Container Cargo<br>13: Ro-Ro Cargo<br>14: Project Cargo<br>15: Break Bulk Cargo | | |
| Category Of Dangerous Or Hazardous Cargo | | 1: IMDG Code Class 1 Div. 1.1<br>2: IMDG Code Class 1 Div. 1.2<br>3: IMDG Code Class 1 Div. 1.3<br>4: IMDG Code Class 1 Div. 1.4<br>5: IMDG Code Class 1 Div. 1.5<br>6: IMDG Code Class 1 Div. 1.6<br>7: IMDG Code Class 2 Div. 2.1<br>8: IMDG Code Class 2 Div. 2.2<br>9: IMDG Code Class 2 Div. 2.3<br>10: IMDG Code Class 3<br>11: IMDG Code Class 4 Div. 4.1<br>12: IMDG Code Class 4 Div. 4.2<br>13: IMDG Code Class 4 Div. 4.3<br>14: IMDG Code Class 5 Div. 5.1<br>15: IMDG Code Class 5 Div. 5.2<br>16: IMDG Code Class 6 Div. 6.1<br>17: IMDG Code Class 6 Div. 6.2<br>18: IMDG Code Class 7<br>19: IMDG Code Class 8<br>20: IMDG Code Class 9<br>21: Harmful Substances in Packaged Form | EN | 0,* |
| Category of Vessel | | 1: General Cargo Vessel<br>2: Container Carrier<br>3: Tanker<br>4: Bulk Carrier<br>5: Passenger Vessel<br>6: Roll-On Roll-Off<br>7: Refrigerated Cargo Vessel<br>8: Fishing Vessel<br>9: Service<br>10: Warship<br>11: Towed or Pushed Composite Unit<br>12: Tug and Tow<br>13: Light Recreational<br>14: Semi-Submersible Offshore Installation | CL | 0,1 |

| | | | | |
|---|---|---|---|---|
| | | 15: Jack-Up Exploration or Project Installation<br>16: Livestock Carrier<br>17: Sport Fishing | | |
| Category of Vessel Registry | | 1: Domestic<br>2: Foreign | EN | 0,1 |
| Logical Connectives | | 1: Logical Conjunction<br>2: Logical Disjunction | EN | 0,1 |
| Thickness of Ice Capability | | | IN | 0,1 |
| Vessel Performance | | | TE | 0,1 |
| Destination | | | TE | 0,1 |
| Information | | | C | 0,* |
| File Locator | | | (S) TE | 0,1 |
| File Reference | | | (S) TE | 0,1 |
| Headline | | | (S) TE | 0,* (ordered) |
| Language | | | (S) TE | 0,1 |
| Text | | | (S) TE | 0,1 |
| Vessel Measurements Specification | | | C | 0,* |
| Comparison Operator | | 1: Greater Than<br>2: Greater Than or Equal To<br>3: Less Than<br>4: Less Than or Equal To<br>5: Equal To<br>6: Not Equal To | (S) EN | 1,1 |
| Vessels Characteristics | | 1: Length Overall<br>2: Length at Waterline<br>3: Breadth<br>4: Draught<br>6: Displacement Tonnage<br>7: Displacement Tonnage, Light<br>8: Displacement Tonnage, Loaded<br>9: Deadweight Tonnage<br>10: Gross Tonnage<br>11: Net Tonnage<br>12: Panama Canal/ Universal Measurement System Net Tonnage<br>13: Suez Canal Net Tonnage | (S) EN | 1,1 |
| Vessels Characteristics Value | | | (S) RE | 1,1 |
| Vessels Characteristics Unit | | 1: Metres<br>3: Metric Ton<br>4: Ton<br>5: Short Ton<br>6: Gross Ton<br>7: Net Ton | (S) EN | 1,1 |

| | | | | |
|---|---|---|---|---|
| | | 9: Suez Canal Net Tonnage | | |

| **Inherited Attributes** | | | |
|---|---|---|---|
| **S-131 Attribute** | **Inherited From** | **Type** | **Multiplicity** |
| Feature Name | InformationType | C | 0,* |
| Fixed Date Range | InformationType | C | 0,1 |
| Periodic Date Range | InformationType | C | 0,* |
| Graphic | InformationType | C | 0,* |
| Source Indication | InformationType | C | 0,* |

| **Information associations** | | | | |
|---|---|---|---|---|
| **S-131 Role** | **S-131 Association Name** | **Associated to** | **Type** | **Multiplicity** |
| theApplicableRxN | InclusionType | AbstractRxN | association | 0,* |

#### 11.3.1 General

No remarks

# 12 Spatial Quality

# 13 Feature Associations

## 13.1 Text association

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

**CamelCase** : TextAssociation

**Remarks** :

**Roles** : thePositionProvider theCartographicText

## 13.2 Subsection

**Definition** : A division of a feature into parts of the same type as the whole.

**CamelCase** : Subsection

**Remarks** :

**Roles** : subUnit constitute

## 13.3 Infrastructure

**Definition** : The infrastructure facilities in an area.

**CamelCase** : Infrastructure

**Remarks** :

**Roles** : infrastructureLocation hasInfrastructure

### 13.4 Primary/Auxiliary Facility

**Definition** : Describes the relationship between a primary feature and a feature that plays a supporting role in the use of the primary facility by a vessel.

**CamelCase** : PrimaryAuxiliaryFacility

**Remarks** :

**Roles** : primaryFacility auxiliaryFacility

### 13.5 Demarcation

**Definition** : Demarcation of location(s) within a feature by relation to another feature or features

**CamelCase** : Demarcation

**Remarks** :

**Roles** : demarcationIndicator demarcatedFeature

### 13.6 Jurisdictional Limit

**Definition** : The limit(s) of a jurisdiction claimed by a coastal State.

**CamelCase** : JurisdictionalLimit

**Remarks** :

**Roles** : limitReference limitExtent

### 13.7 Layout Division

**Definition** : A division of a feature into parts of type(s) different from the type of the whole.

**CamelCase** : LayoutDivision

**Remarks** :

**Roles** : layoutUnit componentOf

## 14 Information Associations

### 14.1 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.

**CamelCase** : AdditionalInformation

**Remarks** :

**Roles** : theInformation

### 14.2 Authority contact

**Definition** : Contact information for an authority

**CamelCase** : AuthorityContact

**Remarks** :

**Roles** : theAuthority theContactDetails

## 14.3 Authority hours

**Definition** : Service hours for an authority

**CamelCase** : AuthorityHours

**Remarks** :

**Roles** : theAuthority_srvHrs theServiceHours

## 14.4 Associated RxN

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

**CamelCase** : AssociatedRxN

**Remarks** :

**Roles** : theRxN

## 14.5 Exceptional workday

**Definition** : Exception to the usual working day

**CamelCase** : ExceptionalWorkday

**Remarks** :

**Roles** : theServiceHours_nsdy partialWorkingDay

## 14.6 Service control

**Definition** : The controlling authority for a service area

**CamelCase** : ServiceControl

**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

**Roles** : controlAuthority

## 14.7 Service contact

**Definition** : Contact details for a service or facility

**CamelCase** : ServiceContact

**Remarks** :

**Roles** : theContactDetails

## 14.8 Location hours

**Definition** : Working hours for a service or facility described by a geographic location

**CamelCase** : LocationHours

**Remarks** : This association links a geo feature to a Service Hours object. Distinction: authyHours, which links an information type (Authority) to a Service Hours object.

**Roles** : facilityOperatingHours

### 14.9 Related organisation

**Definition** : Related organisation

**CamelCase** : RelatedOrganisation

**Remarks** :

**Roles** : organisationRelatedRxN theOrganisation

### 14.10 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).

**CamelCase** : InclusionType

**Remarks** :

**Roles** : theApplicableRxN isApplicableTo

### 14.11 Permission Type

**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.

**CamelCase** : PermissionType

**Remarks** :

**Roles** : permission

### 14.12 Spatial Association

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

**CamelCase** : SpatialAssociation

**Remarks** :

**Roles** : theQualityInformation

### 14.13 Limit Entrance

**Definition** : Association between a limit feature and the entrance for the limit.

**CamelCase** : LimitEntrance

**Remarks** :

**Roles** : entranceReference

### 14.14 Service Availability

**Definition** : The services available within a location.

**CamelCase** : ServiceAvailability

**Remarks** :

**Roles** : serviceDescriptionReference

# 15 Association Roles

## 15.1 The Authority

**Definition** : A pointer to an Authority object

**CamelCase** : theAuthority

**Remarks** :

## 15.2 Authority service hours

**Definition** : The authority for which service hours are given

**CamelCase** : theAuthority_srvHrs

**Remarks** :

## 15.3 Auxiliary Facility

**Definition** : A reference to a feature that supplements or supports the use of the primary feature in an AuxiliaryFacility relationship.

**CamelCase** : auxiliaryFacility

**Remarks** :

## 15.4 Component of

**Definition** : A pointer to the aggregate in a whole-part relationship.

**CamelCase** : componentOf

**Remarks** :

## 15.5 Constitute

**Definition** : Reference to a whole of the same type as the part feature in the relationship.

**CamelCase** : constitute

**Remarks** :

## 15.6 Contact details

**Definition** : A pointer to an Contact Details object

**CamelCase** : theContactDetails

**Remarks** :

## 15.7 Control authority

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

**CamelCase** : controlAuthority

**Remarks** :

### 15.8 Demarcated Feature

**Definition** : Reference to the feature within which locations are demarcated.

**CamelCase** : demarcatedFeature

**Remarks** :

### 15.9 Demarcation Indicator

**Definition** : Reference to a feature demarcating a location within another feature.

**CamelCase** : demarcationIndicator

**Remarks** :

### 15.10 Entrance Reference

**Definition** : Reference to an information type describing the entrance to a limit area.

**CamelCase** : entranceReference

**Remarks** :

### 15.11 Facility Operating Hours

**Definition** : Reference to information about the days and times during which a facility operates or may be used.

**CamelCase** : facilityOperatingHours

**Remarks** :

### 15.12 Has Infrastructure

**Definition** : Reference to the feature describing a particular instance of physical infrastructure.

**CamelCase** : hasInfrastructure

**Remarks** :

### 15.13 Infrastructure Location

**Definition** : Reference to the feature within which the infrastructure is located.

**CamelCase** : infrastructureLocation

**Remarks** :

### 15.14 Is Applicable To

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

**CamelCase** : isApplicableTo

**Remarks** :

### 15.15 Layout Unit

**Definition** : A reference to the diverse units comprising a feature of a different type.

**CamelCase** : layoutUnit

**Remarks** :

### 15.16 Limit Extent

**Definition** : Reference to a feature demarcating the extent to which a coastal State claims or may claim a specific jurisdiction.

**CamelCase** : limitExtent

**Remarks** :

### 15.17 Limit Reference

**Definition** : Reference to the feature for which a coastal State claims a specific jurisdiction different from the feature's geographic boundary.

**CamelCase** : limitReference

**Remarks** :

### 15.18 Organisation-Related RxN

**Definition** : Reference to regulation, recommendation, restriction or general information related to an organisation

**CamelCase** : organisationRelatedRxN

**Remarks** :

### 15.19 Permission

**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.

**CamelCase** : permission

**Remarks** :

### 15.20 Primary Facility

**Definition** : A reference to the primary feature in an Auxiliaryfacility relationship.

**CamelCase** : primaryFacility

**Remarks** :

### 15.21 Partial Working Day

**Definition** : The work hours for a non-standard workday

**CamelCase** : partialWorkingDay

**Remarks** :

## 15.22 Service Description Reference

**Definition** : Reference to an information object describing services.

**CamelCase** : serviceDescriptionReference

**Remarks** :

## 15.23 Service Hours (reference)

**Definition** : Service hours for an authority or service provider

**CamelCase** : theServiceHours

**Remarks** :

## 15.24 Sub-Unit

**Definition** : Reference to a part of the same type as the whole feature in the relationship.

**CamelCase** : subUnit

**Remarks** :

## 15.25 The information

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

**CamelCase** : theInformation

**Remarks** : Registry definition “The information” merely repeats the name.

## 15.26 The organisation

**Definition** : The organisation to which information relates

**CamelCase** : theOrganisation

**Remarks** :

## 15.27 The Quality Information

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

**CamelCase** : theQualityInformation

**Remarks** :

## 15.28 The RxN

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

**CamelCase** : theRxN

**Remarks** :

### 15.29 The Applicable RxN

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

**CamelCase** : theApplicableRxN

**Remarks** :

### 15.30 The Cartographic Text

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

**CamelCase** : theCartographicText

**Remarks** :

### 15.31 The Position Provider

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

**CamelCase** : thePositionProvider

**Remarks** :

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

**Definition** : The usual service hours to which an exception applies

**CamelCase** : theServiceHours_nsdy

**Remarks** :

## 16 Simple Attributes

### 16.1 Administrative Division

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

**Type** : text

**CamelCase** : administrativeDivision

**Alias** :

**Remarks** :

### 16.2 Applicable Load Line Zone

**Definition** : The load line zone in which the port is located. Defined by the International Convention on Load Lines.

**Type** : text

**CamelCase** : applicableLoadLineZone

**Alias** :

**Remarks** :

### 16.3 Application Profile

**Definition** : Name of an application profile that can be used with the online resource.

**Type** : text

**CamelCase** : applicationProfile

**Alias** : APPPRF

**Remarks** :

### 16.4 Approach Description

**Definition** : Description of the approach to a location.

**Type** : text

**CamelCase** : approachDescription

**Alias** :

**Remarks** :

### 16.5 Associated Feature Name

**Definition** : The name of an associated feature.

**Type** : text

**CamelCase** : associatedFeatureName

**Alias** :

**Remarks** : Intended for designating related features in other datasets or products, since such feature instances cannot be linked by feature associations.

### 16.6 Available Berthing Length

**Definition** : The length of a berth or dock which is available for use.

**Type** : real

**CamelCase** : availableBerthingLength

**Alias** :

**Remarks** :

**Units**: Metre **Definition**: The basic unit of length in the International System of Units (SI) system. **Symbol**: m

**Range**: Lower Bound (Inclusive): 0.0 Upper Bound (Inclusive): 10000.0

### 16.7 Berthing Assistance

**Definition** : Classification of assistance for mooring or anchoring operations.

**Type** : enumeration

**CamelCase** : berthingAssistance

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Berthing Information | Information about assistance or arrangements for a service related to berthing operations. |
| 2 | Line Personnel | Personnel specializing in the mooring and unmooring of vessels. |
| 3 | Mooring Boat | A boat which assists the securement of a vessel to a berth or mooring with ropes or anchor. |
| 4 | Mule | A locomotive for moving vessels. |
| 5 | Tugboat | A powerful small boat designed to pull or push larger ships or powerless barges. |
| 6 | Icebreaking Ship | A ship equipped to make and maintain a channel through ice. |

### 16.8 Bollard Description

**Definition** : A textual description of the type of bollard at a berth or mooring facility.

**Type** : text

**CamelCase** : bollardDescription

**Alias** :

**Remarks** :

### 16.9 Bollard Number

**Definition** : An identifier used to locate a specific bollard.

**Type** : text

**CamelCase** : bollardNumber

**Alias** :

**Remarks** : A bollard is a small shaped post, mounted on a wharf or dolphin used to secure ship’s lines.

### 16.10 Call Name

**Definition** : The designated call name of a station; for example, radio station, radar station, pilot.

**Type** : text

**CamelCase** : callName

**Alias** :

**Remarks** : This is the name used when calling a radio station by radio; for example, “Singapore Pilots”.

### 16.11 Call Sign

**Definition** : The designated call-sign of a station (radio station, radar station, pilot, …).

**Type** : text

**CamelCase** : callSign

**Alias** : CALSGN

**Remarks** :

## 16.12 Cardinal Direction

**Definition** : Principal and intermediate compass points.

**Type** : enumeration

**CamelCase** : cardinalDirection

**Alias** : CARDIR

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | North | 348.75-011.25 degrees (true north). |
| 2 | North Northeast | 011.25 — 033.75 degrees. |
| 3 | Northeast | 033.75 — 056.25 degrees. |
| 4 | East Northeast | 056.25-078.75 degrees. |
| 5 | East | 078.75-101.25 degrees. |
| 6 | East Southeast | 101.25-123.75 degrees. |
| 7 | Southeast | 123.75-146.25 degrees. |
| 8 | South Southeast | 146.25-168.75 degrees. |
| 9 | South | 168.75-191.25 degrees. |
| 10 | South Southwest | 191.25-213.75 degrees. |
| 11 | Southwest | 213.75-236.25 degrees. |
| 12 | West Southwest | 236.25-258.75 degrees. |
| 13 | West | 258.75-281.25 degrees. |
| 14 | West Northwest | 281.25-303.75 degrees. |
| 15 | Northwest | 303.75 — 326.25 degrees. |
| 16 | North Northwest | 326.25 — 348.75 degrees. |

## 16.13 Cargo Service

**Definition** : Classification of services related to the goods or items carried by vessels.

**Type** : enumeration

**CamelCase** : cargoService

**Alias** :

**Remarks** : Defines an enumeration or codelist listing specific services.

| Code | Label | Definition |
|---|---|---|
| 1 | Stevedoring | The loading, unloading, moving or handling of cargo, ship’s stores, gear, or other materials, into, in, on, or out of any vessel. |
| 2 | Cargo Surveying | Inspection, evaluation or monitoring of the quantity, stowage, loading and unloading, and condition of cargo, and the effects of cargoes on vessel stability and safety. |
| 3 | Cargo Lashing | The securement of cargo to the ship’s structure and/or other cargo. |

| Code | Label | Definition |
|---|---|---|
| 4 | Draught Survey | Determination of the quantity of certain types of bulk cargo by assessment of its effect on displacement when loaded in a vessel. |

## 16.14 Category of Anchorage

**Definition** : Classification of an area where different use types of vessel can remain static.

**Type** : enumeration

**CamelCase** : categoryOfAnchorage

**Alias** : CATACH

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Unrestricted Anchorage | An area in which vessels anchor or may anchor. |
| 2 | Deep Water Anchorage | An area in which vessels of deep draught anchor or may anchor. |
| 3 | Tanker Anchorage | An area in which tankers anchor or may anchor. |
| 5 | Quarantine Anchorage | An area where a vessel anchors when satisfying quarantine regulations. |
| 6 | Seaplane Anchorage | An area in which seaplanes anchor or may anchor. |
| 7 | Small Craft Anchorage | An area in which yachts and small boats anchor or may anchor. |
| 9 | Anchorage for Periods Up To 24 Hours | An area in which vessels anchor or may anchor for periods of up to 24 hours. |
| 10 | Anchorage for a Limited Period of Time | An area in which vessels may anchor for a period of time not to exceed a specific limit. |
| 14 | Waiting Anchorage | An area in which vessels anchor or may anchor while waiting, for example, for access to a port or berth. |
| 15 | Reported Anchorage | A location not defined by a regulatory authority that has been reported to be suitable and safe for anchoring. |

## 16.15 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.

**Type** : enumeration

**CamelCase** : categoryOfAuthority

**Alias** : CATAUT

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 2 | Border Control | The administration to prevent or detect and prosecute violations of rules and regulations at international boundaries. |
| 3 | Police | The department of government, or civil force, charged with maintaining public order. |

| Code | Label | Definition |
|---|---|---|
| 4 | Port | 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. |
| 5 | Immigration | The authority controlling people entering a country. |
| 6 | Health | The authority with responsibility for checking the validity of the health declaration of a vessel and for declaring free pratique. |
| 7 | Coast Guard | Organization keeping watch on shipping and coastal waters according to governmental law; normally the authority with responsibility for search and rescue. |
| 8 | Agricultural | The authority with responsibility for preventing infection of the agriculture of a country and for the protection of the agricultural interests of a country. |
| 9 | Military | A military authority which provides control of access to or approval for transit through designated areas or airspace. |
| 10 | Private Company | A private or publicly owned company or commercial enterprise which exercises control of facilities, for example a calibration area. |
| 11 | Maritime Police | A governmental or military force with jurisdiction in territorial waters. Examples could include Gendarmerie Maritime, Carabinierie, and Guardia Civil. |
| 12 | Environmental | An authority with responsibility for the protection of the environment. |
| 13 | Fishery | An authority with responsibility for the control of fisheries. |
| 14 | Finance | An authority with responsibility for the control and movement of money. |
| 15 | Maritime | A national or regional authority charged with administration of maritime affairs. |
| 16 | Customs | The agency or establishment for collecting duties, tolls. |

## 16.16 Category of Berth Location

**Definition** : Classification of a berth according to the method of describing its location or extent.

**Type** : enumeration

**CamelCase** : categoryOfBerthLocation

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Wharf Reference Metre Mark | A wharf or quay with reference position(s) given by one or more metre marks. |
| 2 | Wharf Reference Position | A wharf or quay with reference position(s) given by one or more point or points in geographic coordinates. |
| 3 | Pier (Jetty) | A long, narrow structure extending into the water to afford a berthing place for vessels, to serve as a promenade, etc. |
| 4 | Multi-Buoy Mooring Berth | A designated facility where a vessel may moor, usually by a combination of the mooring buoys and the ship’s anchors. |

## 16.17 Category of Cargo

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

**Type** : enumeration

**CamelCase** : categoryOfCargo

**Alias** : CATCGO

**Remarks** : If item 7 is used, the nature of dangerous or hazardous cargoes can be amplified with category of dangerous or hazardous cargo.

| Code | Label | Definition |
|---|---|---|
| 1 | Bulk | Unpacked homogenous cargo poured loose in a certain space of a vessel, for example oil or grain. |
| 2 | Container | One of a number of standard sized cargo carrying units, secured using standard corner attachments and bar. |
| 3 | General | Break bulk cargo normally loaded by crane. |
| 4 | Liquid | Any cargo loaded by pipeline. |
| 5 | Passenger | A fee paying traveller. |
| 6 | Livestock | Live animals carried in bulk. |
| 7 | Dangerous or Hazardous | Dangerous or hazardous cargo as described by the IMO International Maritime Dangerous Goods code. |
| 8 | Heavy Lift | Indivisible heavy items of weight generally over 100 tons, and width or height greater than 100 metres. |
| 9 | Ballast | Material carried by a ship to ensure its stability. |
| 10 | Dry Bulk Cargo | Commodity cargo that is transported unpackaged in large quantities. These types of goods usually need to be kept dry during the whole transportation period. |
| 11 | Liquid Bulk Cargo | Liquids or gases that are transported in bulk and carried unpackaged. |
| 12 | Reefer Container Cargo | Cargo transported in refrigerated containers, generally perishable commodities which require temperature-controlled transportation, such as fruit, meat, fish, vegetables, dairy products and other foods. |
| 13 | Ro-Ro Cargo | Wheeled cargo, such as cars, busses, trucks, agricultural vehicles and cranes, that are driven on and off the ship on their own wheels or using a platform vehicle, such as a self-propelled modular transporter. |
| 14 | Project Cargo | Project cargo is a term used to broadly describe the national or international transportation of large, heavy, high value, or critical (to the project they are intended for) pieces of equipment. Also commonly referred to as heavy lift, this includes shipments made of various components which need disassembly for shipment and reassembly after delivery. |
| 15 | Break Bulk Cargo | Goods that are stowed on board ship in individually counted units, and not in intermodal containers nor in bulk as with oil or grain. |

## 16.18 Category of Communication Preference

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

**Type** : enumeration

**CamelCase** : categoryOfCommunicationPreference

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Preferred Calling | The first choice channel or frequency to be used when calling a radio station. |
| 2 | Alternate Calling | 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. |
| 3 | Preferred Working | The first choice channel or frequency to be used when working with a radio station. |
| 4 | Alternate Working | 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. |

## 16.19 Category Of Dangerous Or Hazardous Cargo

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

**Type** : enumeration

**CamelCase** : categoryOfDangerousOrHazardousCargo

**Alias** : CATDHC

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | IMDG Code Class 1 Div. 1.1 | Explosives, Division 1: Substances and articles which have a mass explosion hazard. |
| 2 | IMDG Code Class 1 Div. 1.2 | Explosives, Division 2: Substances and articles which have a projection hazard but not a mass explosion hazard. |
| 3 | IMDG Code Class 1 Div. 1.3 | 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. |
| 4 | IMDG Code Class 1 Div. 1.4 | Explosives, Division 4: Substances and articles which present no significant hazard. |
| 5 | IMDG Code Class 1 Div. 1.5 | Explosives, Division 5: Very insensitive substances which have a mass explosion hazard. |
| 6 | IMDG Code Class 1 Div. 1.6 | Explosives, Division 6: Extremely insensitive articles which do not have a mass explosion hazard. |
| 7 | IMDG Code Class 2 Div. 2.1 | Gases, flammable gases. |
| 8 | IMDG Code Class 2 Div. 2.2 | Gases, non-flammable, non-toxic gases. |
| 9 | IMDG Code Class 2 Div. 2.3 | Gases, toxic gases. |
| 10 | IMDG Code Class 3 | Flammable liquids. |
| 11 | IMDG Code Class 4 Div. 4.1 | Flammable solids, self-reactive substances and desensitized explosives. |
| 12 | IMDG Code Class 4 Div. 4.2 | Substances liable to spontaneous combustion. |

| Code | Label | Definition |
|---|---|---|
| 13 | IMDG Code Class 4 Div. 4.3 | Substances which, in contact with water, emit flammable gases. |
| 14 | IMDG Code Class 5 Div. 5.1 | Oxidizing substances. |
| 15 | IMDG Code Class 5 Div. 5.2 | Organic peroxides. |
| 16 | IMDG Code Class 6 Div. 6.1 | Toxic substances. |
| 17 | IMDG Code Class 6 Div. 6.2 | Infectious substances. |
| 18 | IMDG Code Class 7 | Radioactive material. |
| 19 | IMDG Code Class 8 | Corrosive substances. |
| 20 | IMDG Code Class 9 | Miscellaneous dangerous substances and articles. |
| 21 | Harmful Substances in Packaged Form | 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. |

## 16.20 Category of Depths Description

**Definition** : Classification of significant aspects of depths about which information is provided.

**Type** : enumeration

**CamelCase** : categoryOfDepthsDescription

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Shoal | A shallow elevation composed of unconsolidated material that may constitute a hazard to surface navigation. |
| 2 | General Depth | General information about the vertical distance from the water surface to the bottom. |
| 3 | Controlling Depth | The least depth in the approach or channel to an area, such as a port or anchorage, governing the maximum draft of vessels that can enter. |

## 16.21 Category of Dolphin

**Definition** : Classification of a post or group of posts, used for mooring or warping a vessel.

**Type** : enumeration

**CamelCase** : categoryOfDolphin

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Mooring Dolphin | A post or group of posts driven into the seabed or riverbed, used as a mooring point for vessels. |
| 2 | Deviation Dolphin | A post or group of posts, which a vessel may swing around for compass adjustment. |
| 3 | Berthing Dolphin | A post or group of posts driven into the seabed or riverbed, used to extend the berth of a vessel by providing extra mooring points. |
| 4 | Fender or Breasting Dolphin | A post or group of posts driven into the seabed or riverbed, used to assist in berthing of vessels by taking up some berthing loads; keep vessels from pressing against the pier structure; or to protect structures from possible impact by ships. |

## 16.22 Category of Frequency

**Definition** : The electrical frequency provided by the power supply station.

**Type** : enumeration

**CamelCase** : categoryOfFrequency

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | 50Hz | 50 Hertz |
| 2 | 60Hz | 60 Hertz |

## 16.23 Category of Harbour Facility

**Definition** : Classification of harbour use.

**Type** : enumeration

**CamelCase** : categoryOfHarbourFacility

**Alias** : CATHAF

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | RoRo Terminal | A terminal for roll-on roll-off ferries. |
| 3 | Ferry Terminal | A terminal for passenger and vehicle ferries. |
| 4 | Fishing Harbour | A harbour with facilities for fishing boats. |
| 5 | Yacht Harbour/ Marina | A harbour facility for small boats, yachts, etc., where supplies, repairs, and various services are available. |
| 6 | Naval Base | A centre of operations for naval vessels. |
| 7 | Tanker Terminal | A terminal for the bulk handling of liquid cargoes. |

| Code | Label | Definition |
|---|---|---|
| 8 | Passenger Terminal | A terminal for the loading and unloading of passengers. |
| 9 | Shipyard | A place where ships are built or repaired. |
| 10 | Container Terminal | A terminal with facilities to load/unload or store shipping containers. |
| 11 | Bulk Terminal | A terminal for the handling of bulk materials such as iron ore, coal, etc. |
| 12 | Ship Lift | A platform powered by synchronous electric motors (for example syncrolift) used to lift vessels (larger than boats) in and out of the water. |
| 13 | Straddle Carrier | A wheeled vehicle designed to lift and carry containers or vessels within its own framework. It is used for moving, and sometimes stacking, shipping containers and vessels. |
| 14 | Service Harbour | A harbour within which the floating equipment (dredges, tugs …) of harbour services are stationed. |
| 15 | Pilotage Service | The services of a person who directs the movements of a vessel through pilot waters, usually a person who has demonstrated extensive knowledge of channels, aids to navigation, dangers to navigation, etc., in a particular area and is licensed for that area, are available. |
| 16 | Service and Repair | A place where mechanical services or repairs can be undertaken to engines or other vessel equipment. |
| 17 | Quarantine Station | A medical control center located in an isolated spot ashore where patients with contagious diseases from vessel in quarantine are taken. |

## 16.24 Category of Mooring/Warping Facility

**Definition** : A place or structure to which a vessel can be secured.

**Type** : enumeration

**CamelCase** : categoryOfMooringWarpingFacility

**Alias** : CATMOR

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 4 | Tie-Up Wall | A section of wall designated for tying-up vessels awaiting transit. Bollards and mooring devices are available for both large and small ships. |
| 5 | Post or Pile | A long heavy timber or section of steel, wood, concrete, etc., forced into the seabed to serve as a mooring facility. |
| 6 | Mooring Cable | A chain or very strong fibre or wire rope used to anchor or moor vessels or buoys. |

## 16.25 Category of Plug

**Definition** : The type of plug(s) available at the power supply station.

**Type** : text

**CamelCase** : categoryOfPlug

**Alias** :

**Remarks** :

## 16.26 Category of Port Section

**Definition** : Classification of subdivisions of a port or harbour area by usage.

**Type** : enumeration

**CamelCase** : categoryOfPortSection

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Port Fairway | The main navigable channel in a harbour or its approaches, for vessels of larger size. |
| 3 | Berth Pocket | A body of water at a berth or anchor berth, of adequate dimensions to allow a vessel to make fast to the shore, mooring buoys, berthing dolphins or to anchor. |
| 8 | Seaplane Anchorage | An area in which sea-planes anchor or may anchor. |
| 9 | Dredged Basin | An area of water or channel enlargement of increased depth compared to adjacent areas, where the depth is maintained by dredging operations. |
| 11 | Port Safety Zone | The area around a port facility or harbour installation within which vessels are prohibited from entering without permission. |
| 12 | Lay-by Berth | A general berth for use by vessels for short term waiting until a loading or discharging berth is available. |

## 16.27 Category of Relationship

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

**Type** : enumeration

**CamelCase** : categoryOfRelationship

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Prohibited | Use of facility, waterway or service is forbidden. |
| 2 | Not Recommended | Use of facility, waterway or service is not recommended. |
| 3 | Permitted | Use of facility, waterway, or service is permitted but not required. |
| 4 | Recommended | Use of facility, waterway, or service is recommended. |
| 5 | Required | Use of facility, waterway, or service is required. |
| 6 | Not Required | Use of facility, waterway, or service is not required. |
| 7 | Exclusively Permitted | Only vessels of the specified characteristics may use the facility, waterway, or service. |

## 16.28 Category of Schedule

**Definition** : The type of schedule, for instance opening, closure, etc.

**Type** : enumeration

**CamelCase** : categoryOfSchedule

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Normal Operation | The service, office, is open, fully manned, and operating normally, or the area is accessible as usual. |
| 2 | Closure | The service, office, or area is closed. |
| 3 | Unmanned Operation | The service is available but not manned. |

## 16.29 Category of Shore Power Facility

**Definition** : Classification of equipment or installations that are used for providing shoreside electrical power to a vessel at berth.

**Type** : enumeration

**CamelCase** : categoryOfShorePowerFacility

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | High-Voltage Shore Power System | Delivers power to vessels using higher voltage (for example, 10 kV or above), suitable for large ports and large vessels. such as tankers, cargo ships, etc. |
| 2 | Low-Voltage Shore Power System | Delivers power to vessels using lower voltage, designed for small to medium-sized coastal or riverine terminals and smaller vessels. |
| 3 | Hybrid Shore Power System | Delivers power to vessels using high-voltage (for example, 10kV and above) and low-voltage outputs or simultaneous provision of dual-voltage power. |

## 16.30 Category of Temporal Variation

**Definition** : An assessment of the likelihood of change over time.

**Type** : enumeration

**CamelCase** : categoryOfTemporalVariation

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Extreme Event | Indication of the possible impact of a significant event (for example hurricane, earthquake, volcanic eruption, landslide, etc), which is considered likely to have changed the seafloor or landscape significantly. |

| Code | Label | Definition |
|---|---|---|
| 2 | Likely to Change and Significant Shoaling Expected | Continuous or frequent change (for example river siltation, sand waves, seasonal storms, ice bergs, etc) that is likely to result in new significant shoaling. |
| 3 | Likely to Change But Significant Shoaling Not Expected | Continuous or frequent change (for example sand wave shift, seasonal storms, ice bergs, etc) that is not likely to result in new significant shoaling. |
| 4 | Likely to Change | Continuous or frequent change to non-bathymetric features (for example river siltation, glacier creep/recession, sand dunes, buoys, marine farms, etc). |
| 5 | Unlikely to Change | Significant change to the seafloor is not expected. |
| 6 | Unassessed | Not having been assessed. |

## 16.31 Category of Terminal

**Definition** : Classification of terminals according to type of use, purpose, or type of cargo loaded or unloaded.

**Type** : enumeration

**CamelCase** : categoryOfTerminal

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | RoRo Terminal | A terminal for roll-on roll-off ferries. |
| 3 | Ferry Terminal | A terminal for passenger and vehicle ferries. |
| 7 | Tanker Terminal | A terminal for the bulk handling of liquid cargoes. |
| 8 | Passenger Terminal | A terminal for the loading and unloading of passengers. |
| 10 | Container Terminal | A terminal with facilities to load/unload or store shipping containers. |
| 11 | Bulk Terminal | A terminal for the handling of bulk materials such as iron ore, coal, etc. |

## 16.32 Category of Text

**Definition** : Classification of completeness of textual information in relation to the source material from which it is derived.

**Type** : enumeration

**CamelCase** : categoryOfText

**Alias** : CATTXT

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Abstract or Summary | A statement summarizing the important points of a text. |
| 2 | Extract | An excerpt or excerpts from a text. |
| 3 | Full Text | The whole text. |

## 16.33 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.

**Type** : enumeration

**CamelCase** : categoryOfVesselRegistry

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Domestic | 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. |
| 2 | Foreign | 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 which the object that possesses this attribute applies or is located. |

## 16.34 Category of Voltage

**Definition** : The electrical voltage provided by the power supply station.

**Type** : enumeration

**CamelCase** : categoryOfVoltage

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | 230V | 230 Volts |
| 2 | 400V | 400 Volts. |
| 3 | 120V | 120 Volts |
| 4 | 120V or 240V | 120/240 Volts |
| 5 | 208V | 208 Volts |
| 6 | 440V | 440 Volts |
| 7 | 440V or 690V | 440/690 Volts |
| 8 | 480V | 480 Volts |
| 9 | 690V | 690 Volts |
| 10 | 6600V | 6.6 kiloVolts |
| 11 | 6600V or 11000V | 6.6/11 kiloVolts |
| 12 | 11000V | 11 kiloVolts |
| 13 | 22000V | 22 kiloVolts |
| 14 | 380V | 380 Volts |

## 16.35 Cathodic Protection System

**Definition** : A system used to protect metal structures against corrosion by supplying direct current to the immersed external surface of the structure.

**Type** : boolean

**CamelCase** : cathodicProtectionSystem

**Alias** :

**Remarks** : Cathodic protection is applied to protect harbour installations from corrosion due to seawater, brackish water, saline mud or soil fill.

## 16.36 City Name

**Definition** : The name of a town or city.

**Type** : text

**CamelCase** : cityName

**Alias** : CITYNM

**Remarks** :

## 16.37 Communication Channel

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

**Type** : text

**CamelCase** : communicationChannel

**Alias** : COMCHA

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

## 16.38 Comparison Operator

**Definition** : Numerical comparison.

**Type** : enumeration

**CamelCase** : comparisonOperator

**Alias** : COMPOP

**Remarks** : Provides the relation between the value given in the model and the real ship’s value.

| Code | Label | Definition |
|---|---|---|
| 1 | Greater Than | The value of the left value is greater than that of the right. |
| 2 | Greater Than or Equal To | The value of the left expression is greater than or equal to that of the right. |
| 3 | Less Than | The value of the left expression is less than that of the right. |
| 4 | Less Than or Equal To | The value of the left expression is less than or equal to that of the right. |
| 5 | Equal To | The two values are equivalent. |
| 6 | Not Equal To | The two values are not equivalent. |

## 16.39 Condition

**Definition** : The various conditions of buildings and other constructions.

**Type** : enumeration

**CamelCase** : condition

**Alias** : CONDTN

**Remarks** : The default ‘condition’ should be considered to be completed, undamaged and working normally.

| Code | Label | Definition |
|---|---|---|
| 1 | Under Construction | Being built but not yet capable of function. |
| 2 | Ruined | A structure in a decayed or deteriorated condition resulting from neglect or disuse, or a damaged structure in need of repair. |
| 3 | Under Reclamation | An area of the sea, a lake or the navigable part of a river that is being reclaimed as land, usually by the dumping of earth and other material. |
| 5 | Planned Construction | Detailed planning has been completed but construction has not been initiated. |

## 16.40 Contact Instructions

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

**Type** : text

**CamelCase** : contactInstructions

**Alias** :

**Remarks** :

## 16.41 Country Name

**Definition** : The name of a nation.

**Type** : text

**CamelCase** : countryName

**Alias** :

**Remarks** :

## 16.42 Date End

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

**Type** : S100_TruncatedDate

**CamelCase** : dateEnd

**Alias** : DATEND

**Remarks** : The 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 month and/or day is required/known, indication of the month and/or day is omitted, and replaced with dashes (-). When no specific year is required (that is, the event or date range ends 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. Date End indicates the latest date of an event or the end of a date range. It is used to indicate the end of a fixed date range, the end of a periodic date range, or the removal or cancellation of a feature at a specific date in the future.

### 16.43 Date Fixed

**Definition** : The date of an event.

**Type** : S100_TruncatedDate

**CamelCase** : dateFixed

**Alias** :

**Remarks** :

### 16.44 Date Start

**Definition** : The earliest date on which an object (for example a buoy) will be present.

**Type** : S100_TruncatedDate

**CamelCase** : dateStart

**Alias** : DATSTA

**Remarks** : The Date Start 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 month and/or day is required/known, indication of the month and/or day is omitted, and replaced with dashes (-). When no specific year is required (that is, the event or date range ends 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. Date Start indicates the earliest date of an event or the start of a date range. It is used to indicate the start of a fixed date range, the start of a periodic date range, or the deployment or implementation of a feature at a specific date in the future.

### 16.45 Date Variable

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

**Type** : text

**CamelCase** : dateVariable

**Alias** :

**Remarks** : Examples: The fourth Thursday in November; new moon day of Kartika (Diwali); Easter Sunday.

### 16.46 Day of Week

**Definition** : Any one of seven days in a week.

**Type** : enumeration

**CamelCase** : dayOfWeek

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Sunday | The day of the week following Saturday and preceding Monday. |

| Code | Label | Definition |
|---|---|---|
| 2 | Monday | The day of the week following Sunday and preceding Tuesday. |
| 3 | Tuesday | The day of the week following Monday and preceding Wednesday. |
| 4 | Wednesday | The day of the week following Tuesday and preceding Thursday. |
| 5 | Thursday | The day of the week following Wednesday and preceding Friday. |
| 6 | Friday | The day of the week following Thursday and preceding Saturday. |
| 7 | Saturday | The day of the week following Friday and preceding Sunday. |

### 16.47 Day of Week is Range

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

**Type** : boolean

**CamelCase** : dayOfWeekIsRange

**Alias** :

**Remarks** : A True value is an indication that the identified days of the week define a range between and inclusive of those days.

### 16.48 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.

**Type** : text

**CamelCase** : deliveryPoint

**Alias** : DELPNT

**Remarks** :

### 16.49 Destination

**Definition** : The place or general direction to which a vessel is going or directed.

**Type** : text

**CamelCase** : destination

**Alias** :

**Remarks** :

### 16.50 Development

**Definition** : Describes a feature that is in development.

**Type** : text

**CamelCase** : development

**Alias** :

**Remarks** :

## 16.51 Distance

**Definition** : A numeric measure of the spatial separation between two locations.

**Type** : real

**CamelCase** : distance

**Alias** :

**Remarks** :

**Units**: Nautical Mile **Definition**: Nautical mile **Symbol**: NM

## 16.52 Dynamic Resource

**Definition** : Whether a vessel must use a shore-based or other resource to obtain up-to-date information.

**Type** : enumeration

**CamelCase** : dynamicResource

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Static | The information is static, or a source of up-to-date information is unavailable or unknown. |
| 2 | Mandatory External Dynamic | An external source of up-to-date information is available and interaction with it to obtain up-to-date information is required. |
| 3 | Optional External Dynamic | An external source of up-to-date information is available but interaction with it to obtain up-to-date information is not required. |
| 4 | Onboard Dynamic | Up-to-date information may be computed using only onboard resources. |

## 16.53 Elevation

**Definition** : The altitude of the ground level of an object, measured from a specified vertical datum.

**Type** : real

**CamelCase** : elevation

**Alias** : ELEVAT

**Remarks** :

**Units**: Metre **Definition**: The basic unit of length in the International System of Units (SI) system. **Symbol**: m

**Range**: Lower Bound (Inclusive): 0.0 Upper Bound (Inclusive): 8850.0

## 16.54 Entrance Description

**Definition** : Description of the seaward end of a channel, harbour, dock, etc.

**Type** : text

**CamelCase** : entranceDescription

**Alias** :

**Remarks** :

## 16.55 File Locator

**Definition** : The location of a fragment of text or other information in a support file.

**Type** : text

**CamelCase** : fileLocator

**Alias** :

**Remarks** : Application schemas must describe how the associated file is identified. The associated file will commonly be named in a file reference co-attribute of the same complex attribute. Each DCEG must specify requirements for the format of the associated file and the semantics of file locator. For example, the value of file locator may be an HTML ID in an HTML file, line number in a text file) or a bookmark in a PDF file.

## 16.56 File Reference

**Definition** : The file name of an externally referenced text file.

**Type** : text

**CamelCase** : fileReference

**Alias** : TXTDSC

**Remarks** :

## 16.57 Firefighting Service

**Definition** : Services for combating fires, provided by different methods.

**Type** : enumeration

**CamelCase** : firefightingService

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Shore-Based Firefighting | Personnel and equipment that are capable of combating a fire from ashore. |
| 2 | Onboard Firefighting | Trained firefighting personnel with the capability of boarding and combating a fire on a vessel. |
| 3 | Firefighting Boat | Specialised watercraft with firefighting apparatus designed for fighting shoreline and shipboard fires |

## 16.58 Frequency Shore Station Receives

**Definition** : The shore station receiver frequency.

**Type** : integer

**CamelCase** : frequencyShoreStationReceives

**Alias** : FRQRXV

**Remarks** :

**Units**: Hz **Definition**: Cycles per second **Symbol**: Hz

**Range**: Lower Bound (Exclusive): 0 Upper Bound: (not specified)

### 16.59 Frequency Shore Station Transmits

**Definition** : The shore station transmitter frequency.

**Type** : integer

**CamelCase** : frequencyShoreStationTransmits

**Alias** : FRQTXM

**Remarks** :

**Units**: Hz **Definition**: Cycles per second **Symbol**: Hz

**Range**: Lower Bound (Exclusive): 0 Upper Bound: (not specified)

### 16.60 GLN Extension

**Definition** : The GLN extension component is used to identify internal physical locations within a location which is identified with a GLN. Must conform to the rules for GLN extension. (GS1 specification).

**Type** : text

**CamelCase** : gLNExtension

**Alias** :

**Remarks** :

### 16.61 Global Location Number

**Definition** : A globally unique, standardised identifier for parties and locations in business processes or supply chains.

**Type** : text

**CamelCase** : globalLocationNumber

**Alias** : GLN

**Remarks** : Global Location Numbers may be used to identify physical or digital locations, legal entities, organisational subdivisions or departments. A Global Location Number must conform to the GLN format specified in GS1 General Specifications.

### 16.62 Headline

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

**Type** : text

**CamelCase** : headline

**Alias** :

**Remarks** :

### 16.63 Heaving Lines From Shore

**Definition** : Ships must take heaving lines thrown from the shore.

**Type** : boolean

**CamelCase** : heavingLinesFromShore

**Alias** :

**Remarks** : Some ports make a ship take their heaving line.

### 16.64 Height

**Definition** : The value of the vertical distance to the highest point of the feature, measured from a specified vertical datum.

**Type** : real

**CamelCase** : height

**Alias** : HEIGHT

**Remarks** :

**Units**: Metre **Definition**: The basic unit of length in the International System of Units (SI) system. **Symbol**: m

**Range**: Lower Bound (Exclusive): 0.0 Upper Bound: (not specified)

### 16.65 Horizontal Distance Uncertainty

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

**Type** : real

**CamelCase** : horizontalDistanceUncertainty

**Alias** : HORACC

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

**Units**: metres **Definition**: SI Metres **Symbol**: m

**Range**: Lower Bound (Inclusive): 0 Upper Bound: (not specified)

### 16.66 ID Code

**Definition** : Identification code as specified in predefined system. Also called identification number.

**Type** : text

**CamelCase** : iDCode

**Alias** : Identification Number Identification Code

**Remarks** :

### 16.67 In Ballast

**Definition** : Whether the vessel is in ballast.

**Type** : boolean

**CamelCase** : inBallast

**Alias** :

**Remarks** :

## 16.68 Interoperability Identifier

**Definition** : A common unique identifier for entities which describe a single real-world feature, and which is used to identify instances of the feature in end-user systems where the feature may be included in multiple data product types.

**Type** : URN

**CamelCase** : interoperabilityIdentifier

**Alias** :

**Remarks** :

## 16.69 ISPS Level

**Definition** : Classification of ISPS security levels according to the ISPS Code.

**Type** : enumeration

**CamelCase** : iSPSLevel

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | ISPS Level 1 | The level for which minimum appropriate protective security measures shall be maintained at all times. |
| 2 | ISPS Level 2 | The level for which appropriate additional protective security measures shall be maintained for a period of time as a result of heightened risk of a security incident. |
| 3 | ISPS Level 3 | The level for which further specific protective security measures shall be maintained for a limited period of time when a security incident is probable or imminent, although it may not be possible to identify the specific target. |

## 16.70 Language

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

**Type** : text

**CamelCase** : language

**Alias** :

**Remarks** : The language is encoded by a 3 character code following ISO 639-2/T.

## 16.71 Linkage

**Definition** : Location (address) for online access using a URL/URI address or similar addressing scheme.

**Type** : URI

**CamelCase** : linkage

**Alias** :

**Remarks** :

## 16.72 Local Knowledge Description

**Definition** : Description of local knowledge that may be needed, for example to traverse a location.

**Type** : text

**CamelCase** : localKnowledgeDescription

**Alias** :

**Remarks** :

## 16.73 Location by Text

**Definition** : A textual rendering of a geographic location.

**Type** : text

**CamelCase** : locationByText

**Alias** :

**Remarks** :

## 16.74 Location Maritime Resource Name

**Definition** : Location identifier, based on MRN. This can be either a specific identifier for an identified physical location or a type-only identifier for a logical location, such as BERTH.

**Type** : URN

**CamelCase** : locationMRN

**Alias** :

**Remarks** :

## 16.75 Logical Connectives

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

**Type** : enumeration

**CamelCase** : logicalConnectives

**Alias** : LOGCON

**Remarks** : 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 logicalConnectives 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.

| Code | Label | Definition |
|---|---|---|
| 1 | Logical Conjunction | All the conditions described by the other attributes of the object, or sub-attributes of the same complex attribute, are true. |
| 2 | Logical Disjunction | At least one of the conditions described by the other attributes of the object, or sub-attributes of the same complex attributes, is true. |

### 16.76 Manifold Number

**Definition** : An identifier for a specific location on a manifold (a pipe or chamber with several openings).

**Type** : text

**CamelCase** : manifoldNumber

**Alias** :

**Remarks** :

### 16.77 Maximum Display Scale

**Definition** : The largest intended viewing scale for the data.

**Type** : integer

**CamelCase** : maximumDisplayScale

**Alias** :

**Remarks** :

**Range**: Lower Bound (Inclusive): 1 Upper Bound: (not specified)

### 16.78 Maximum Permitted Draught

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

**Type** : real

**CamelCase** : maximumPermittedDraught

**Alias** :

**Remarks** :

**Units**: Metre **Definition**: The basic unit of length in the International System of Units (SI) system. **Symbol**: m

**Range**: Lower Bound (Exclusive): 0.0 Upper Bound (Inclusive): 30.0

### 16.79 Maximum Permitted Vessel Length

**Definition** : The maximum length of a vessel permitted in a channel or dock, at a berth, or at an anchorage or mooring.

**Type** : real

**CamelCase** : maximumPermittedVesselLength

**Alias** :

**Remarks** :

**Units**: Metre **Definition**: The basic unit of length in the International System of Units (SI) system. **Symbol**: m

**Range**: Lower Bound (Exclusive): 0.0 Upper Bound: (not specified)

### 16.80 Medical Service

**Definition** : Services for the prevention or treatment of, or response to injury or illness.

**Type** : enumeration

**CamelCase** : medicalService

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Ambulance | A vehicle for conveying the sick or injured to or from a hospital. |
| 2 | Fumigation | Disinfection or purification with fumes. |
| 3 | Doctor | A place where a doctor is available to provide medical attention. |
| 4 | Quarantine | The isolation of patients with contagious diseases. |
| 5 | Vaccination Centre | A place where substances intended to procure immunity against one or several diseases are administered. |

## 16.81 Membership

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

**Type** : enumeration

**CamelCase** : membership

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Included | Vessels with these characteristics are included in the regulation/restriction/recommendation/nautical information. |
| 2 | Excluded | Vessels with these characteristics are excluded from the regulation/restriction/recommendation/nautical information. |

## 16.82 Method of Securing

**Definition** : The process, arrangement or scheme of attachment used to secure a vessel to a berth.

**Type** : enumeration

**CamelCase** : methodOfSecuring

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Bow to Seaward | Vessel is secured perpendicular to the wharf with bow to seaward. |
| 2 | Stern to Seaward | Vessel is secured perpendicular to the wharf with stern to the seaward. |
| 3 | Mediterranean Mooring | The vessel is secured perpendicular to the wharf. |
| 4 | Baltic Mooring | Mooring method/procedure used during onshore wind conditions without a tug. |

| Code | Label | Definition |
|---|---|---|
| 5 | Running Mooring | Mooring by maneuvering ahead and astern while dropping anchors to secure the vessel with reduced swinging room. |
| 6 | Standing Mooring | Mooring by using mainly wind and tide to position the vessel while dropping anchors to secure the vessel with reduced swinging room. Makes limited use of the engine to position the vessel. |
| 7 | Single Point Mooring | A mooring structure used by tankers to load and unload in port approaches or in offshore oil and gas fields. The size of the structure can vary between a large mooring buoy and a manned floating structure. |
| 8 | Multi-Buoy Mooring | A facility where a vessel is usually moored by a combination of the ship's anchors forward and mooring buoys aft and held on a fixed heading. Also called Conventional Buoy Mooring (CBM). |
| 9 | Ship-to-Ship Mooring | Mooring alongside another vessel. |
| 10 | Spider Buoy Mooring | Mooring system supported by a spider buoy. |

## 16.83 Metre Mark Number

**Definition** : An identifier for a specific position along a linear or curvilinear extent of a wharf, quay, or jetty. Numbering may be continued over multiple segments.

**Type** : text

**CamelCase** : metreMarkNumber

**Alias** :

**Remarks** : Metre marks may be painted so as to be visible to ships approaching alongside. Metre mark numbering typically starts with zero at one end and increases with distance alongside from the commencement point.

## 16.84 Minimum Berth Depth

**Definition** : The least depth of the body of water at the berth or in a berth pocket adjacent to the berth.

**Type** : real

**CamelCase** : minimumBerthDepth

**Alias** :

**Remarks** : The minimum depth is measured from a specified sounding datum. A berth pocket is the body of water at a berth or anchor berth, of adequate dimensions to allow a vessel to make fast to the shore, mooring buoys, berthing dolphins or to anchor.

**Units**: Metre **Definition**: The basic unit of length in the International System of Units (SI) system.
**Symbol**: m

**Range**: Lower Bound (Exclusive): 0.00 Upper Bound: (not specified)

## 16.85 Minimum Display Scale

**Definition** : The smallest intended viewing scale for the data.

**Type** : integer

**CamelCase** : minimumDisplayScale

**Alias** :

**Remarks** :

**Range**: Lower Bound (Inclusive): 1 Upper Bound: (not specified)

### 16.86 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.

**Type** : text

**CamelCase** : mMSICode

**Alias** :

**Remarks** :

### 16.87 Name

**Definition** : The individual name of a feature.

**Type** : text

**CamelCase** : name

**Alias** : OBJNAM

**Remarks** :

### 16.88 Name of Resource

**Definition** : Name of the online resource.

**Type** : text

**CamelCase** : nameOfResource

**Alias** :

**Remarks** :

### 16.89 Name Usage

**Definition** : Classification of the type and display level of the name of a feature in an end-user system.

**Type** : enumeration

**CamelCase** : nameUsage

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Default Name Display | The name is intended to be displayed when the end-user system is set to the default name/text display setting. |
| 2 | Alternate Name Display | The name is intended to be displayed when the end-user system is set to an alternate name/text display setting, for example an alternate language. |

| Code | Label | Definition |
|---|---|---|
| 3 | No Chart Display | The name or text is not intended to be displayed. |

## 16.90 Nationality

**Definition** : Identifier of membership of a particular nation.

**Type** : text

**CamelCase** : nationality

**Alias** : NATION

**Remarks** :

## 16.91 Online Function

**Definition** : Code for function performed by the online resource.

**Type** : enumeration

**CamelCase** : onlineFunction

**Alias** : ONLFUN

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Download | Online instructions for transferring data from one storage device or system to another. |
| 3 | Offline Access | Online instructions for requesting the resource from the provider. |
| 4 | Order | Online order process for obtaining the resource. |
| 5 | Search | To make painstaking investigation or examination. |
| 6 | Complete Metadata | Complete metadata provided. |
| 7 | Browse Graphic | Browse graphic provided. |
| 8 | Upload | Online resource upload capability provided. |
| 9 | Email Service | Online email service provided. |
| 10 | Browsing | Online browsing provided. |
| 11 | File Access | Online file access provided. |

## 16.92 Online Resource Description

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

**Type** : text

**CamelCase** : onlineResourceDescription

**Alias** :

**Remarks** :

### 16.93 Optimum Display Scale

**Definition** : The largest intended viewing scale for the data.

**Type** : integer

**CamelCase** : optimumDisplayScale

**Alias** : CSCALE

**Remarks** :

**Range**: Lower Bound (Inclusive): 1 Upper Bound: (not specified)

### 16.94 Orientation Uncertainty

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

**Type** : real

**CamelCase** : orientationUncertainty

**Alias** :

**Remarks** :

**Range**: Lower Bound (Exclusive): 0.000 Upper Bound (Exclusive): 360.000

### 16.95 Orientation Value

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

**Type** : real

**CamelCase** : orientationValue

**Alias** : ORIENT

**Remarks** :

**Units**: degrees **Definition**: degrees of arc **Symbol**: °

**Range**: Lower Bound (Inclusive): 0.0 Upper Bound (Inclusive): 360.0

### 16.96 Pictorial Representation

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

**Type** : text

**CamelCase** : pictorialRepresentation

**Alias** : PICREP

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

### 16.97 Picture Caption

**Definition** : Short description of the purpose of the image.

**Type** : text

**CamelCase** : pictureCaption

**Alias** :

**Remarks** :

## 16.98 Picture Information

**Definition** : A set of information to provide credits to picture creator, copyright owner etc.

**Type** : text

**CamelCase** : pictureInformation

**Alias** :

**Remarks** :

## 16.99 Pilot Movement

**Definition** : Classification of pilot activity by arrival, departure, or change of pilot. It may also describe the place where the pilot's advice begins, ends, or is transferred to a different pilot.

**Type** : enumeration

**CamelCase** : pilotMovement

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Embarkation | The place where vessels not being navigated according to a pilot's instructions pick up a pilot while in transit from sea to a port or constricted waters for future navigation under pilot instructions. |
| 2 | Disembarkation | The place where vessels being navigated under a pilot's instructions in transit from sea to a port or constricted waters drop the pilot and proceed without being subject to pilot instructions. |
| 3 | Pilot Change | The place where vessels being navigated under a pilot's instructions drop off the pilot and pick up a different pilot for future navigation under pilot's instructions. |

## 16.100 Port Facility Number

**Definition** : Number assigned to the port facility in the IMO port facility database.

**Type** : text

**CamelCase** : portFacilityNumber

**Alias** : IMO Port Facility Number

**Remarks** : The IMO port facility number consists of a UN LOCODE with a 4-digit sufffix, seperated by a hyphen, for example USLAX-0001.

## 16.101 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.

**Type** : text

**CamelCase** : postalCode

**Alias** : POSCOD Postcode ZIP Code

**Remarks** :

## 16.102 Product

**Definition** : The various substances which are transported, stored or exploited.

**Type** : enumeration

**CamelCase** : product

**Alias** : PRODCT

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Oil | A thick, slippery liquid that will not dissolve in water, usually petroleum based in the context of storage tanks. |
| 2 | Gas | A substance with particles that can move freely, usually a fuel substance in the context of storage tanks. |
| 4 | Stone | A general term for rock and rock fragments ranging in size from pebbles and gravel to boulders or large rock masses. |
| 5 | Coal | A hard black mineral that is burned as fuel. |
| 6 | Ore | A solid rock or mineral from which metal is obtained. |
| 7 | Chemicals | Any substance obtained by or used in a chemical process. |
| 9 | Milk | A white fluid secreted by female mammals as food for their young. |
| 10 | Bauxite | A mineral from which aluminum is obtained. |
| 11 | Coke | A solid substance obtained after gas and tar have been extracted from coal, used as a fuel. |
| 12 | Iron Ingots | An oblong lump of cast iron metal. |
| 13 | Salt | Sodium chloride obtained from mines or by the evaporation of sea water. |
| 14 | Sand | Loose material consisting of small but easily distinguishable, separate grains, between 0.0625 and 2.000 millimetres in diameter. |
| 15 | Timber | Wood prepared for use in building or carpentry. |
| 16 | Sawdust/Wood Chips | Powdery fragments of wood made in sawing timber or coarse chips produced for use in manufacturing pressed board. |
| 17 | Scrap Metal | Discarded metal suitable for being reprocessed. |
| 18 | Liquefied Natural Gas | Natural gas that has been liquefied for ease of transport by cooling the gas to -162 Celsius. |
| 19 | Liquefied Petroleum Gas | A compressed gas consisting of flammable light hydrocarbons and derived from petroleum. |
| 20 | Wine | The fermented juice of grapes. |
| 21 | Cement | A substance made of powdered lime and clay, mixed with water. |
| 22 | Grain | A small hard seed, especially that of any cereal plant such as wheat, rice, corn, rye etc. |

## 16.103 Protocol

**Definition** : Connection protocol to be used. Example: ftp, http get KVP, http POST, etc.

**Type** : text

**CamelCase** : protocol

**Alias** : PROTCL

**Remarks** :

## 16.104 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.

**Type** : text

**CamelCase** : protocolRequest

**Alias** : PROTRQ

**Remarks** :

## 16.105 Quality of Horizontal Measurement

**Definition** : The degree of reliability attributed to a position.

**Type** : enumeration

**CamelCase** : qualityOfHorizontalMeasurement

**Alias** : QUAPOS

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Surveyed | 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. |
| 2 | Unsurveyed | Survey data is does not exist or is very poor. |
| 3 | Inadequately Surveyed | Not surveyed to modern standards; or due to its age, scale, or positional or vertical uncertainties is not suitable to the type of navigation expected in the area. |
| 4 | Approximate | 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. |
| 5 | Position Doubtful | Of uncertain position. The expression is used principally on charts to indicate that a wreck, shoal, etc., has been reported in various positions and not definitely determined in any. |
| 6 | Unreliable | A feature's position has been obtained from questionable or unreliable data. |
| 7 | Reported (Not Surveyed) | 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. |
| 8 | Reported (Not Confirmed) | An object whose position has been reported and its position has not been confirmed. |
| 9 | Estimated | The most probable position of an object determined from incomplete data or data of questionable accuracy. |
| 10 | Precisely Known | A position that is of a known value, such as the position of an anchor berth or other defined object. |
| 11 | Calculated | A position that is computed from data. |

### 16.106 Radius

**Definition** : The vector extending from the centre to the periphery of a circular or spherical feature.

**Type** : real

**CamelCase** : radius

**Alias** : RADIUS

**Remarks** :

**Units**: Metre **Definition**: The basic unit of length in the International System of Units (SI) system. **Symbol**: m

**Range**: Lower Bound (Exclusive): 0.0 Upper Bound: (not specified)

### 16.107 Ramp Number

**Definition** : An identifier for a specific ramp (a sloping structure that can be used as a landing place for small vessels, landing ships, or a ferry boat, or for hauling a cradle carrying a vessel, or for the transfer of rolling cargo).

**Type** : text

**CamelCase** : rampNumber

**Alias** :

**Remarks** :

### 16.108 Repair Service

**Definition** : Work or maintenance activities whereby vessels or equipment are restored to working order, renovated, or improved in condition.

**Type** : enumeration

**CamelCase** : repairService

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Compensation of Magnetic Compass | The process of neutralizing or reducing to a minimum the magnetic effects the vessel itself exerts on a magnetic compass. It is based on the principle that the magnetic effect of the iron and steel of the vessel can be counterbalanced by means of magnets and soft iron placed near the compass. Also called compass adjustment, compass compensation, or magnetic compensation. |
| 2 | Diver Service | Underwater inspection and repair performed by divers. |
| 3 | Bridge Equipment Repair | Repairs to eqipment installed on the ship’s bridge. |
| 4 | Engine Repair | Repair of an engine or machine parts. |
| 5 | Electronic Equipment Repair | Repair of marine electronic instruments. |
| 6 | Hull Repair | Repairs to the ship’s body, frame, or superstructure. |
| 7 | Navigational Equipment Repair | Repairs to equipment used in the act of navigating a ship. |
| 8 | Propeller Repair | Repairs to propeller hub and blades. |

| Code | Label | Definition |
|---|---|---|
| 9 | Salvage Gear Repair | Repairs to equipment used in salvage operations. |
| 10 | Shaft Repair | Repairs to drive shafts used for transmitting mechanical power and torque to a propeller. |

### 16.109 Reported Date

**Definition** : The date that the item was observed, done, or investigated.

**Type** : S100_TruncatedDate

**CamelCase** : reportedDate

**Alias** : SORDAT

**Remarks** :

### 16.110 Safe Working Load

**Definition** : The maximum safe force or load that a piece of equipment, device, or accessory can handle without breaking or failing under normal conditions.

**Type** : real

**CamelCase** : safeWorkingLoad

**Alias** :

**Remarks** :

**Units**: KiloNewton **Definition**: Unit of force. One Newton is defined as 1 kg-m/s^2. 1kN = 1000N. **Symbol**: kN

**Range**: Lower Bound (Exclusive): 0.0 Upper Bound: (not specified)

### 16.111 Scale Minimum

**Definition** : The minimum scale at which the feature may be used for example for ECDIS presentation.

**Type** : integer

**CamelCase** : scaleMinimum

**Alias** : SCAMIN

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

### 16.112 Ship Sanitation Control

**Definition** : Application of measures to ensure that a vessel is free of disease and disease risks, or issue of completion or exemption certificates for such measures.

**Type** : enumeration

**CamelCase** : shipSanitationControl

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Sanitation Measures Only | Capable of applying measures to ensure that a vessel is free of disease and disease risks, but cannot issue a certificate. |
| 2 | Issue SSCC | The competent authority can issue a Ship Sanitation Control Certificate after satisfactorily completing or supervising the completion of ship sanitation control measures. |
| 3 | Issue SSCEC | The competent authority may issue a Ship Sanitation Control Exemption Certificate if it is satisfied that the ship is free of infection and contamination, including vectors and reservoirs. |

### 16.113 Shore Power Description

**Definition** : A textual description of precautions for shore power usage.

**Type** : text

**CamelCase** : shorePowerDescription

**Alias** :

**Remarks** :

### 16.114 Shore Power Service Provider

**Definition** : An entity that generates, sells, or is responsible for supplying shore power to vessels.

**Type** : text

**CamelCase** : shorePowerServiceProvider

**Alias** :

**Remarks** :

### 16.115 Sill Depth

**Definition** : The greatest depth over a sill.

**Type** : real

**CamelCase** : sillDepth

**Alias** :

**Remarks** :

**Units**: Metre **Definition**: The basic unit of length in the International System of Units (SI) system. **Symbol**: m

**Range**: Lower Bound (Inclusive): 0.0 Upper Bound (Inclusive): 100.0

### 16.116 SMDG Terminal Code

**Definition** : A code from the SMDG (Ship Message Design Group) Terminal Code List.

**Type** : text

**CamelCase** : sMDGTerminalCode

**Alias** :

**Remarks** : The SMDG Terminal Code List (TCL) contains codes for container handling terminal facilities that are called by seagoing cargo vessels in maritime transport. The SMDG terminal code is used when necessary to define a geographic subset of a location identified by a UN/LOCODE.

### 16.117 Source

**Definition** : The publication, document, or reference work from which information comes or is acquired.

**Type** : text

**CamelCase** : source

**Alias** :

**Remarks** : May be populated with the corresponding paper chart Notice to Mariners numbers, although other references are permitted.

### 16.118 Source Date

**Definition** : The production date of the source; for example the date of measurement.

**Type** : date

**CamelCase** : sourceDate

**Alias** : SORDAT

**Remarks** :

### 16.119 Source Type

**Definition** : Type of the source.

**Type** : enumeration

**CamelCase** : sourceType

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Law or Regulation | Treaty, convention, or international agreement; law or regulation issued by a national or other authority. |
| 2 | Official Publication | Publication not having the force of law, issued by an international organisation or a national or local administration. |
| 7 | Mariner Report, Confirmed | Reported by mariner(s) and confirmed by another source. |
| 8 | Mariner Report, Not Confirmed | Reported by mariner(s) but not confirmed. |
| 9 | Industry Publications and Reports | Shipping and other industry publications, including graphics, charts and web sites. |
| 10 | Remotely Sensed Images | Information obtained from satellite images. |
| 11 | Photographs | Information obtained from photographs. |
| 12 | Products Issued by HO Services | Information obtained from products issued by Hydrographic Offices. |

| Code | Label | Definition |
|---|---|---|
| 13 | News Media | Information obtained from news media. |
| 14 | Traffic Data | Information obtained from the analysis of traffic data. |

## 16.120 Supply Service

**Definition** : Classification of services for the provision of materials, goods, utilities, or personal services to vessels, passengers, or crew.

**Type** : enumeration

**CamelCase** : supplyService

**Alias** :

**Remarks** : Describes an enumeration or codelist listing specific services.

| Code | Label | Definition |
|---|---|---|
| 1 | Shore Power | The provision of shoreside electrical power to a ship at berth while its main and auxiliary engines are shut down. |
| 2 | Fuel Oil Bunkering | Transfer of fuel oil to the fuel compartments of a ship. |
| 3 | LNG Bunkering | Transfer of liquefied natural gas to the fuel compartments of a ship. |
| 4 | Lubricants | Substances capable of reducing friction, heat, and wear when introduced as a film between solid surfaces. |
| 5 | Steam | The gas into which water is changed by boiling. |
| 6 | Potable Water | Water which can be used for drinking and food preparation. |
| 7 | International Shore Connection | A universal hose connection for the supply of water for fighting fires. |
| 8 | Provisions | A place where food and other such supplies are available. |
| 9 | Chandler | A dealer in ships' supplies. |
| 10 | Mechanics Workshop | A place where mechanical repairs can be undertaken to engines or other vessel equipment. |

## 16.121 Technical Port Service

**Definition** : Services for the adjustment of vessel equipment or for assessments pertaining to cargo, compliance with regulations, safety, or security.

**Type** : enumeration

**CamelCase** : technicalPortService

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Compensation of Magnetic Compass | The process of neutralizing or reducing to a minimum the magnetic effects the vessel itself exerts on a magnetic compass. It is based on the principle that the magnetic effect of the iron and steel of the vessel can be counterbalanced by means of magnets and soft iron placed near the compass. Also called compass adjustment, compass compensation, or magnetic compensation. |

| Code | Label | Definition |
|---|---|---|
| 2 | Degaussing | Neutralization of the strength of the magnetic field of a vessel, by means of suitably arranged electric coils permanently installed in the vessel. See also Degaussing Cable. |
| 3 | Cargo Surveying | Inspection, evaluation or monitoring of the quantity, stowage, loading and unloading, and condition of cargo, and the effects of cargoes on vessel stability and safety. |
| 4 | Vetting | Assessment of quality and compliance with applicable law, regulations, and safety standards. |

### 16.122 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.

**Type** : text

**CamelCase** : telecommunicationCarrier

**Alias** :

**Remarks** :

### 16.123 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.

**Type** : text

**CamelCase** : telecommunicationIdentifier

**Alias** :

**Remarks** :

### 16.124 Telecommunication Service

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

**Type** : enumeration

**CamelCase** : telecommunicationService

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Voice | The transfer or exchange of information by using sounds that are being made by mouth and throat when speaking. |
| 2 | Facsimile | A system of transmitting and reproducing graphic matter (as printing or still pictures) by means of signals sent over telephone lines. |
| 3 | SMS | Short Message Service is a form of text messaging communication on phones and mobile phones. |
| 4 | Data | A representation of facts, concepts or instructions in a formalised manner suitable for communication, interpretation or processing. |

| Code | Label | Definition |
|---|---|---|
| 5 | Streamed Data | Data that is constantly received by and presented to an end-user while being delivered by a provider. |
| 6 | Telex | 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). |
| 7 | Telegraph | An apparatus, system or process for communication at a distance by electric transmission over wire. |
| 8 | Email | Messages and other data exchanged between individuals using computers in a network. |

### 16.125 Terminal Identifier

**Definition** : The unique identifier for a given terminal.

**Type** : text

**CamelCase** : terminalIdentifier

**Alias** :

**Remarks** :

### 16.126 Text

**Definition** : A non-formatted digital text string.

**Type** : text

**CamelCase** : text

**Alias** : INFORM NINFOM

**Remarks** : Should be used, for example, to hold the information that is for short cautionary or explanatory notes. Therefore, text populated in text must not exceed 300 characters. Text may be in English, or in a national language. No formatting of text is possible within text. If formatted text, or text strings exceeding 300 characters, is required, then an alternate concept should be used.

### 16.127 Text Offset Bearing

**Definition** : The angular distance measured from true north that text associated with a feature is positioned from the feature in an end-user system.

**Type** : integer

**CamelCase** : textOffsetBearing

**Alias** :

**Remarks** :

**Units**: Degree of Arc **Definition**: 1° = (π/180) rad **Symbol**: °

**Range**: Lower Bound (Exclusive): 0 Upper Bound (Exclusive): 360

### 16.128 Text Offset Distance

**Definition** : The distance that text associated with a feature is positioned from the feature in an end-user system.

**Type** : integer

**CamelCase** : textOffsetDistance

**Alias** :

**Remarks** :

**Units**: Millimetre **Definition**: 1 metre = 1000 millimetres **Symbol**: mm

**Range**: Lower Bound (Exclusive): 0 Upper Bound (Inclusive): 50

### 16.129 Text Rotation

**Definition** : A statement that expresses if text associated with a feature is to be rotated in the ECDIS display or not.

**Type** : boolean

**CamelCase** : textRotation

**Alias** :

**Remarks** :

### 16.130 Text Type

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

**Type** : enumeration

**CamelCase** : textType

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Name | The individual name of a feature. |

### 16.131 Thickness of Ice Capability

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

**Type** : integer

**CamelCase** : thicknessOfIceCapability

**Alias** :

**Remarks** :

**Units**: centimetres **Definition**: Centimetres (SI) **Symbol**: cm

**Range**: Lower Bound (Exclusive): 0 Upper Bound: (not specified)

### 16.132 Time of Day End

**Definition** : The time corresponding to the end of an active period.

**Type** : time

**CamelCase** : timeOfDayEnd

**Alias** :

**Remarks** : The time of day end must be encoded using 2 digits for the hour (hh), 2 digits for the minutes(mm) and 2 digits for the seconds (ss). This conforms to ISO 8601:2004.

### 16.133 Time of Day Start

**Definition** : The time corresponding to the start of an active period.

**Type** : time

**CamelCase** : timeOfDayStart

**Alias** :

**Remarks** : The time of day start must be encoded using 2 digits for the hour (hh), 2 digits for the minutes(mm) and 2 digits for the seconds (ss). This conforms to ISO 8601:2004.

### 16.134 Tug Information

**Definition** : Textual description of the types and capacities of available tugs.

**Type** : text

**CamelCase** : tugInformation

**Alias** :

**Remarks** :

### 16.135 UN Location Code

**Definition** : Used to encode the UN Location Code (http://www.unece.org/cefact/locode/service/location.html) or — in Europe — the Inland Ship Reporting Standard (ISRS) Code.

**Type** : text

**CamelCase** : uNLocationCode

**Alias** : unlocd

**Remarks** : The ISRS Code exists of: — UN country code (2 digits), — UN Location code (3 digits, “XXX” if not available), — Fairway section number (5 numerical digits, to be determined by the national authority; a side branch should have an own section number, when there are special restrictions, e.g. bridges), — terminal code or passage point code (5 alphanumerical digits, “00000” if not available), — fairway section hectometre (5 numerical digits, hectometre at the centre of the area, “00000” if not available). If the ISRS code is not available, the code of the Nordersoft RIS-Index may be used.

### 16.136 Uncertainty Fixed

**Definition** : The best estimate of the fixed horizontal or vertical accuracy component for positions, depths, heights, vertical distances and vertical clearances.

**Type** : real

**CamelCase** : uncertaintyFixed

**Alias** : POSACC SOUACC VERACC

**Remarks** :

**Units**: Metre **Definition**: The basic unit of length in the International System of Units (SI) system.
**Symbol**: m

## 16.137 Uncertainty Variable Factor

**Definition** : The factor to be applied to the variable component of an uncertainty equation so as to provide the best estimate of the variable horizontal or vertical accuracy component for positions, depths, heights, vertical distances and vertical clearances.

**Type** : real

**CamelCase** : uncertaintyVariableFactor

**Alias** :

**Remarks** :

## 16.138 Vertical Clearance Value

**Definition** : The vertical clearance measured from the horizontal plane towards the feature overhead.

**Type** : real

**CamelCase** : verticalClearanceValue

**Alias** : VERCLR VERCCL VERCOP VERCSA

**Remarks** :

**Units**: Metre **Definition**: The basic unit of length in the International System of Units (SI) system. **Symbol**: m

**Range**: Lower Bound (Inclusive): 0.1 Upper Bound (Inclusive): 100.0

## 16.139 Vertical Datum

**Definition** : The reference level used for expressing the vertical measurements of points on the earth's surface. Also called datum level, reference plane, levelling datum, datum for sounding reduction, datum for heights.

**Type** : enumeration

**CamelCase** : verticalDatum

**Alias** : VERDAT Datum Level Reference Plane Levelling Datum Datum for Sounding Reduction Datum for Heights

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Mean Low Water Springs | The average height of the low waters of spring tides. This level is used as a tidal datum in some areas. Also called spring low water. |
| 2 | Mean Lower Low Water Springs | The average height of lower low water springs at a place. |
| 3 | Mean Sea Level | The average height of the surface of the sea at a tide station for all stages of the tide over a 19-year period, usually determined from hourly height readings measured from a fixed predetermined reference level. |
| 4 | Lowest Low Water | An arbitrary level conforming to the lowest tide observed at a place, or some what lower. |
| 5 | Mean Low Water | The average height of all low waters at a place over a 19-year period. |
| 6 | Lowest Low Water Springs | An arbitrary level conforming to the lowest water level observed at a place at spring tides during a period of time shorter than 19 years. |

| Code | Label | Definition |
|---|---|---|
| 7 | Approximate Mean Low Water Springs | An arbitrary level, usually within 0.3m from that of Mean Low Water Springs (MLWS). |
| 8 | Indian Spring Low Water | An arbitrary tidal datum approximating the level of the mean of the lower low water at spring tides. It was first used in waters surrounding India. |
| 9 | Low Water Springs | An arbitrary level, approximating that of mean low water springs (MLWS). |
| 10 | Approximate Lowest Astronomical Tide | An arbitrary level, usually within 0.3m from that of Lowest Astronomical Tide (LAT). |
| 11 | Nearly Lowest Low Water | An arbitrary level approximating the lowest water level observed at a place, usually equivalent to the Indian Spring Low Water (ISLW). |
| 12 | Mean Lower Low Water | The average height of the lower low waters at a place over a 19-year period. |
| 13 | Low Water | The lowest level reached at a place by the water surface in one oscillation. Also called low tide. |
| 14 | Approximate Mean Low Water | An arbitrary level, usually within 0.3m from that of Mean Low Water (MLW). |
| 15 | Approximate Mean Lower Low Water | An arbitrary level, usually within 0.3m from that of Mean Lower Low Water (MLLW). |
| 16 | Mean High Water | The average height of all high waters at a place over a 19-year period. |
| 17 | Mean High Water Springs | The average height of the high waters of spring tides. Also called spring high water. |
| 18 | High Water | The highest level reached at a place by the water surface in one oscillation. |
| 19 | Approximate Mean Sea Level | An arbitrary level, usually within 0.3m from that of Mean Sea Level (MSL). |
| 20 | High Water Springs | An arbitrary level, approximating that of mean high water springs (MHWS). |
| 21 | Mean Higher High Water | The average height of higher high waters at a place over a 19-year period. |
| 22 | Equinoctial Spring Low Water | The level of low water springs near the time of an equinox. |
| 23 | Lowest Astronomical Tide | The lowest tide level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions. |
| 24 | Local Datum | An arbitrary datum defined by a local harbour authority, from which levels and tidal heights are measured by this authority. |
| 25 | International Great Lakes Datum 1985 | A vertical reference system with its zero based on the mean water level at Rimouski/Pointe-au-Pere, Quebec, over the period 1970 to 1988. |
| 26 | Mean Water Level | The average of all hourly water levels over the available period of record. |
| 27 | Lower Low Water Large Tide | The average of the lowest low waters, one from each of 19 years of observations. |
| 28 | Higher High Water Large Tide | The average of the highest high waters, one from each of 19 years of observations. |
| 29 | Nearly Highest High Water | An arbitrary level approximating the highest water level observed at a place, usually equivalent to the high water springs. |

| Code | Label | Definition |
|---|---|---|
| 30 | Highest Astronomical Tide | The highest tidal level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions. |
| 44 | Baltic Sea Chart Datum 2000 | The datum refers to each Baltic country's realization of the European Vertical Reference System (EVRS) with land-uplift epoch 2000, which is connected to the Normaal Amsterdams Peil (NAP). |

### 16.140 Vertical Length

**Definition** : The total vertical length of a feature.

**Type** : real

**CamelCase** : verticalLength

**Alias** : VERLEN

**Remarks** :

**Units**: Metre **Definition**: The basic unit of length in the International System of Units (SI) system. **Symbol**: m

**Range**: Lower Bound (Exclusive): 0.0 Upper Bound: (not specified)

### 16.141 Vessel Performance

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

**Type** : text

**CamelCase** : vesselPerformance

**Alias** :

**Remarks** :

### 16.142 Vessels Characteristics

**Definition** : Characteristics of vessels.

**Type** : enumeration

**CamelCase** : vesselsCharacteristics

**Alias** : VSLCAR

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Length Overall | The maximum length of the ship. |
| 2 | Length at Waterline | The ship's length measured at the waterline. |
| 3 | Breadth | The width or beam of the vessel. |
| 4 | Draught | The depth of water necessary to float a vessel fully loaded. |
| 6 | Displacement Tonnage | 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 |

| Code | Label | Definition |
|---|---|---|
| | | 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. |
| 7 | Displacement Tonnage, Light | The weight of the ship excluding cargo, fuel, ballast, stores, passengers, and crew, but with water in the boilers to steaming level. |
| 8 | Displacement Tonnage, Loaded | 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. |
| 9 | Deadweight Tonnage | The difference between displacement, light and displacement, loaded. A measure of the ship's total carrying capacity. |
| 10 | Gross Tonnage | 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. |
| 11 | Net Tonnage | Obtained from the gross tonnage by deducting crew and navigating spaces and allowances for propulsion machinery. |
| 12 | Panama Canal/ Universal Measurement System Net Tonnage | 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. |
| 13 | Suez Canal Net Tonnage | 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. |

### 16.143 Vessels Characteristics Unit

**Definition** : The unit used for vessel characteristics attribute.

**Type** : enumeration

**CamelCase** : vesselsCharacteristicsUnit

**Alias** : VSLUNT

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | Metres | The basic unit of length in the International System of Units (SI) system. |
| 3 | Metric Ton | 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. |
| 4 | Ton | 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 |

| Code | Label | Definition |
|---|---|---|
| | | cubic feet (0.9911 m) of salt water with a density of 64 lb/ft (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). |
| 5 | Short Ton | 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 US 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 US system (short or net hundredweight) and 112 pounds (50.80234544 kg) in the Imperial system (long or gross hundredweight). |
| 6 | Gross Ton | 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. |
| 7 | Net Ton | Net tonnage (NT) is based on a calculation of the volume of all cargo spaces of the ship. It indicates a vessels earning space and is a function of the moulded volume of all cargo spaces of the ship. |
| 9 | Suez Canal Net Tonnage | 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. |

## 16.144 Vessels Characteristics Value

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

**Type** : real

**CamelCase** : vesselsCharacteristicsValue

**Alias** :

**Remarks** : Indicates range limits in expressions characterizing vessels by dimensions and tonnages. The unit of measure, characteristic, and comparison operator (greater, less, etc.) are encoded separately.

## 16.145 Visitors Mooring

**Definition** : A mooring set aside for the use of visiting vessels.

**Type** : boolean

**CamelCase** : visitorsMooring

**Alias** :

**Remarks** :

## 16.146 Waste Disposal Service

**Definition** : Service for the reception of residues, polluting substances, refuse, oily wastes, and by-products from ships.

**Type** : enumeration

**CamelCase** : wasteDisposalService

**Alias** :

**Remarks** :

| Code | Label | Definition |
|---|---|---|
| 1 | MARPOL Annex I Oily Bilge Water | The service with facility to receive oil related waste/residue of the type “Oily bilge water” as specified in MARPOL Annex I. |
| 2 | MARPOL Annex I Oily Residues | The service with facility to receive oil related waste/residue of the type “Oily Residues (sludge)” as specified in MARPOL Annex I. |
| 3 | MARPOL Annex I Oily Tank Washings | The service with facility to receive oil related waste/residue of the type “Oily tank washings (slops)” as specified in MARPOL Annex I. |
| 4 | MARPOL Annex I Dirty Ballast Water | The service with facility to receive oil related waste/residue of the type “Dirty ballast water” as specified in MARPOL Annex I. |
| 5 | MARPOL Annex I Scale and Sludge from Tank Cleaning | The service with facility to receive oil related waste/residue of the type “Scale and sludge from tank cleaning” as specified in MARPOL Annex I. |
| 6 | MARPOL Annex I Other Oily Waste | The service with facility to receive oil related waste/residue of the type “Other” as specified in MARPOL Annex I. |
| 7 | MARPOL Annex II Category X | The service with facility to receive chemical/Noxious liquid substances related waste/residue of the type “Category X” as specified in MARPOL Annex II. |
| 8 | MARPOL Annex II Category Y | The service with facility to receive chemical/Noxious liquid substances related waste/residue of the type “Category Y” as specified in MARPOL Annex II. |
| 9 | MARPOL Annex II Category Z | The service with facility to receive chemical/Noxious liquid substances related waste/residue of the type “Category Z” as specified in MARPOL Annex II. |
| 10 | MARPOL Annex II Category OS | The service with facility to receive chemical/Noxious liquid substances related waste/residue of the type “Other substance” as specified in MARPOL Annex II. |
| 11 | MARPOL Annex IV Sewage | The service with facility to receive waste/residue of the type “Sewage” as specified in MARPOL Annex IV. |
| 12 | MARPOL Annex V Plastics | The service with facility to receive garbage related waste/residue of the type “Plastics”, as specified in MARPOL Annex V |
| 13 | MARPOL Annex V Food Wastes | The service with facility to receive garbage related waste/residue of the type “Food wastes”, as specified in MARPOL Annex V |
| 14 | MARPOL Annex V Domestic Wastes | The service with facility to receive garbage related waste/residue of the type “Domestic wastes”, as specified in MARPOL Annex V |
| 15 | MARPOL Annex V Cooking Oil | The service with facility to receive garbage related waste/residue of the type “Cooking oil”, as specified in MARPOL Annex V |
| 16 | MARPOL Annex V Incinerator Ashes | The service with facility to receive garbage related waste/residue of the type “Incinerator ashes”, as specified in MARPOL Annex V |

| Code | Label | Definition |
|---|---|---|
| 17 | MARPOL Annex V Operational Wastes | The service with facility to receive garbage related waste/residue of the type “Operational wastes”, as specified in MARPOL Annex V |
| 18 | MARPOL Annex V Animal Carcasses | The service with facility to receive garbage related waste/residue of the type “Animal carcasses”, as specified in MARPOL Annex V |
| 19 | MARPOL Annex V Fishing Gear | The service with facility to receive garbage related waste/residue of the type “Fishing gear”, as specified in MARPOL Annex V |
| 20 | MARPOL Annex V E-Waste | The service with facility to receive garbage related waste/residue of the type “E-waste”, as specified in MARPOL Annex V |
| 21 | MARPOL Annex V Cargo Residues — non-HME | The service with facility to receive garbage related waste/residue of the type “Cargo residues not determined to be harmful to the marine environment”, as specified in MARPOL Annex V |
| 22 | MARPOL Annex V Cargo Residues — HME | The service with facility to receive garbage related waste/residue of the type “Cargo residues harmful to the marine environment”, as specified in MARPOL Annex V |
| 23 | MARPOL Annex VI Ozone-Depleting Substances | The service with facility to receive air pollution related waste/residue of the type “Ozone-depleting substances” as specified in MARPOL Annex VI. |
| 24 | MARPOL Annex VI Exhaust Gas-Cleaning Residues | The service with facility to receive air pollution related waste/residue of the type “Exhaust gas-cleaning residues” as specified in MARPOL Annex VI. |

### 16.147 Action or Activity

**Definition** : The action or activity of a vessel.

**Type** : S100_CodeList

**CamelCase** : actionOrActivity

**Alias** :

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

| Code | Label | Definition |
|---|---|---|
| 1 | Navigating With a Pilot | Carrying a qualified pilot as part of the vessel navigation team. |
| 2 | Entering Port | Navigating a vessel into a port. |
| 3 | Leaving Port | Navigating a vessel out of a port. |
| 4 | Berthing | Attaching a vessel to a wharf or jetty. |
| 5 | Slipping | Detaching a vessel from a wharf or jetty. |
| 6 | Anchoring | Attaching a vessel to the seabed by means of an anchor and cable. |
| 7 | Weighing Anchor | Detaching a vessel from the seabed by recovering an anchor and cable. |
| 8 | Transiting | Navigating a vessel along a route or through a narrow gap, such as under a bridge or through a lock. |
| 9 | Overtaking | Navigating a vessel past another traveling broadly in the same direction. |
| 10 | Reporting | Providing details such as the name, location or intentions of a vessel. |
| 11 | Working Cargo | Loading or unloading cargo. |

| Code | Label | Definition |
|---|---|---|
| 12 | Landing | Placing crew or passengers on shore. |
| 13 | Diving | A signal or message warning of diving activity. |
| 14 | Fishing | Hunting or catching fish. |
| 15 | Discharging Overboard | Releasing anything into the sea; often ballast water; or spoil from dredging elsewhere. |
| 16 | Passing | Navigating a vessel past another travelling broadly in the opposite direction. |
| 17 | Ballast Water Exchange | Discharge and uptake of ballast water. |
| 18 | Hull Cleaning | The removal or treatment of biofouling (accumulation of aquatic organisms including microfouling and macrofouling) from a ship's submerged surfaces, including hull and niche areas, conducted either in-water or during dry-docking. The process includes both proactive cleaning (periodic removal of microfouling) and reactive cleaning (removal of micro- and macrofouling as corrective action). |
| 19 | Scientific Research | The conduct of observational, sampling, or experimental activities by authorised personnel to collect scientific or environmental data, which may involve the deployment of scientific instruments, collection of biological or geological samples, or in-water survey operations. |
| 20 | Tourism | Organised recreational visitation and leisure activities in marine areas, including sight-seeing, wildlife observation, glass-bottom vessel tours, and guided nature excursions conducted by commercial or permitted operators. |
| 21 | Education | Structured activities conducted for training, awareness, or interpretive purposes involving groups or individuals learning about the marine environment, including guided educational programs, school activities, and field instruction conducted within designated marine areas. |
| 22 | Infrastructure Maintenance | Inspection, repair, or upkeep of existing marine or coastal infrastructure such as wharves, piers, pipelines, moorings, subsea cables, navigational aids, or coastal protection structures, including minor works that do not expand the original footprint. |

## 16.148 Category of RxN

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

**Type** : S100_CodeList

**CamelCase** : categoryOfRxN

**Alias** :

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

| Code | Label | Definition |
|---|---|---|
| 1 | Navigation | The process of directing the movement of a craft from one point to another. |
| 2 | Communication | Transmitting and/or receiving electronic communication signals. |
| 3 | Environmental Protection | Pertaining to environmental protection. |
| 4 | Wildlife Protection | Pertaining to wildlife protection. |
| 5 | Security | Pertaining to security. |
| 6 | Customs | The agency or establishment for collecting duties, tolls. |

| Code | Label | Definition |
|---|---|---|
| 7 | Cargo Operation | Pertaining to cargo operations. |
| 8 | Refuge | Pertaining to a place of safety or refuge. |
| 9 | Health | The authority with responsibility for checking the validity of the health declaration of a vessel and for declaring free pratique. |
| 10 | Natural Resources or Exploitation | Pertaining to natural resources or exploitation. |
| 11 | Port | 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. |
| 12 | Finance | An authority with responsibility for the control and movement of money. |
| 13 | Agriculture | The science, art, or practice of cultivating the soil, producing crops, and raising livestock and in varying degrees the preparation and marketing of the resulting products. |

### 16.149 Category of Vessel

**Definition** : Classification of vessels by function or use.

**Type** : S100_CodeList

**CamelCase** : categoryOfVessel

**Alias** :

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

| Code | Label | Definition |
|---|---|---|
| 1 | General Cargo Vessel | A vessel which is designed for carrying general cargo, e.g. boxes, sacks. |
| 2 | Container Carrier | A vessel designed to carry ISO containers. |
| 3 | Tanker | A vessel which is designed for carrying liquid goods, for example oil or water. |
| 4 | Bulk Carrier | A vessel which is designed for carrying bulk goods, e.g. coal, ore or grain. |
| 5 | Passenger Vessel | A day trip or cabin vessel constructed and equipped to carry more than 12 passengers. |
| 6 | Roll-On Roll-Off | A vessel designed to allow road vehicles to be driven on and off; often a ferry. |
| 7 | Refrigerated Cargo Vessel | A vessel designed to carry refrigerated cargo. |
| 8 | Fishing Vessel | A vessel that is used and equipped for the fishing of living aquatic resources. |
| 9 | Service | A vessel which provides a service such as a tug, anchor handler, survey or supply vessel. |
| 10 | Warship | A vessel designed for the conduct of military operations. |
| 11 | Towed or Pushed Composite Unit | Either a tug and tow, or any combination of a tug providing propulsion to barges or vessels secured ahead or alongside. |
| 12 | Tug and Tow | A combination of tug(s) and non-powered tow(s). |
| 13 | Light Recreational | A pleasure boat or watercraft, or an excursion vessel used for short cruises such as whale watching. |

| Code | Label | Definition |
|---|---|---|
| 14 | Semi-Submersible Offshore Installation | 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. |
| 15 | Jack-Up Exploration or Project Installation | An exploration or project installation with legs which can be raised and lowered. The legs are raised when the installation is re-positioned. When stationary the legs are lowered to the sea floor and the working platform is raised clear of the sea surface. |
| 16 | Livestock Carrier | A vessel designed to carry large quantities of live animals. |
| 17 | Sport Fishing | A vessel used in fishing for pleasure or competition. |

### 16.150 Security-Safety-Emergency Service

**Definition** : Protective services, law enforcement, or services for responding to sudden danger.

**Type** : S100_CodeList

**CamelCase** : securitySafetyEmergencyService

**Alias** :

**Remarks** : codelistType=openEnumeration

| Code | Label | Definition |
|---|---|---|
| 1 | Coast Guard | Organization keeping watch on shipping and coastal waters according to governmental law; normally the authority with responsibility for search and rescue. |
| 2 | Customs | The agency or establishment for collecting duties, tolls. |
| 3 | Environmental Emergency Information Centre | Office for reporting or obtaining information about sudden dangers to the environment such as spillage of polluting or hazardous substances. |
| 4 | Emergency Coordination Centre | An office or organisation for reporting or coordinating response to emergencies. |
| 5 | Guard and/or Security Service | A place where a vessel is patrolled by a security service or stored in a secure lockup. |
| 6 | Immigration | The authority controlling people entering a country. |
| 7 | Police | The department of government, or civil force, charged with maintaining public order. |
| 8 | Sea Rescue Control | A unit responsible for promoting efficient organization of search and rescue services and for coordinating the conduct of search and rescue operations within a search and rescue region. |

### 16.151 Transport Connection

**Definition** : Classification of services for the conveyance of persons and/or goods, according to means of transport, nature of path, or representative installation.

**Type** : S100_CodeList

**CamelCase** : transportConnection

**Alias** : Transportation Service

**Remarks** : codelistType=openEnumeration

| Code | Label | Definition |
|---|---|---|
| 2 | Heliport | A small airport for the use of helicopters and some other vertical lift aircraft. Heliports typically contain one or more touchdown and liftoff areas and also have facilities such as fuel or hangars. In some larger towns and cities, customs facilities may also be available. |
| 3 | Helipad | A small landing surface for helicopters, with minimal or no supporting installations or facilities. |
| 4 | Hired Boat | Small boat with crew that may be hired for single journeys. |
| 5 | Bus Station | A building where buses and coaches regularly stop to take on and/or let off passengers, especially for long-distance travel. |
| 6 | Ferry | A vessel for transporting passengers, vehicles, and/or goods across a stretch of water, especially as a regular service. |
| 8 | Motorway | A limited access dual carriageway road specially designed for fast long-distance traffic and subject to special regulations concerning its use. It may have more than two lanes. |
| 9 | Launch | Large open or half decked boat. |
| 11 | Inland Waterway Transport | The carriage of goods or passengers using navigable waterways such as canals, rivers, lakes, or other stretch of water that is not part of the sea. |
| 12 | Short Sea Transportation | The carriage of specified types of cargo between qualifying ports. The types of cargo and/or qualifying ports are generally specified by law or government regulation. |
| 13 | Marine Highway | Specially designated commercially navigable routes in coastal, inland, and intracoastal waters, frequently as waterborne relievers to congested landside routes. |

# 17 Complex Attributes

## 17.1 Bearing Information

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

**CamelCase** : bearingInformation

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| cardinalDirection | enumeration | 0,1 |
| distance | real | 0,1 |
| information | Complex | 0,* |
| orientation | Complex | 0,1 |

## 17.2 Cargo Services Description

**Definition** : Description of services related to the goods or items carried by vessels.

**CamelCase** : cargoServicesDescription

**Alias** :

**Remarks** : Textual or narrative description of cargo services.

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| textContent | Complex | 1,* |

## 17.3 Construction Information

**Definition** : A description of construction or other development in a location where the work will affect vessel operations such as navigation, maneuvering or docking/berthing.

**CamelCase** : constructionInformation

**Alias** : Development Information

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| fixedDateRange | Complex | 0,1 |
| condition | enumeration | 0,1 |
| development | text | 1,1 |
| locationByText | text | 0,1 |
| textContent | Complex | 0,* |

## 17.4 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.

**CamelCase** : contactAddress

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| deliveryPoint | text | 0,* (ordered) |
| cityName | text | 0,1 |
| administrativeDivision | text | 0,1 |
| countryName | text | 0,1 |
| postalCode | text | 0,1 |

## 17.5 Depths Description

**Definition** : Textual description of the characteristics and notable matters pertaining to depths in an area.

**CamelCase** : depthsDescription

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| categoryOfDepthsDescription | enumeration | 1,1 |
| textContent | Complex | 1,* |

## 17.6 Facilities Layout Description

**Definition** : Textual description of the layout of port facilities.

**CamelCase** : facilitiesLayoutDescription

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| textContent | Complex | 1,* |

## 17.7 Feature Name

**Definition** : 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.

**CamelCase** : featureName

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| language | text | 1,1 |
| name | text | 1,1 |
| nameUsage | enumeration | 0,1 |

## 17.8 Fixed Date Range

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

**CamelCase** : fixedDateRange

**Alias** :

**Remarks** : Dates must be encoded in the format YYYYMMDD; using 4 digits for the calendar year (YYYY) and, optionally, 2 digits for the month (MM) (for example April = 04) and 2 digits for the day (DD). When no specific month and/or day is required/known, the values are replaced with dashes (-). The date range of a recurring event or occurrence must be encoded using periodicDateRange.

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| dateStart | S100_TruncatedDate | 0,1 |
| dateEnd | S100_TruncatedDate | 0,1 |

## 17.9 Frequency Pair

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

**CamelCase** : frequencyPair

**Alias** : FRQPAR

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| frequencyShoreStationReceives | integer | 0,1 |
| frequencyShoreStationTransmits | integer | 1,1 |

## 17.10 General Harbour Information

**Definition** : General information about the port or harbour area.

**CamelCase** : generalHarbourInformation

**Alias** : General Port Information

**Remarks** : Describes a collection of information designed to give a general overview of harbour related Information.

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| generalPortDescription | Complex | 0,1 |
| facilitiesLayoutDescription | Complex | 0,1 |
| limitsDescription | Complex | 0,1 |
| constructionInformation | Complex | 0,1 |
| cargoServicesDescription | Complex | 0,1 |
| weatherResource | Complex | 0,* |

## 17.11 General Port Description

**Definition** : General, introductory information about the port.

**CamelCase** : generalPortDescription

**Alias** : General Harbour Description

**Remarks** : General statement about the port, including social/political aspects, which could have an impact on the mariner's/company's safety or professional reputation. The information covered by this should be confined to information not contained in any other place in the data.

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| textContent | Complex | 1,* |

## 17.12 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.

**CamelCase** : graphic

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| pictorialRepresentation | text | 1,* |
| pictureCaption | text | 0,1 |
| sourceDate | date | 0,1 |
| pictureInformation | text | 0,1 |
| bearingInformation | Complex | 0,1 |

## 17.13 Horizontal Position Uncertainty

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

**CamelCase** : horizontalPositionUncertainty

**Alias** : POSACC

**Remarks** : The expected input is the maximum of the two-dimensional error. The error is assumed to be positive and negative.

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| uncertaintyFixed | real | 1,1 |
| uncertaintyVariableFactor | real | 0,1 |

## 17.14 Information

**Definition** : Textual information about the feature. The information may be provided as a string of text or as a file name of a single external text file that contains the text.

**CamelCase** : information

**Alias** : INFORM

**Remarks** : At least one of the sub-attributes file reference or text must be populated.The sub-attribute file reference is generally used for long text strings or those that require formatting, however, there is no restriction on the type of text (except for lexical level) that can be held in files referenced by sub-attribute file reference.

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| fileLocator | text | 0,1 |
| fileReference | text | 0,1 |
| headline | text | 0,* (ordered) |
| language | text | 0,1 |
| text | text | 0,1 |

## 17.15 Landmark Description

**Definition** : Textual description of selected landmarks that have significance in an area.

**CamelCase** : landmarkDescription

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| textContent | Complex | 1,* |

## 17.16 Limits Description

**Definition** : Description of the area covered by the information specified.

**CamelCase** : limitsDescription

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| textContent | Complex | 1,* |

## 17.17 Major Light Description

**Definition** : A description of navigationally significant lights essential for marking landfalls, offshore dangers, shipping routes, port access channels or protection of the marine environment.

**CamelCase** : majorLightDescription

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| textContent | Complex | 1,* |

## 17.18 Marked By

**Definition** : Description of the aids to navigation used to mark an area or object.

**CamelCase** : markedBy

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| textContent | Complex | 1,* |

## 17.19 Offshore Mark Description

**Definition** : Description of aids to navigation or prominent marks located away from the shore.

**CamelCase** : offshoreMarkDescription

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| textContent | Complex | 1,* |

## 17.20 Online Resource

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

**CamelCase** : onlineResource

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| linkage | URI | 1,1 |
| protocol | text | 0,1 |
| applicationProfile | text | 0,1 |
| nameOfResource | text | 0,1 |
| onlineResourceDescription | text | 0,1 |
| onlineFunction | enumeration | 0,1 |
| protocolRequest | text | 0,1 |

## 17.21 Orientation

**Definition** : (1) The angular distance measured from true north to the major axis of the feature. (2) In ECDIS, the mode in which information on the ECDIS is being presented. Typical modes include: north-up — as shown on a nautical chart, north is at the top of the display; Ships head-up — based on the

actual heading of the ship, (e.g. Ships gyrocompass); course-up display — based on the course or route being taken.

**CamelCase** : orientation

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| orientationUncertainty | real | 0,1 |
| orientationValue | real | 1,1 |

## 17.22 Periodic Date Range

**Definition** : The active period of a recurring event or occurrence.

**CamelCase** : periodicDateRange

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| dateStart | S100_TruncatedDate | 1,1 |
| dateEnd | S100_TruncatedDate | 1,1 |

## 17.23 RxN Code

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

**CamelCase** : rxNCode

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| categoryOfRxN | S100_CodeList | 0,1 |
| actionOrActivity | S100_CodeList | 0,1 |
| headline | text | 0,* (ordered) |

## 17.24 Schedule by Day of Week

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

**CamelCase** : scheduleByDayOfWeek

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| categoryOfSchedule | enumeration | 0,1 |
| text | text | 0,1 |
| timeIntervalsByDayOfWeek | Complex | 1,* |

## 17.25 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.

**CamelCase** : sourceIndication

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| categoryOfAuthority | enumeration | 0,1 |
| countryName | text | 0,1 |
| source | text | 0,1 |
| sourceType | enumeration | 0,1 |
| reportedDate | S100_TruncatedDate | 0,1 |
| featureName | Complex | 0,* |

## 17.26 Spatial Accuracy

**Definition** : Provides an indication of the vertical and horizontal positional uncertainty of bathymetric data, optionally within a specified date range.

**CamelCase** : spatialAccuracy

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| fixedDateRange | Complex | 0,1 |
| horizontalPositionUncertainty | Complex | 0,1 |
| verticalUncertainty | Complex | 0,1 |

## 17.27 Survey Date Range

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

**CamelCase** : surveyDateRange

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| dateStart | S100_TruncatedDate | 0,1 |
| dateEnd | S100_TruncatedDate | 1,1 |

## 17.28 Telecommunications

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

**CamelCase** : telecommunications

**Alias** :

**Remarks** : If no value is populated for the sub-attribute telecommunication service, this means the service is by voice communication. If no value is populated for the sub-attribute telecommunication carrier, this means the service is by land line communication.

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| categoryOfCommunicationPreference | enumeration | 0,1 |
| telecommunicationIdentifier | text | 1,1 |
| telecommunicationCarrier | text | 0,1 |
| contactInstructions | text | 0,1 |
| telecommunicationService | enumeration | 0,* |

## 17.29 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.

**CamelCase** : textContent

**Alias** : TXTCON

**Remarks** : 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.

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| categoryOfText | enumeration | 0,1 |
| information | Complex | 0,* |
| onlineResource | Complex | 0,1 |
| sourceIndication | Complex | 0,* |

## 17.30 Time Intervals by Day of Week

**Definition** : The regular weekly operation times of a service or schedule.

**CamelCase** : timeIntervalsByDayOfWeek

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| dayOfWeek | enumeration | 0,7 (ordered) |
| dayOfWeekIsRange | boolean | 0,1 |
| timeOfDayStart | time | 0,* (ordered) |
| timeOfDayEnd | time | 0,* (ordered) |

## 17.31 Useful Mark Description

**Definition** : Description of Aids to Navigation or prominent marks which are usually clearly visible and identifiable enough to be used in determining location or direction.

**CamelCase** : usefulMarkDescription

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| textContent | Complex | 1,* |

## 17.32 Vertical Uncertainty

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

**CamelCase** : verticalUncertainty

**Alias** : VERACC

**Remarks** : Encodes the vertical uncertainty associated with any vertical measurement.

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| uncertaintyFixed | real | 1,1 |
| uncertaintyVariableFactor | real | 0,1 |

## 17.33 Vessel Measurements Specification

**Definition** : Combinations of values of measurable characteristics or dimensions of vessels, used to specify size and tonnage ranges.

**CamelCase** : vesselMeasurementsSpecification

**Alias** :

**Remarks** : Combines (i) specifications of vessels' measurable characteristics (length, beam, tonnages, etc.), (ii) limit values for the specified characteristics (with units), (iii) arithmetical comparison operators (greater than, etc.), and (iv) logical operators (AND/OR) to define a subset of vessels characterized by the specified ranges. For example, the combination (draught, 10.5, metres, greaterThan) describes "vessels with draught greater than 10.5 metres".

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| comparisonOperator | enumeration | 1,1 |
| vesselsCharacteristics | enumeration | 1,1 |
| vesselsCharacteristicsValue | real | 1,1 |
| vesselsCharacteristicsUnit | enumeration | 1,1 |

## 17.34 Weather Resource

**Definition** : Links for relevant weather related information.

**CamelCase** : weatherResource

**Alias** :

**Remarks** :

**Sub-attributes** :

| Sub-Attribute | Type | Multiplicity |
|---|---|---|
| onlineResource | Complex | 0,1 |
| dynamicResource | enumeration | 0,1 |
| textContent | Complex | 0,1 |