S-57 Appendix A
IHO Object Catalogue

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Important notice

All “Clarifications” in the latest Edition of the Maintenance Document must be taken into account before making use of this document.

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Introduction

The Object Catalogue is the data schema for "S-57 - The IHO Transfer Standard for Digital Hydrographic Data". Its primary function is to provide a means of describing real world entities. That is entities which actually exist (either physically such as a beacon or legally such as an anchorage area) in the real world. The Object Catalogue is based on the theoretical model described in Part 2 of this Standard. The model assumes that real world entities can be categorized into a finite number of types, such as lights, wrecks, built up areas etc. These entity types are termed feature object classes in the Object Catalogue. An instance of a feature object class, referred to as a feature object, (that is one specific light or wreck or built up area) can be more precisely described by assigning to it a number of attributes and then specifying values for those attributes. A particular real world entity is encoded by specifying the appropriate feature object class, attributes and attribute values. For example, a red lateral buoy would be encoded as follows:- feature object class: buoy lateral; attribute: colour; attribute value: red.

The data model defines four types of feature object:

Geo containing the descriptive characteristics of a real world entity.

Meta containing information about other objects (eg. compilation scale, vertical datum).

Collection containing information about the relationships between other objects.

Cartographic containing information about the cartographic representation of a real world entity.

Chapter 1 contains a description of each feature object class. This includes a definition of the class and a list of the attributes that are allowed for that class. Instructions on how to interpret the information associated with each feature object class are given in the introduction to Chapter 1.

The Object Catalogue does not mandate the use of any attributes. However, for each instance of a feature object, a particular attribute may only be used once. In general terms it is up to the encoder to select from the appropriate list the attributes that are relevant to a particular object instance. However, for some applications, certain attributes may be designated as mandatory for specific object classes. These attributes will be listed in the appropriate product specification (see S-57 Appendix B).

A description of each attribute is contained in Chapter 2. This includes a definition of the attribute and, where appropriate, a list of allowable values, also with definitions. Instructions on how to interpret the information associated with each attribute are given in the introduction to Chapter 2.

For the purposes of backward compatibility, changes from edition 2.0 of S-57 have been emphasized in the table of contents by striking out object classes or attributes that have been deleted and by marking those that have been added in the margin. In addition, pages in the Object Catalogue relating to deleted object classes or attributes have been retained with the remark "DELETED - DO NOT USE". Where a deleted object class or attribute has been replaced by another one, this is specified at the bottom of the page in bold characters.

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S-57 Appendix A

Chapter 1 - Object Classes

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Important notice

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1.1 Introduction

Each object class is specified in a standardized way, under the following headings:

- Object Class: object class name
- Acronym: six-character code for the object class
- Code: integer code to be used in the coding of data
- For each object class the set of relevant attributes is defined. This set is divided into three subsets:

  * subset ‘Attribute_A’: Attributes in this subset define the individual characteristics of an object;

  * subset ‘Attribute_B’: Attributes in this subset provide information relevant to the use of the data, e.g. for presentation or for an information system;

  * subset ‘Attribute_C’: Attributes in this subset provide administrative information about the object and the data describing it;

  Each subset shows a list of ASCII attribute acronyms. For the description of each attribute see Chapter 2.

- Definition: Where possible each object class is defined and the source of the definition is quoted.
- References:

  * INT 1: reference to the number of the paper chart feature in the ‘International Chart Series INT 1 - Symbols, Abbreviations, Terms used on Charts’. INT 1 was one of the major guidelines for the definition of object classes.

  * M-4: reference to the paragraph number in the ‘Chart Specifications of the IHO’, publication M-4. This was another guideline used in the definition and description of object classes.

- Remarks: Under ‘Remarks’ further comments and notes are given. Related but separate object classes are listed under the heading ‘Distinction’.

1.2 Geo Object Classes

GEO OBJECT CLASSES

Object Class: **Administration Area (Named)**

Acronym: **ADMARE** Code: **1**

Set Attribute_A: JRSDTN; NATION; NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A defined (and possibly named) administrative area.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

Distinction : land region; contiguous zone; continental shelf area; exclusive economic zone; fishery zone; territorial sea area;

GEO OBJECT CLASSES

Object Class: **Airport/airfield**

Acronym: **AIRARE** Code: **2**

Set Attribute_A: CATAIR; CONDTN; CONVIS; NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area containing at least one runway, used for landing, take-off, and movement of aircraft.

References:

INT 1: ID 17;

M-4: 366;

Remarks:

Distinction : runway; sea-plane landing area;

GEO OBJECT CLASSES

Object Class: Anchor

DELETED - DO NOT USE

Acronym: ACHPNT

INT 1 Reference: IQ 42;

Chart Specification: 431.6;

Set Attribute_A: DATEND; DATSTA; NOBJNM; OBJNAM; PEREND; PERSTA; QUASOU; STATUS; TECSOU; VALSOU; VERDAT;

Set Attribute_B: INFORM; NINFOM; SCAMAX; SCAMIN;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point;

Definition:

A heavy forging or casting comprising a shank with large shackle or ring at one end and two arms with palms at the other, so shaped as to grip the sea bottom, and by means of a cable or rope hold a vessel, boat, or any other floating structure in a desired position regardless of wind and current. (International Maritime Dictionary, 2nd Ed.)

Remarks:

Distinction: chain/wire;

This object is obsolete. It is only shown here for reasons of backward compatibility. An anchor should be encoded as an obstruction (OBSTRN) with a category of obstruction (CATOBS) value 9.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Anchor berth**

Acronym: **ACHBRT** Code: **3**

Set Attribute_A: CATACH; DATEND; DATSTA; NOBJNM; OBJNAM; PEREND; PERSTA; RADIUS; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A designated area of water where a single vessel, sea plane, etc... may anchor.

Reference:

INT 1: IN 11.1-2;

M-4: 431.2;

Remarks:

In general the anchor berth is defined by the centre point and a swinging circle.

Distinction : anchorage area; berth; mooring/warping facility;

GEO OBJECT CLASSES

Object Class: **Anchorage area**

Acronym: **ACHARE** Code: **4**

Set Attribute_A: CATACH; DATEND; DATSTA; NOBJNM; OBJNAM; PEREND; PERSTA; RESTRN; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area in which vessels anchor or may anchor. (IHO Dictionary, S-32, 5th Edition, 130)

References:

INT 1: IN 12.1-9;

M-4: 431.3;

Remarks:

Distinction: anchor berth; mooring/warping facility;

GEO OBJECT CLASSES

Object Class: **Beacon, cardinal**

Acronym: **BCNCAR** Code: **5**

Set Attribute_A: BCNSHP; CATCAM; COLOUR; COLPAT; CONDTN; CONVIS; CONRAD; DATEND; DATSTA; ELEVAT; HEIGHT; MARSYS; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A beacon is a prominent, specially constructed object forming a conspicuous mark as a fixed aid to navigation or for use in hydrographic survey (IHO Dictionary, S-32, 5th Edition, 420).

A cardinal beacon is used in conjunction with the compass to indicate where the mariner may find the best navigable water. It is placed in one of the four quadrants (North, East, South and West), bounded by inter-cardinal bearings from the point marked. (UKHO NP 735, 5th Edition)

References:

INT 1: IQ 130.3;

M-4: 461;

Remarks:

Topmark, light, fog signal, radar reflector and retro-reflector are separate objects.

Distinction: daymark; beacon lateral; beacon safe water; beacon isolated danger; beacon special purpose/general;

GEO OBJECT CLASSES

Object Class: **Beacon, isolated danger**

Acronym: **BCNISD** Code: **6**

Set Attribute_A: BCNSHP; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; ELEVAT; HEIGHT; MARSYS; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A beacon is a prominent specially constructed object forming a conspicuous mark as a fixed aid to navigation or for use in hydrographic survey (IHO Dictionary, S-32, 5th Edition, 420).

An isolated danger beacon is a beacon erected on an isolated danger of limited extent, which has navigable water all around it. (UKHO NP735, 5th Edition)

References:

INT 1: IQ 130.4;

M-4: 463.1;

Remarks:

Topmark, light, fog signal, radar reflector and retro-reflector are separate objects.

Distinction: daymark; beacon lateral; beacon safe water; beacon cardinal; beacon special purpose/general;

GEO OBJECT CLASSES

Object Class: **Beacon, lateral**

Acronym: **BCNLAT** Code: **7**

Set Attribute_A: BCNSHP; CATLAM; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; ELEVAT; HEIGHT; MARSYS; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A beacon is a prominent specially constructed object forming a conspicuous mark as a fixed aid to navigation or for use in hydrographic survey (IHO Dictionary, S-32, 5th Edition, 420).

A lateral beacon is used to indicate the port or starboard hand side of the route to be followed. They are generally used for well defined channels and are used in conjunction with a conventional direction of buoyage. (UKHO NP 735, 5th Edition)

References:

INT 1: IQ 91-92, 130.1;

M-4: not specified;

Remarks:

Topmark, light, fog signal, radar reflector and retro-reflector are separate objects.

Distinction: daymark; beacon cardinal; beacon safe water; beacon isolated danger; beacon special purpose/general;

GEO OBJECT CLASSES

Object Class: **Beacon, safe water**

Acronym: **BCNSAW** Code: **8**

Set Attribute_A: BCNSHP; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; ELEVAT; HEIGHT; MARSYS; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A safe water beacon is a prominent specially constructed object forming a conspicuous mark as a fixed aid to navigation or for use in hydrographic survey (IHO Dictionary, S-32, 5th Edition, 420).

A safe water beacon may be used to indicate that there is navigable water around the mark. (UKHO NP735, 5th Edition)

References:

INT 1: IQ 130.5;

M-4: 456.4;

Remarks:

Topmark, light, fog signal, radar reflector and retro-reflector are separate objects.

Distinction: daymark; beacon cardinal; beacon lateral; beacon isolated danger; beacon special purpose/general;

GEO OBJECT CLASSES

Object Class: **Beacon, special purpose/general**

Acronym: **BCNSPP** Code: **9**

Set Attribute_A: BCNSHP; CATSPM; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; ELEVAT; HEIGHT; MARSYS; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A beacon is a prominent specially constructed object forming a conspicuous mark as a fixed aid to navigation or for use in hydrographic survey (IHO Dictionary, S-32, 5th Edition, 420).

A special purpose beacon is primarily used to indicate an area or feature, the nature of which is apparent from reference to a chart, Sailing Directions or Notices to Mariners. (UKHO NP 735, 5th Edition)

Beacon in general: A beacon whose appearance or purpose is not adequately known.

References:

INT 1: IQ 130.6;

M-4: 456.4;

Remarks:

Topmark, light, fog signal, radar reflector and retro-reflector are separate objects.

Distinction: daymark; beacon lateral; beacon safe water; beacon isolated danger; beacon cardinal; distance mark;

GEO OBJECT CLASSES

Object Class: **Berth**

Acronym: **BERTHS** Code: **10**

Set Attribute_A: DATEND; DATSTA; DRVAL1; NOBJNM; OBJNAM; PEREND; PERSTA; QUASOU; SOUACC; STATUS; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A named or numbered place where a vessel is moored at a wharf. (IHO Dictionary, S-32, 5th Edition, 470)

References:

INT 1: IF 19;

M-4: 321.1;

Remarks:

Distinction: anchor berth; dock area; mooring/warping facility; shoreline construction;

GEO OBJECT CLASSES

Object Class: Berthing facility

DELETED - DO NOT USE

Acronym: BRTFAC

INT 1 Reference: IF 13;

Chart Specification: 321.1;

Set Attribute_A: CONDTN; DATEND; DATSTA; NATCON; NOBJNM; OBJNAM; STATUS; WATLEV;

Set Attribute_B: INFORM; NINFOM; SCAMAX; SCAMIN;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point; Line; Area;

Definition:

The designated
- length along the limit of land area or along a shoreline construction
- area at a dolphin

where a ship may be tied on and may safely lie.

Remarks:

Distinction: dock area;

This object is obsolete. It is only shown here for reasons of backward compatibility. A berthing facility should be encoded as a berth (BERTHS).

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Bridge**

Acronym: **BRIDGE** Code: **11**

Set Attribute_A: CATBRG; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; HORACC; HORCLR; NATCON; NOBJNM; OBJNAM;; VERACC; VERCCL; VERCLR; VERCOP; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A structure erected over a depression or an obstacle such as a body of water, railroad, etc... to provide a roadway for vehicles, pedestrians or to carry utility services. (IHO Dictionary, S-32, 5th Edition, 544)

References:

INT 1: ID 20, 21, 22, 23.1-6, 24;

M-4: 381.1-3;

Remarks:

A bridge may consist of portions which cover the land and the water.

The bridge supports are encoded as pylon/bridge supports (PYLONS).

Distinction: pylon/bridge support;

GEO OBJECT CLASSES

Object Class: Building, religious

DELETED - DO NOT USE

Acronym: BUIREL

INT 1:	IE 10.1-10.4, 13-18;
M-4:	373.1-5;
Set Attribute_A:	BUISHP; CATREB; COLOUR; CONDTN; CONRAD; CONVIS; HEIGHT; NATCON; NOBJNM; OBJNAM; QUAVEM; VERDAT; VERLEN;
Set Attribute_B:	INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;
Set Attribute_C:	RECDAT; RECIND; SORDAT; SORIND;
Geometric Primitive:	Point; Area;

Definition:

A structure designed for religious use.

Remarks:

Distinction: building, single;

This object is obsolete. It is only shown here for reasons of backward compatibility. A religious building should be encoded as a single building (BUISGL) with an appropriate function (FUNCTN) value.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Building, single**

Acronym: **BUISGL** Code: **12**

Set Attribute_A: BUISHP; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; ELEVAT; FUNCTN; HEIGHT; NATCON; NOBJNM; OBJNAM; STATUS; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A relatively permanent structure, roofed and usually walled. It is designed for some particular use which it may be important to indicate. (Digital Geographic Information Working Group, Oct.87)

References:

INT 1: ID 5-6, 13; IE 10.1, 10.3, 11, 13-18, 28-30.1; IF 51, 60-63;

M-4: 325.1-3; 328.1; 362.2; 370.3,5; 372.1; 373.1-4; 375.1,2; 487.3;

Remarks:

This object class is used to encode single buildings, including those with a particular function or service of major interest.

Distinction: built-up area; coastguard station; landmark; rescue station;

GEO OBJECT CLASSES

Object Class: **Built-up area**

Acronym: **BUAARE** Code: **13**

Set Attribute_A: CATBUA; CONDTN; CONRAD; CONVIS; HEIGHT; NOBJNM; OBJNAM; VERACC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area containing a concentration of buildings and the supporting road or rail infrastructure.

References:

INT 1: ID 1-4;

M-4: 370.3-4; 370.6-7;

Remarks:

Distinction: building, single; road; square;

GEO OBJECT CLASSES

Object Class: **Buoy, cardinal**

Acronym: **BOYCAR** Code: **14**

Set Attribute_A: BOYSHP; CATCAM; COLOUR; COLPAT; CONRAD; DATEND; DATSTA; MARSYS; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A buoy is a floating object moored to the bottom in a particular place, as an aid to navigation or for other specific purposes. (IHO Dictionary S-32 5th Edition, 565).

A cardinal buoy is used in conjunction with the compass to indicate where the mariner may find the best navigable water. It is placed in one of the four quadrants (North, East, South and West), bounded by inter-cardinal bearings from the point marked. (UKHO NP 735, 5th Edition)

References:

INT 1: IQ 130.3;

M-4: 461; 462.5, 462.6;

Remarks:

Topmark, light, fog signal, radar reflector and retro-reflector are separate objects.

Distinction: buoy lateral; buoy safe water; buoy isolated danger; buoy special purpose/general; mooring/warping facility;

GEO OBJECT CLASSES

Object Class: **Buoy, installation**

Acronym: **BOYINB** Code: **15**

Set Attribute_A: BOYSHP; CATINB; COLOUR; COLPAT; CONRAD; DATEND; DATSTA; MARSYS; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; PRODCT; STATUS; VERACC; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A buoy is a floating object moored to the bottom in a particular place, as an aid to navigation or for other specific purposes. (IHO Dictionary, S-32, 5th Edition, 565).

An installation buoy is a buoy used for loading tankers with gas or oil. (IHO Chart Specifications, M-4)

References:

INT 1: IL 16

M-4: 445.4;

Remarks:

Distinction: buoy special purpose/general; mooring/warping facility; offshore platform;

GEO OBJECT CLASSES

Object Class: **Buoy, isolated danger**

Acronym: **BOYISD** Code: **16**

Set Attribute_A: BOYSHP; COLOUR; COLPAT; CONRAD; DATEND; DATSTA; MARSYS; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A buoy is a floating object moored to the bottom in a particular place, as an aid to navigation or for other specific purposes. (IHO Dictionary, S-32, 5th Edition, 565).

A isolated danger buoy is a buoy moored on or above an isolated danger of limited extent, which has navigable water all around it. (UKHO NP735, 5th Edition)

References:

INT 1: IQ 130.4;

M-4: 461;

Remarks:

Topmark, light, fog signal, radar reflector and retro-reflector are separate objects.

Distinction: buoy lateral; buoy safe water; buoy cardinal; buoy special purpose/general; mooring/warping facility;

GEO OBJECT CLASSES

Object Class: **Buoy, lateral**

Acronym: **BOYLAT** Code: **17**

Set Attribute_A: BOYSHP; CATLAM; COLOUR; COLPAT; CONRAD; DATEND; DATSTA; MARSYS; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A buoy is a floating object moored to the bottom in a particular place, as an aid to navigation or for other specific purposes. (IHO Dictionary, S-32, 5th Edition, 565).

A lateral buoy is used to indicate the port or starboard hand side of the route to be followed. They are generally used for well defined channels and are used in conjunction with a conventional direction of buoyage. (UKHO NP 735, 5th Edition)

References:

INT 1: IQ 130.1;

M-4: 461;

Remarks:

Topmark, light, fog signal, radar reflector and retro-reflector are separate objects.

Distinction: buoy cardinal; buoy safe water; buoy isolated danger; buoy special purpose/general; mooring/warping facility;

GEO OBJECT CLASSES

Object Class: **Buoy, safe water**

Acronym: **BOYSAW** Code: **18**

Set Attribute_A: BOYSHP; COLOUR; COLPAT; CONRAD; DATEND; DATSTA; MARSYS; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A buoy is a floating object moored to the bottom in a particular place, as an aid to navigation or for other specific purposes. (IHO Dictionary, S-32, 5th Edition, 565).

A safe water buoy is used to indicate that there is navigable water around the mark. (UKHO NP735, 5th Edition)

References:

INT 1: IQ 130.5;

M-4: 461;

Remarks:

A safe water mark may be used as a centerline, mid-channel or landfall buoy, or to indicate the best point of passage under a fixed bridge.

Topmark, light, fog signal, radar reflector and retro-reflector are separate objects.

Distinction: buoy cardinal; buoy lateral; buoy isolated danger; buoy special purpose/general; mooring/warping facility;

GEO OBJECT CLASSES

Object Class: **Buoy, special purpose/general**

Acronym: **BOYSPP** Code: **19**

Set Attribute_A: BOYSHP; CATSPM; COLOUR; COLPAT; CONRAD; DATEND; DATSTA; MARSYS; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A buoy is a floating object moored to the bottom in a particular place, as an aid to navigation or for other specific purposes. (IHO Dictionary, S-32, 5th Edition, 565).

A special purpose buoy is primarily used to indicate an area or feature, the nature of which is apparent from reference to a chart, Sailing Directions or Notices to Mariners. (UKHO NP 735, 5th Edition)

Buoy in general: A buoy whose appearance or purpose is not adequately known.

References:

INT 1: IQ 130.6;

M-4: 461;

Remarks:

Topmark, light, fog signal, radar reflector and retro-reflector are separate objects.

Distinction: buoy lateral; buoy safe water; buoy isolated danger; buoy cardinal; buoy installation; mooring/warping facility;

GEO OBJECT CLASSES

Object Class: **Cable area**

Acronym: **CBLARE** Code: **20**

Set Attribute_A: CATCBL; DATEND; DATSTA; NOBJNM; OBJNAM; RESTRN; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area which contains one or more submarine cables.

References:

INT 1: IL 30.2, 31.2

M-4: 439.3; 443.2;

Remarks:

Distinction: cable, overhead; cable, submarine;

GEO OBJECT CLASSES

Object Class: **Cable, overhead**

Acronym: **CBLOHD** Code: **21**

Set Attribute_A: CATCBL; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; ICEFAC; NOBJNM; OBJNAM; STATUS; VERACC; VERCLR; VERCSA; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An overhead cable is an assembly of wires or fibres, or a wire rope or chain, which is supported by structures such as poles or pylons and passing over or nearby navigable waters. (Hydrographic Service, Royal Australian Navy).

References:

INT 1: ID 26, 27

M-4: 382; 382.1-2;

Remarks:

The cable supports are encoded as pylon/bridge supports (PYLONS).

Distinction: cable area; cable, submarine; conveyor; pylon/bridge support;

GEO OBJECT CLASSES

Object Class: **Cable, submarine**

Acronym: **CBLSUB** Code: **22**

Set Attribute_A: BURDEP; CATCBL; CONDTN; DATEND; DATSTA; DRVAL1; DRVAL2; NOBJNM; OBJNAM; STATUS; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An assembly of wires or fibres, or a wire rope or chain which has been laid underwater or buried beneath the seabed (Hydrographic Service, Royal Australian Navy)

References:

INT 1: IL 30.1, 31.1, 32

M-4: 443.1; 443.3; 443.7;

Remarks:

Distinction: cable, overhead; cable area;

GEO OBJECT CLASSES

Object Class: Cairn

DELETED - DO NOT USE

Acronym: CAIRNS

INT 1: IQ 100;

M-4: 456.2;

Set Attribute_A: COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; HEIGHT; NOBJNM; OBJNAM; QUAVEM; STATUS; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point; Area;

Definition:

A mound of stones, usually conical or pyramidal, raised as a landmark or to designate a point of importance in surveying. (IHO Dictionary, S-32, 4th Edition)

Remarks:

If a cairn bears the colour(s) specified by a navigational mark system, it is to be encoded as a beacon.

This object is obsolete. It is only shown here for reasons of backward compatibility. A cairn should be encoded as a landmark (LNDMRK) with a category of landmark (CATLMK) value 1.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Canal**

Acronym: **CANALS** Code: **23**

Set Attribute_A: CATCAN; CONDTN; DATEND; DATSTA; HORACC; HORCLR; HORWID; NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An artificial waterway with no flow, or a controlled flow, used for navigation, or for draining or irrigating land (ditch). (United States Geological Survey, Jan.89)

References:

INT 1: IF 40;

M-4: 361.6;

Remarks:

The object ‘canal’ describes the area of the canal, the object ‘canal bank’ the banks.

Distinction: canal bank; river; lake; tideway;

GEO OBJECT CLASSES

Object Class: **Canal bank**

Acronym: **CANBNK** Code: **24**

Set Attribute_A: CONDTN; DATEND; DATSTA; NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The limit line between the water area of a canal and the area of land.

References:

INT 1: IF 40;

M-4: 361.6;

Remarks:

Distinction: canal; coastline; lake shore; river bank; shoreline construction;

GEO OBJECT CLASSES

Object Class: **Cargo transhipment area**

Acronym: **CTSARE** Code: **25**

Set Attribute_A: DATEND; DATSTA; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area designated for the transfer of cargo from one vessel to another. (adapted from IHO Dictionary, S-32, 5th Edition, 5593).

References:

INT 1: IN 64;

M-4: 449.4;

Remarks:

The transhipment of cargo is often known as ‘lightering’ and the area may be known as ‘lightering area’ or ‘cargo transfer area’. (IHO Chart Specifications, M-4)

Distinction: dock area; harbour area (administrative); harbour facility;

GEO OBJECT CLASSES

Object Class: **Causeway**

Acronym: **CAUSWY** Code: **26**

Set Attribute_A: CONDTN; NATCON; NOBJNM; OBJNAM; STATUS; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A raised way across low or wet ground or water. (IHO Dictionary, S-32, 5th Edition, 662)

References:

INT 1: IF 3;

M-4: 313.3;

Remarks:

Distinction: dam; road;

GEO OBJECT CLASSES

Object Class: **Caution area**

Acronym: **CTNARE** Code: **27**

Set Attribute_A: DATEND; DATSTA; PEREND; PERSTA;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Generally, an area where the mariner has to be made aware of circumstances influencing the safety of navigation.

References:

INT 1: IM 29.2;

M-4: not specified;

Remarks:

This object class may be required to identify:

- a danger
- a risk
- a rule
- advice

which is not directly related to a specific object.

Distinction: wrecks; underwater rocks; obstructions; unsurveyed area;

GEO OBJECT CLASSES

Object Class: Cemetery

DELETED - DO NOT USE

Acronym: CEMTRY

Set Attribute_A: CONDTN; CONVIS; NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area of land for burying the dead with two or more graves. (United States Geological Survey, Jan.89)

References:

INT 1: IE 19;

M-4: 373.6;

Remarks:

No remarks

This object is obsolete. It is only shown here for reasons of backward compatibility. A cemetery should be encoded as a landmark (LNDMRK) with a category of landmark (CATLMK) value 2.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: Chain/Wire

DELETED - DO NOT USE

Acronym: CHNWIR

INT 1: IQ 42;

M-4: 431.6;

Set Attribute_A: DATEND; DATSTA; PEREND; PERSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Line;

Definition:

A connection between two independent objects, e.g.
- between an anchor and a mooring buoy
- between an anchor and an offshore platform
- between a hulk and a bollard on land
- etc.

Remarks:

Distinction: anchor;

This object is obsolete. It is only shown here for reasons of backward compatibility. A chain/wire should be encoded either as a cable (CBLSUB) with a category of cable (CATCBL) value 6, or as a mooring/warping facility (MORFAC) with a category of mooring/warping facility (CATMOR) value 6.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Checkpoint**

Acronym: **CHKPNT** Code: **28**

Set Attribute_A: CATCHP; NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An official place to register, declare or check goods and people.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

The object ‘checkpoint’ does not include facilities such as buildings, gates or other installations.

Distinction: custom zone;

GEO OBJECT CLASSES

Object Class: Chimney

DELETED - DO NOT USE

Acronym: CHIMNY

INT 1:	IE 22;
M-4:	374.1;
Set Attribute_A:	COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; HEIGHT; NATCON; NOBJNM; OBJNAM; QUAVEM; VERDAT; VERLEN;
Set Attribute_B:	INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;
Set Attribute_C:	RECDAT; RECIND; SORDAT; SORIND;
Geometric Primitive:	Point; Area;

Definition:

A chimney is a vertical structure containing a passage or flue for discharging smoke and gases of combustion. (Digital Geographic Information Working Group, Oct.87)

Remarks:

Where a chimney carries a light, the light should be encoded as a separate object.

This object is obsolete. It is only shown here for reasons of backward compatibility. A chimney should be encoded as a landmark (LNDMRK) with a category of landmark (CATLMK) value 3.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Coastguard station**

Acronym: **CGUSTA** Code: **29**

Set Attribute_A: DATEND; DATSTA; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Watch keeping stations at which a watch is kept either continuously, or at certain times only. (IHO Chart Specifications, M-4)

References:

INT 1: IT 10;

M-4: 492;

Remarks:

This object class is used to describe the function of the coastguard rather than the building in which the coastguard is sited.

Distinction: building, single; rescue station;

GEO OBJECT CLASSES

Object Class: **Coastline**

Acronym: **COALNE** Code: **30**

Set Attribute_A: CATCOA; COLOUR; CONRAD; CONVIS; ELEVAT; NOBJNM; OBJNAM; VERACC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The line where shore and water meet. Although the terminology of coasts and shores is rather confused, shoreline and coastline are generally used as synonyms. (IHO Dictionary, S-32, 5th Edition, 858,4695)

References:

INT 1: IC 1-8, 32-33;

M-4: 310; 312.1-4;

Remarks:

Distinction: canal bank; lake shore; river bank; shoreline construction;

GEO OBJECT CLASSES

Object Class: **Contiguous zone**

Acronym: **CONZNE** Code: **31**

Set Attribute_A: DATEND; DATSTA; NATION; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A zone contiguous to a coastal State's territorial sea, which may not extend beyond 24 nautical miles from the baselines from which the breadth of the territorial sea is measured. The coastal state may exercise certain control in this zone subject to the provisions of International Law. (IHO Dictionary, S-32, 5th Edition, 993)

References:

INT 1: IN 44;

M-4: 440.6;

Remarks:

Distinction: administrative area; continental area; exclusive economic zone; fishing zone; territorial sea area;

GEO OBJECT CLASSES

Object Class: **Continental shelf area**

Acronym: **COSARE** Code: **32**

Set Attribute_A: NATION; NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The continental shelf of a coastal State comprises the sea bed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend out to that distance. (IHO Publication S-51)

References:

INT 1: IN 46;

M-4: 440.8;

Remarks:

Distinction: administrative area; contiguous zone; exclusive economic zone; fishery zone; territorial sea area;

GEO OBJECT CLASSES

Object Class: **Control point**

Acronym: **CTRPNT** Code: **33**

Set Attribute_A: CATCTR; DATEND; DATSTA; ELEVAT; NOBJNM; OBJNAM; VERACC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A point on the ground where position (horizontal and vertical) is used as a base for a dependent survey. Also referred to as a control station. (IHO Dictionary, S-32, 5th Edition, 1026)

References:

INT 1: IB 20-24;

M-4: 304.1-3; 305.1; 306;

Remarks:

No remarks.

GEO OBJECT CLASSES

Object Class: **Conveyor**

Acronym: **CONVYR** Code: **34**

Set Attribute_A: CATCON; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; HEIGHT; LIFCAP; NOBJNM; OBJNAM; PRODCT; STATUS; VERACC; VERCLR; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A mechanical apparatus for moving bulk material or people from place to place (as by a moving belt or chain of receptacles).

References:

INT 1: ID25;

M-4: 382.3;

Remarks:

The conveyor supports are encoded as pylon/bridge supports (PYLONS).

Distinction: cable, overhead; pylon/bridge support;

GEO OBJECT CLASSES

Object Class: **Crane**

Acronym: **CRANES** Code: **35**

Set Attribute_A: CATCRN; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; HEIGHT; LIFCAP; NOBJNM; OBJNAM; ORIENT; RADIUS; STATUS; VERACC; VERCLR; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A machine for lifting, shifting and lowering objects or materials by means of a swinging boom or with a lifting apparatus supported on an overhead track. (Digital Geographic Information Working Group, Oct.87)

References:

INT 1: IF 53.1-3;

M-4: 328.3;

Remarks:

The position of a sheerlegs or a travelling crane is defined as its resting position.

GEO OBJECT CLASSES

Object Class: **Current - non-gravitational**

Acronym: **CURENT** Code: **36**

Set Attribute_A: CURVEL; DATEND; DATSTA; NOBJNM; OBJNAM; ORIENT; PEREND; PERSTA;

Set Attribute_B: INFORM; NINFOM; SCAMAX; SCAMIN;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Currents (non-gravitational) include either singly or in combination: ocean currents (wind and/or density driven), inter-oceanic equalising currents, currents of navigable rivers, river outflow effects offshore and other non-tidal flows.

References:

INT 1: IH 42-43;

M-4: 408.2-3;

Remarks:

Distinction: tidal stream - harmonic prediction; tidal stream - non-harmonic prediction; tidal stream panel data; tidal stream - time series;

GEO OBJECT CLASSES

Object Class: **Custom zone**

Acronym: **CUSZNE** Code: **37**

Set Attribute_A: NATION;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The area within which national custom regulations are in force.

References:

INT 1: IN 48;

M-4: 440.2;

Remarks:

Distinction: check point; free port area;

GEO OBJECT CLASSES

Object Class: **Dam**

Acronym: **DAMCON** Code: **38**

Set Attribute_A: CATDAM; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; HEIGHT; NATCON; NOBJNM; OBJNAM; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A barrier to check or confine anything in motion; particularly one constructed to hold back water and raise its level to form a reservoir, or to prevent flooding. (IHO Dictionary, S-32, 5th Edition, 1196)

References:

INT 1: IF 44

M-4: 364.2;

Remarks:

Distinction: causeway; dyke; road;

GEO OBJECT CLASSES

Object Class: **Daymark**

Acronym: **DAYMAR** Code: **39**

Set Attribute_A: CATSPM; COLOUR; COLPAT; DATEND; DATSTA; ELEVAT; HEIGHT; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; TOPSHP; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The identifying characteristics of an aid to navigation which serve to facilitate its recognition against a daylight viewing background. On those structures that do not by themselves present an adequate viewing area to be seen at the required distance, the aid is made more visible by affixing a daymark to the structure. A daymark so affixed has a distinctive colour and shape depending on the purpose of the aid. (IHO Dictionary, S-32, 5th Edition, 1248)

References:

INT 1: IQ 101;

M-4: 456.2;

Remarks:

Distinction: beacon, lateral; beacon, safe water; beacon, isolated danger; beacon, cardinal; beacon special purpose/general; topmark;

GEO OBJECT CLASSES

Object Class: **Deep water route centerline**

Acronym: **DWRTCL** Code: **40**

Set Attribute_A: CATTRK; DATEND; DATSTA; DRVAL1; DRVAL2; NOBJNM; OBJNAM; ORIENT; QUASOU; SOUACC; STATUS; TECSOU; TRAFIC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A deep water route is a route in a designated area, within defined limits, which has been accurately surveyed for clearance of sea bottom and submerged obstacles to a minimum indicated depth of water. (IHO Dictionary, S-32, 5th Edition, 1280)

The deep water route centerline indicates the centerline of a route, the width of which is not explicitly defined.

References:

INT 1: IM 27.3;

M-4: 435.3;

Remarks:

Additional information can be found in IHO Technical Resolution A1.17.

Distinction: deep water route part;

GEO OBJECT CLASSES

Object Class: **Deep water route part**

Acronym: **DWRTPT** Code: **41**

Set Attribute_A: DATEND; DATSTA; DRVAL1; DRVAL2; NOBJNM; OBJNAM; ORIENT; QUASOU; RESTRN; SOUACC; STATUS; TECSOU; TRAFIC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A deep water route is a route in a designated area, within defined limits, which has been accurately surveyed for clearance of sea bottom and submerged obstacles to a minimum indicated depth of water. (IHO Dictionary, S-32, 5th Edition, 1280)

References:

INT 1: IM 27.1-2;

M-4: 435, 435.3; 436.3;

Remarks:

The complete deep water route consists of one or more parts depending on the shape of the deep water route.

The orientation of the route part is defined by the middle line of the part relating to the general direction of the deep water route.

Additional information can be found in IHO Technical Resolution A1.17.

Distinction: deep water route centerline; two way route part;

GEO OBJECT CLASSES

Object Class: **Depth area**

Acronym: **DEPARE** Code: **42**

Set Attribute_A: DRVAL1; DRVAL2; QUASOU; SOUACC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A depth area is a water area whose depth is within a defined range of values.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

Intertidal areas are encoded as depth areas. These do not have to include soundings.

The depth range within a depth area is defined by the attributes ‘DRVAL1’ and ‘DRVAL2’.

Distinction: depth contour; dredged area; sounding; obstruction; sea area/named water area; unsurveyed area; wreck;

GEO OBJECT CLASSES

Object Class: **Depth contour**

Acronym: **DEPCNT** Code: **43**

Set Attribute_A: VALDCO; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A line connecting points of equal water depth which is sometimes significantly displaced outside of soundings, symbols and other chart detail for clarity as well as generalization. Depth contours, therefore, often represent an approximate location of the line of equal depth as related to the surveyed line delineated on the source. Also referred to as depth curve. (IHO Dictionary, S-32, 5th Edition, 1314, 1315)

References:

INT 1: II 15, 30, 31;

M-4: 404.2; 410; 411, 411.2; 413-413.2;

Remarks:

Drying contours are encoded with negative values.

Distinction: sounding; depth area; coastline;

GEO OBJECT CLASSES

Object Class: Diffuser

DELETED - DO NOT USE

Acronym: DIFFUS

INT 1: IL 43;

M-4: not specified

Set Attribute_A: CONDTN; DATEND; DATSTA; EXPSOU; PRODCT; QUASOU; SOUACC; TECSOU; VALSOU; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point; Area;

Definition:

An artificial installation at or below water level, where liquids (e.g. cooling water, spillage) are spread out.

Remarks:

No remarks

This object is obsolete. It is only shown here for reasons of backward compatibility. A diffuser should be encoded as an obstruction (OBSTRN) with a category of obstruction (CATOBS) value 3.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: Dish aerial

DELETED - DO NOT USE

Acronym: DSHAER

INT 1: IE 31;

M-4: 375.4;

Set Attribute_A: COLOUR; CONDTN; CONRAD; CONVIS; HEIGHT; NOBJNM; OBJNAM; QUAVEM; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point;

Definition:

A parabolic aerial for the receipt and transmission of high frequency radio signals. (IHO Dictionary, S-32, 4th Edition)

Remarks:

No remarks

This object is obsolete. It is only shown here for reasons of backward compatibility. A dish aerial should be encoded as a landmark (LNDMRK) with a category of landmark (CATLMK) value 4.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Distance mark**

Acronym: **DISMAR** Code: **44**

Set Attribute_A: CATDIS; DATEND; DATSTA; NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A distance mark indicates the distance measured from an origin and consists of either a solid visible structure or a distinct location without special installation. Usually found on canals.

References:

INT 1: IF 40;

M-4: 361.3; 307;

Remarks:

Distinction: beacon, special purpose;

GEO OBJECT CLASSES

Object Class: **Dock area**

Acronym: **DOCARE** Code: **45**

Set Attribute_A: CATDOC; CONDTN; DATEND; DATSTA; HORACC; HORCLR; NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A dock is an artificially enclosed area within which ships may moor and which may have gates to regulate water level (adapted from IHO Chart Specifications, M-4).

Reference:

INT 1: IF 27,28;

M-4: 326.3-4;

Remarks:

Distinction: harbour area (administrative); cargo transhipment area; berth; harbour facility; gate; floating dock; dry dock;

GEO OBJECT CLASSES

Object Class: **Dredged area**

Acronym: **DRGARE** Code: **46**

Set Attribute_A: DRVAL1; DRVAL2; NOBJNM; OBJNAM; QUASOU; RESTRN; SOUACC; TECSOU; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area of the bottom of a body of water which has been deepened by dredging. (IHO Dictionary, S-32, 5th Edition, 1462)

References:

INT 1: II 20-23;

M-4: 414.1-2; 414.4;

Remarks:

Distinction: depth area; dumping ground; swept area;

GEO OBJECT CLASSES

Object Class: **Dry dock**

Acronym: **DRYDOC** Code: **47**

Set Attribute_A: CONDTN; DRVAL1; HORACC; HORCLR; HORLEN; HORWID; NOBJNM; OBJNAM; QUASOU; SOUACC; STATUS; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

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. (IHO Dictionary, S-32, 5th Edition, 1426)

Remarks:

INT 1: IF 25;

M-4: 326.1;

Distinction: floating dock; gate; dock area; shoreline construction;

GEO OBJECT CLASSES

Object Class: **Dumping ground**

Acronym: **DMPGRD** Code: **48**

Set Attribute_A: CATDPG; NOBJNM; OBJNAM; RESTRN; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A sea area where dredged material or other potentially more harmful material, e.g. explosives, chemical waste, is deliberately deposited. (Derived from IHO Chart Specifications, M-4).

References:

INT 1: IN 23-24, 62.1-2;

M-4: 442.1-4; 446a;

Remarks:

Distinction: dredged area; incineration area;

GEO OBJECT CLASSES

Object Class: Dune

DELETED - DO NOT USE

Acronym: DUNARE

Set Attribute_A: COLOUR; CONRAD; CONVIS; HEIGHT; NATSUR; NATQUA; NOBJNM; OBJNAM; QUAVEM; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A mound, ridge or hill of drifted material on the sea coast or in a desert. (IHO Dictionary, S-32, 4th Edition)

References:

INT 1: IC 8;

M-4: 312.3;

Remarks:

Distinction: sand waves;

This object is obsolete. It is only shown here for reasons of backward compatibility. A dune should be encoded as sloping ground (SLOGRD) with a category of slope (CATSLO) value 3.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Dyke**

Acronym: **DYKCON** Code: **49**

Set Attribute_A: CONDTN; CONRAD; DATEND; DATSTA; HEIGHT; NATCON; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A dyke (or dike) is an artificial embankment to contain or hold back water.(IHO Dictionary, S-32, 5th Edition, 1361)

References:

INT 1: IF 1;

M-4: 313.1;

Remarks:

Distinction: dam; sloping ground; slope top line;

GEO OBJECT CLASSES

Object Class: Dyke area

DELETED - DO NOT USE

Acronym: DYKARE

INT 1 Reference: IF 1;

Chart Specification: 313.1;

Set Attribute_A: CATDYK; CONDTN; NATCON;

Set Attribute_B: INFORM; NINFOM; SCAMAX; SCAMIN;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Area;

Definition:

A dyke (or dike) is an artificial embankment to contain or hold back water. (IHO Dictionary, S-32, 4th Edition)

The dyke area is the base of the dyke.

Remarks:

A system of winter and summer dykes may form an area of polder or koog.

It is necessary to record the dyke base as an area for a complete two-dimensional description of reality.

Distinction: dam; dyke crown;

This object is obsolete. It is only shown here for reasons of backward compatibility. A dyke area should be encoded as a dyke (DYKCON).

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: Dyke crown

DELETED - DO NOT USE

Acronym: DYKCRW

INT 1: IF 1;

M-4: 313.1;

Set Attribute_A: CATDYK; CONDTN; CONRAD; NATCON; NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Line;

Definition:

A dyke (or dike) is an artificial embankment to contain or hold back water.
(IHO Dictionary, S-32, 4th Edition)

The dyke crown is the top line of the dyke.

Remarks:

A system of winter and summer dykes may form an area of polder or koog.

The dyke crown records the third dimension of the dyke. Only the crown of the dyke construction is relevant to Radar.

This object is obsolete. It is only shown here for reasons of backward compatibility. A dyke crown should be encoded as a slope top line (SLOTOP).

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Exclusive economic zone**

Acronym: **EXEZNE** Code: **50**

Set Attribute_A: NATION;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area, not exceeding 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, subject to a specific legal regime established in the United Nations Convention on the Law of the Sea under which the coastal state has certain rights and jurisdiction. (IHO Dictionary, S-32, 5th Edition, 1723)

References:

INT 1: IN 47;

M-4: 440.9;

Remarks:

Distinction: administrative area; contiguous zone; continental shelf area; fishery zone; territorial sea area;

GEO OBJECT CLASSES

Object Class: **Fairway**

Acronym: **FAIRWY** Code: **51**

Set Attribute_A: DATEND; DATSTA; DRVAL1; NOBJNM; OBJNAM; ORIENT; QUASOU; RESTRN; SOUACC; STATUS; TRAFIC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

That part of a river, harbour and so on, where the main navigable channel for vessels of larger size lies. It is also the usual course followed by vessels entering or leaving harbours, called ‘ship channel’. (International Maritime Dictionary, 2nd Ed.)

References:

INT 1: not specified;

M-4: not specified;

Remarks:

Distinction: deep water route centerline; deep water route part; traffic separation scheme lane part;

GEO OBJECT CLASSES

Object Class: **Fence/wall**

Acronym: **FNCLNE** Code: **52**

Set Attribute_A: CATFNC; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; ELEVAT; HEIGHT; NATCON; NOBJNM; OBJNAM; STATUS; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A natural or man-made barrier used as an enclosure or boundary or for protection. (adapted from Digital Geographic Information Working Group, Oct.1987)

References:

INT 1: not specified

M-4: not specified

Remarks:

No remarks.

GEO OBJECT CLASSES

Object Class: **Ferry route**

Acronym: **FERYRT** Code: **53**

Set Attribute_A: CATFRY; DATEND; DATSTA; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A route in a body of water where a ferry crosses from one shoreline to another. (Digital Geographic Information Working Group, Oct.87)

References:

INT 1: IM 50, 51;

M-4: 438.1, 438.2;

Remarks:

No remarks

GEO OBJECT CLASSES

Object Class: Fish haven

DELETED - DO NOT USE

Acronym: FSHHAV

Set Attribute_A: EXPSOU; NOBJNM; OBJNAM; QUASOU; TECSOU; VALSOU; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Areas established by private interests, usually sport fishermen, to simulate natural reefs and wrecks that attract fish. The reefs are constructed by dumping assorted junk in areas which may be of very small extent or may stretch considerable distance along a depth contour. Also called fishery reefs. (IHO Dictionary, S-32, 5th Edition, 1812).

References:

INT 1: IK 46.1-2;

M-4: 447.5;

Remarks:

Distinction: fishing facility; marine farm/culture;

This object is obsolete. It is only shown here for reasons of backward compatibility. A fish haven should be encoded as an obstruction (OBSTRN) with a category of obstruction (CATOBS) value 5.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Fishery zone**

Acronym: **FSHZNE** Code: **54**

Set Attribute_A: NATION; NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The offshore zone in which exclusive fishing rights and management are held by the coastal nation. (IHO Dictionary, S-32, 5th Edition, 1816)

References:

INT 1: IN 45;

M-4: 440.7;

Remarks:

The fishery zone commonly coincides with other zones such as:
- Continental Shelf
- Exclusive Economic Zone.

Distinction: administrative area; contiguous zone; continental shelf area; exclusive economic zone; fishing ground; restricted area; territorial sea area;

GEO OBJECT CLASSES

Object Class: **Fishing facility**

Acronym: **FSHFAC** Code: **55**

Set Attribute_A: CATFIF; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A structure in shallow water for fishing purposes which can be an obstruction to ships in general. The position of these structures may vary frequently over time.

References:

INT 1: IK 44.1-2, 45;

M-4: 447.1-3;

Remarks:

Distinction: marine farm/culture; obstruction;

GEO OBJECT CLASSES

Object Class: **Fishing ground**

Acronym: **FSHGRD** Code: **56**

Set Attribute_A: NOBJNM; OBJNAM; PEREND; PERSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A water area in which fishing is frequently carried on. (IHO Dictionary, S-32, 5th Edition, 1814)

References:

INT 1: not specified;

M-4: not specified;

Remarks:

Distinction: fishery zone;

GEO OBJECT CLASSES

Object Class: Flagstaff/Flagpole

DELETED - DO NOT USE

Acronym: FLGSTF

INT 1: IE 27;

M-4: 374.7;

Set Attribute_A: COLOUR; CONRAD; CONVIS; HEIGHT; NOBJNM; OBJNAM; QUAVEM; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point;

Definition:

A pole on which a flag is hoisted and displayed. (International Maritime Dictionary, 2nd Ed.)

Remarks:

No remarks

This object is obsolete. It is only shown here for reasons of backward compatibility. A flagstaff should be encoded as a landmark (LNDMRK) with a category of landmark (CATLMK) value 5.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: Flare stack

DELETED - DO NOT USE

Acronym: FLASTK

INT 1: IE 23; IL 11;

M-4: 374,1; 445,6;

Set Attribute_A: COLOUR; CONDTN; CONRAD; CONVIS; HEIGHT; NATCON; NOBJNM; OBJNAM; QUAVEM; STATUS; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point; Area;

Definition:

A tall structure used for burning-off waste oil or gas. (IHO Dictionary, S-32, 4th Edition)

Remarks:

A Flare stack is generally located at refineries or at other production installations and it is normally showing a flame.

This object is obsolete. It is only shown here for reasons of backward compatibility. A flare stack should be encoded as a landmark (LNDMRK) with a category of landmark (CATLMK) value 6.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Floating dock**

Acronym: **FLODOC** Code: **57**

Set Attribute_A: COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; DRVAL1; HORACC; HORCLR; HORLEN; HORWID; LIFCAP; NOBJNM; OBJNAM; STATUS; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

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. (IHO Dictionary, S-32, 5th Edition, 1427)

References:

INT 1: IF 26

M-4: 326.2;

Remarks:

Distinction: dry dock; dock area;

GEO OBJECT CLASSES

Object Class: **Fog signal**

Acronym: **FOGSIG** Code: **58**

Set Attribute_A: CATFOG; DATEND; DATSTA; NOBJNM; OBJNAM; SIGFRQ; SIGGEN; SIGGRP; SIGPER; SIGSEQ; STATUS; VALMXR;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A warning signal transmitted by a vessel, or aid to navigation, during periods of low visibility. Also, the device producing such a signal. (IHO Dictionary, S-32, 5th Edition, 1890)

References:

INT 1: IR 1, 10-16, 20-22;

M-4: 452-452.8;

Remarks:

Distinction: signal station, warning;

GEO OBJECT CLASSES

Object Class: **Fortified structure**

Acronym: **FORSTC** Code: **59**

Set Attribute_A: CATFOR; CONDTN; CONRAD; CONVIS; HEIGHT; NATCON; NOBJNM; OBJNAM; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A structure for the military defence of a site.

References:

INT 1: IE 34.1-3;

M-4: 379.1-2;

Remarks:

A fortified structure is often disused, decayed or used for non-defence purpose. Such structures range from major castles and forts to minor lookout posts. (IHO Chart Specifications, M-4)

Distinction: building single;

GEO OBJECT CLASSES

Object Class: **Free port area**

Acronym: **FRPARE** Code: **60**

Set Attribute_A: NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A port where certain import and export duties are waived (unless goods pass into the country) to facilitate reshipment to other countries. (IHO Dictionary, S-32, 5th Edition, 1927)

References:

INT 1: not specified;

M-4: not specified;

Remarks:

Distinction: custom zone; production/storage area;

GEO OBJECT CLASSES

Object Class: **Gate**

Acronym: **GATCON** Code: **61**

Set Attribute_A: CATGAT; CONDTN; DRVAL1; HORACC; HORCLR; NATCON; NOBJNM; OBJNAM; QUASOU; SOUACC; STATUS; VERACC; VERCLR; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A structure that may be swung, drawn, or lowered to block an entrance or passageway. (United States Geological Survey, Jan.89)

References:

INT 1: IF 27, 41.1-2, 42-43;

M-4: 326.3; 326.5; 326.6; 326.7;

Remarks:

This object class is used to encode gates that control the flow of water.

Distinction: dry dock; floating dock;

GEO OBJECT CLASSES

Object Class: **Gridiron**

Acronym: **GRIDRN** Code: **62**

Set Attribute_A: HORACC; HORLEN; HORWID; NATCON; NOBJNM; OBJNAM; STATUS; VERACC; VERLEN; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A ~~timber~~ 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. Also called careening grid. (adapted from IHO Dictionary, S-32, 5th Edition, 649)

References:

INT 1: IF 24;

M-4: 326.8;

Remarks:

No remarks

GEO OBJECT CLASSES

Object Class: **Harbour area (administrative)**

Acronym: **HRBARE** Code: **63**

Set Attribute_A: NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The area over which a harbour authority has jurisdiction.

References:

INT 1: IN 49;

M-4: 430.1;

Remarks:

Distinction: dock area;

GEO OBJECT CLASSES

Object Class: **Harbour facility**

Acronym: **HRBFAC** Code: **64**

Set Attribute_A: CATHAF; CONDTN; DATEND; DATSTA; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A harbour installation with a service or commercial operation of public interest.

References:

INT 1: IF 10, 50; IU 1.1,

M-4: 320.1-2; 321.5; 328.2;

Remarks:

Distinction: small craft facility;

GEO OBJECT CLASSES

Object Class: Hill

DELETED - DO NOT USE

Acronym: HILARE

INT 1: IC 4;

M-4: 312.1;

Set Attribute_A: CONRAD; CONVIS; HEIGHT; NATQUA; NATSUR; NOBJNM; OBJNAM; QUAVEM; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Area;

Definition:

A small isolated elevation, smaller than a mountain. (IHO Dictionary, S-32, 4th Edition)

Remarks:

Distinction: dune;

This object is obsolete. It is only shown here for reasons of backward compatibility. A hill should be encoded as sloping ground (SLOGRD) with a category of slope (CATSLO) value 4.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Hulk**

Acronym: **HULKES** Code: **65**

Set Attribute_A: CATHLK; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; HORACC; HORLEN; HORWID; NOBJNM; OBJNAM; VERACC; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A permanently moored ship.

References:

INT 1: IF 34;

M-4: not specified;

Remarks:

Distinction: wreck;

GEO OBJECT CLASSES

Object Class: **Ice area**

Acronym: **ICEARE** Code: **66**

Set Attribute_A: CATICE; CONVIS; ELEVAT; HEIGHT; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area of ice over land or water.

References:

INT 1: IC 25; IN 60.1-2;

M-4: 353.8; 449.1;

Remarks:

Distinction: depth area; land area;

GEO OBJECT CLASSES

Object Class: **Incineration area**

Acronym: **ICNARE** Code: **67**

Set Attribute_A: NOBJNM; OBJNAM; PEREND; PERSTA; RESTRN; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An offshore area officially designated as suitable for the burning of chemical waste by specially equipped ships. (IHO Dictionary, S-32, 5th Edition, 2408)

References:

INT 1: IN 65;

M-4: 449.3;

Remarks:

Distinction: dumping ground;

GEO OBJECT CLASSES

Object Class: **Inshore traffic zone**

Acronym: **ISTZNE** Code: **68**

Set Attribute_A: CATTSS; DATEND; DATSTA; RESTRN; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A routeing measure comprising a designated area between the landward boundary of a traffic separation scheme and the adjacent coast, to be used in accordance with the provisions of the International Regulations for Preventing Collisions at Sea. (IHO Dictionary, S-32, 5th Edition, 2457)

References:

INT 1: IM 25.1;

M-4: 435.1;

Remarks:

Distinction: traffic separation scheme crossing; traffic separation scheme lane part; traffic separation scheme roundabout; traffic separation zone; precautionary area;

GEO OBJECT CLASSES

Object Class: Intertidal area

DELETED - DO NOT USE

Acronym: ITDARE

INT 1: IJ 20 - 22;

M-4: 426.1 - 3;

Set Attribute_A: NATQUA; NATSUR; NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point; Line; Area;

Definition:

An intertidal zone is the zone generally considered to be between mean high water and mean low water levels. (IHO Dictionary, S-32, 4th Edition)

Remarks:

No remarks

This object is obsolete. It is only shown here for reasons of backward compatibility. Intertidal areas should be coded as depth areas (DEPARE) with negative DRVAL1 and DRVAL2 attributes. The bottom characteristics of intertidal areas should be coded as sea bed areas (SBDARE) using the attribute nature of surface (NATSUR) and qualifying terms of nature of surface (NATQUA).

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Lake**

Acronym: **LAKARE** Code: **69**

Set Attribute_A: ELEVAT; NOBJNM; OBJNAM; VERACC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A large body of water entirely surrounded by land. (IHO Dictionary, S-32, 5th Edition, 2629)

References:

INT 1: IC 23;

M-4: 353.6;

Remarks:

Distinction: canal; depth area; lake shore; river;

GEO OBJECT CLASSES

Object Class: **Lake shore**

Acronym: **LAKSHR** Code: **70**

Set Attribute_A: NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The limit line between the water area of a lake and the area of land.

References:

INT 1: IC 23;

M-4: 353, 353.6;

Remarks:

Distinction: canal bank; coastline; lake area; river bank; shoreline construction;

GEO OBJECT CLASSES

Object Class: **Land area**

Acronym: **LNDARE** Code: **71**

Set Attribute_A: CONDTN; NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The solid portion of the Earth's surface, as opposed to sea, water. (IHO Dictionary, S-32, 5th Edition, 2635)

References:

INT 1: IK 10;

M-4: 421.1;

Remarks:

Distinction: canal; coastline; depth area; lake; land region; river; sea bed area; shoreline construction; vegetation;

GEO OBJECT CLASSES

Object Class: **Land elevation**

Acronym: **LNDELV** Code: **72**

Set Attribute_A: CONVIS; ELEVAT; NOBJNM; OBJNAM; VERACC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An elevation is the vertical distance of a point or a level, on, or affixed to, the surface of the earth, measured from a specified vertical datum. (IHO Dictionary, S-32, 5th Edition, 1590)

References:

INT 1: IC 10-13;

M-4: 351; 352.1-2;

Remarks:

This object class is used to encode both spot heights and land (height) contours.

Distinction: slope top line;

GEO OBJECT CLASSES

Object Class: **Land region**

Acronym: **LNDRGN** Code: **73**

Set Attribute_A: CATLND; NATQUA; NATSUR; NOBJNM; OBJNAM; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area of natural scenery on land. It is defined by its geographical characteristics and may be known by its proper name.

References:

INT 1: IC 24, 26, 33;

M-4: 312.1-4; 355;

Remarks:

Distinction: sea area; land area; vegetation;

GEO OBJECT CLASSES

Object Class: Landing place

DELETED - DO NOT USE

Acronym: LNDPLC

Set Attribute_A: CONDTN; NATCON; NOBJNM; OBJNAM; STATUS; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A landing is a place where boats receive or discharge passengers, freight, etc.. (IHO Dictionary, S-32, 4th Edition)

References:

INT 1: IF 17;

M-4: 324.2;

Remarks:

No remarks

This object is obsolete. It is only shown here for reasons of backward compatibility. A landing place should be encoded as a small craft facility (SMCFAC) with a category of small craft facility (CATSCF) value 28.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: Landing stairs

DELETED - DO NOT USE

Acronym: LNDSTS

Set Attribute_A: CONDTN; NATCON; QUAVEM; VERLEN; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Steps at the shoreline as the connection between land and water on different levels.

References:

INT 1: IF 18

M-4: not specified

Remarks:

No remarks

This object is obsolete. It is only shown here for reasons of backward compatibility. Landing stairs should be encoded as a shoreline construction (SLCONS) with a category of shoreline construction (CATSLC) value 11.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Landmark**

Acronym: **LNDMRK** Code: **74**

Set Attribute_A: CATLMK; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; ELEVAT; FUNCTN; HEIGHT; NATCON; NOBJNM; OBJNAM; STATUS; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A prominent object at a fixed location which can be used in determining a location or a direction. (adapted from IHO Dictionary, S-32, 5th Edition, 2643).

References:

INT 1: ID 5-6, 13; IE 10.1-20, 22-30.1, 30.3-4, 31; IL 11; IQ 100;

M-4: 373.6; 374.1; 374.4; 374.5; 374.6; 374.7; 375.1-2; 375.4; 445.6; 456.2; 487.3;

Remarks:

Distinction: beacon, special purpose/general; building single; daymark; pylon/bridge support; topmark;

GEO OBJECT CLASSES

Object Class: **Light**

Acronym: **LIGHTS** Code: **75**

Set Attribute_A: CATLIT; COLOUR; DATEND; DATSTA; EXCLIT; HEIGHT; LITCHR; LITVIS; MARSYS; MLTYLT; NOBJNM; OBJNAM; ORIENT; PEREND; PERSTA; SECTR1; SECTR2; SIGGRP; SIGPER; SIGSEQ; STATUS; VERACC; VALNMR; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A luminous or lighted aid to navigation. (adapted from IHO Dictionary, S-32, 5th Edition, 2766)

References:

INT 1: IP 1-30.3, 40-65;

M-4: 470-473.5; 475-475.7; 476-478,5;

Remarks:

A light may be fixed on a buoy, beacon, tower etc. These are separate objects.

Distinction: beacon, cardinal; beacon, isolated danger; beacon, lateral; beacon, safe water; beacon special purpose/general; buoy, cardinal; buoy, installation; buoy, isolated danger; buoy, lateral; buoy, safe water; buoy, special purpose/general; light vessel; light float;

GEO OBJECT CLASSES

Object Class: **Light float**

Acronym: **LITFLT** Code: **76**

Set Attribute_A: COLOUR; COLPAT; CONRAD; CONVIS; DATEND; DATSTA; HORACC; HORLEN; HORWID; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A boat-like structure used instead of a light buoy in waters where strong streams or currents are experienced, or when a greater elevation than that of a light buoy is necessary (IHO Dictionary, S-32, 5th Edition, 2821).

References:

INT 1: IQ 30-31;

M-4: 462.8;

Remarks:

The light of a light float is a separate object, handled as with buoys, beacons, etc.

Distinction: buoy, cardinal; buoy, installation; buoy, isolated danger; buoy, lateral; buoy, safe water; buoy, special purpose/general; light vessel;

GEO OBJECT CLASSES

Object Class: Light, moiré effect

DELETED - DO NOT USE

Acronym: LITMOI

INT 1: IP 31;

M-4: 475.8;

Set Attribute_A: COLOUR; DATEND; DATSTA; HEIGHT; NOBJNM; OBJNAM; ORIENT; PEREND; PERSTA; QUAVEM; STATUS; VALNMR; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point;

Definition:

The moiré effect is the effect created by transmitting light through two separate, overlapping families of parallel lines. (IHO Dictionary, S-32, 4th Edition)

Remarks:

The attribute ‘orientation’ indicates the orientation of the leading line of the moiré effect light measured from the water towards the light.

Distinction: light;

This object is obsolete. It is only shown here for reasons of backward compatibility. A moiré effect light should be encoded as a light (LIGHTS) with a category of light (CATLIT) value 16.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Light vessel**

Acronym: **LITVES** Code: **77**

Set Attribute_A: COLOUR; COLPAT; CONRAD; CONVIS; DATEND; DATSTA; HORACC; HORLEN; HORWID; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A distinctively marked vessel anchored or moored at a charted point, to serve as an aid to navigation. By night, it displays a characteristic light(s) and is usually equipped with other devices, such as fog signal, submarine sound signal, and radio-beacon, to assist navigation. Also called light ship. (IHO Dictionary, S-32, 5th Edition, 2828,2829)

References:

INT 1: IP 6;

M-4: 474.1-3; 474.5-6;

Remarks:

The light(s), fog signal etc of a light vessel is a separate object, handled as with buoys, beacons etc.

Distinction: beacon, cardinal; beacon, isolated danger; beacon, lateral; beacon, safe water; beacon special purpose/general; buoy, cardinal; buoy, installation; buoy, isolated danger; buoy, lateral; buoy, safe water; buoy, special purpose/general; light float;

GEO OBJECT CLASSES

Object Class: **Local magnetic anomaly**

Acronym: **LOCMAG** Code: **78**

Set Attribute_A: NOBJNM; OBJNAM; VALLMA;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An anomaly of the magnetic field of the Earth, extending over a relatively small area, due to local magnetic influences. (IHO Dictionary, S-32, 5th Edition, 2874, 2984)

References:

INT 1: IB 82.1-2;

M-4: 274;

Remarks:

The value of the deviation from the normal magnetic variation is stored in the VALLMA attribute.

Distinction: magnetic variation;

GEO OBJECT CLASSES

Object Class: **Lock basin**

Acronym: **LOKBSN** Code: **79**

Set Attribute_A: DATEND; DATSTA; HORACC; HORCLR; HORLEN; HORWID; NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A lock basin is a wet dock in a waterway, permitting a ship to pass from one level to another. (adapted from IHO Dictionary, S-32, 5th Edition, 2881)

References:

INT 1: IF 41.1;

M-4: 326.6;

Remarks:

The lock gates are encoded as separate gate objects (GATCON).

Distinction: gate;

GEO OBJECT CLASSES

Object Class: **Log pond**

Acronym: **LOGPON** Code: **80**

Set Attribute_A: NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A maritime area enclosed with connected floating timbers used as a staging area for sawn logs.

References:

INT 1: IN 61;

M-4: 449.2;

Remarks:

Also known as booming ground.

GEO OBJECT CLASSES

Object Class: **Magnetic variation**

Acronym: **MAGVAR** Code: **81**

Set Attribute_A: DATEND; DATSTA; RYRMGV; VALACM; VALMAG;

Set Attribute_B: INFORM; NINFOM; SCAMAX; SCAMIN;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The angle between the magnetic and geographic (true) north at a location, expressed in degrees east or west from the direction of true north.

References:

INT 1: IB 64-66, 71;

M-4: 261; 272.1,3;

Remarks:

No remarks.

Distinction: local magnetic anomaly;

GEO OBJECT CLASSES

Object Class: **Marine farm/culture**

Acronym: **MARCUL** Code: **82**

Set Attribute_A: CATMFA; DATEND; DATSTA; EXPSOU; NOBJNM; OBJNAM; PEREND; PERSTA; QUASOU; RESTRN; SOUACC; STATUS; VALSOU; VERACC; VERDAT; VERLEN; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An assemblage of cages, nets, rafts and floats or posts where fish, including shellfish, are artificially cultivated. Also called fish farm. (IHO Dictionary, S-32, 5th Edition, 1811)

References:

INT 1: IK 47, 48.1-2;

M-4: 447.4,6;

Remarks:

Distinction: fishing facility; obstruction;

GEO OBJECT CLASSES

Object Class: Mast

DELETED - DO NOT USE

Acronym: MSTCON

INT 1: IE 28, 30.1;

M-4: 375.1-2;

Set Attribute_A: CATMST; COLOUR; COLPAT; CONRAD; CONVIS; HEIGHT; NOBJNM; OBJNAM; QUAVEM; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A straight piece of timber or a hollow cylinder of wood or metal set up vertically or nearly so. (International Maritime Dictionary, 2nd Ed.)

Remarks:

The object ‘mast’ is independent of associated equipment e.g. radar station.

A mast could be constructed of any material, including those mentioned above.

Distinction: pylon;

This object is obsolete. It is only shown here for reasons of backward compatibility. A mast should be encoded as a landmark (LNDMRK) with category of landmark (CATLMK) value 7.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Military practice area**

Acronym: **MIPARE** Code: **83**

Set Attribute_A: CATMPA; DATEND; DATSTA; NOBJNM; OBJNAM; PEREND; PERSTA; RESTRN; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area within which naval, military or aerial exercises are carried out. Also called an exercise area. (adapted from IHO Dictionary, S-32, 5th Edition, 1722)

References:

INT 1: IN 30-33;

M-4: 441.1-6;

Remarks:

Distinction: caution area; restricted area; submarine transit lane;

GEO OBJECT CLASSES

Object Class: Monument

DELETED - DO NOT USE

Acronym: MONUMT

INT 1: IE 24;

M-4: 374.4;

Set Attribute_A: BUISHP; CATMNT; COLOUR; CONDTN; CONRAD; CONVIS; HEIGHT; NATCON; NOBJNM; OBJNAM; QUAVEM; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point;

Definition:

A structure erected or maintained as a memorial to a person or event. (Digital Geographic Information Working Group, Oct.87)

Remarks:

No remarks

This object is obsolete. It is only shown here for reasons of backward compatibility. A monument should be encoded as a landmark (LNDMRK) with category of landmark (CATLMK) value 9.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Mooring/Warping facility**

Acronym: **MORFAC** Code: **84**

Set Attribute_A: BOYSHP; CATMOR; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; HEIGHT; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERDAT; VERLEN; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The equipment or structure used to secure a vessel (adapted from IHO Dictionary, S-32, 5th Edition, 3322)

References:

INT 1: IF 20,21,22; IG 181; IQ 40-43;

M-4: 327.1-2,3; 431.5-6;

Remarks:

Distinction: buoy, special purpose/general;

GEO OBJECT CLASSES

Object Class: National territorial area

DELETED - DO NOT USE

Acronym: NATARE

Set Attribute_A: NATION;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The whole area of a nation defined by authorities. The area is delimited by boundaries established by agreement between adjacent or opposite states.

References:

INT 1: IN 40, 41;

M-4: 440.1, 440.3;

Remarks:

Distinction: territorial sea area;

This object is obsolete. It is only shown here for reasons of backward compatibility. A national territorial area should be encoded as an administrative area (ADMARE) with jurisdiction (JRSDTN) value 2.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Navigation line**

Acronym: **NAVLNE** Code: **85**

Set Attribute_A: CATNAV; DATEND; DATSTA; ORIENT; PEREND; PERSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A navigation line is a straight line extending towards an area of navigational interest and generally generated by two navigational aids or one navigational aid and a bearing. (Service Hydrographique et Océanographique de la Marine, France)

References:

INT 1: IM 1-3;

M-4: 433-433.5;

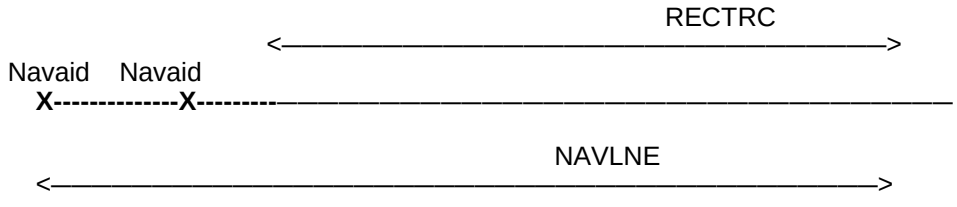
Remarks:

~~The portion of a navigation line that a ship should use for navigation is known as a recommended track.~~

The extent of the navigation line depends on the visibility of the navigational aid(s).

The attribute ‘orientation’ (ORIENT) specifies the orientation of the navigation line measured from the water towards the navigational aid(s).

The recommended track is that portion of a ‘navigation line’ that a ship should use for navigation. (see below)



Distinction: recommended route; recommended track;

GEO OBJECT CLASSES

Object Class: **Obstruction**

Acronym: **OBSTRN** Code: **86**

Set Attribute_A: CATOBS; CONDTN; EXPSOU; HEIGHT; NATCON; NATQUA; NATSUR; NOBJNM; OBJNAM; PRODCT; QUASOU; SOUACC; STATUS; TECSOU; VALSOU; VERACC; VERDAT; VERLEN; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

In marine navigation, anything that hinders or prevents movement, particularly anything that endangers or prevents passage of a vessel. The term is usually used to refer to an isolated danger to navigation... (IHO Dictionary, S-32, 5th Edition, 3503)

References:

INT 1: IK 1, 31, 40-43, 46.1-2; IL 21, 23; IQ 42;

M-4: 422.8-9; 431.6; 445.1; 447.5;

Remarks:

Distinction: wreck; fishing facility; marine farm/culture; depth area; underwater/awash rock; water turbulence;

GEO OBJECT CLASSES

Object Class: **Offshore platform**

Acronym: **OFSPLF** Code: **87**

Set Attribute_A: CATOFP; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; HEIGHT; NATCON; NOBJNM; OBJNAM; PRODCT; STATUS; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A permanent offshore structure, either fixed or floating, used in the production of oil or natural gas. (IHO Dictionary, S-32, 5th Edition, 3895)

References:

INT 1: IL 2, 10, 11-15, 17;

M-4: 445.2; 445.3; 445.4; 445.6;

Remarks:

Distinction: buoy, installation; offshore production area;

GEO OBJECT CLASSES

Object Class: **Offshore production area**

Acronym: **OSPARE** Code: **88**

Set Attribute_A: CATPRA; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; HEIGHT; NOBJNM; OBJNAM; PRODCT; RESTRN; STATUS; VERACC; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area at sea within which there are production facilities.

References:

INT 1: IL 4;

M-4: not specified;

Remarks:

Distinction: offshore platform; exclusive economic zone;

GEO OBJECT CLASSES

Object Class: **Oil barrier**

Acronym: **OILBAR** Code: **89**

Set Attribute_A: CATOLB; CONDTN; DATEND; DATSTA; NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A construction to dam oil flow on water.

References:

INT 1: IF 29.1-2;

M-4: not specified;

Remarks:

No remarks.

GEO OBJECT CLASSES

Object Class: **Pile**

Acronym: **PILPNT** Code: **90**

Set Attribute_A: CATPLE; COLOUR; COLPAT; CONDTN; CONVIS; DATEND; DATSTA; HEIGHT; NOBJNM; OBJNAM; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A long heavy timber or section of steel, wood, concrete, etc.. forced into the earth which may serve as a support, as for a pier, or a free standing pole within a marine environment. (Adapted from IHO Dictionary, S-32, 5th Edition, 3840)

References:

INT 1: IF 22;

M-4: 327.3;

Remarks:

Distinction: beacon, cardinal; beacon, isolated danger; beacon, lateral; beacon, safe water; beacon special purpose/general; mooring/warping facility;

GEO OBJECT CLASSES

Object Class: **Pilot boarding place**

Acronym: **PILBOP** Code: **91**

Set Attribute_A: CATPIL; COMCHA; DATEND; DATSTA; NOBJNM; NPLDST; OBJNAM; PEREND; PERSTA; PILDST; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The meeting place to which the pilot comes out. (IHO Chart Specifications, M-4)

References:

INT 1: IT 1.1-4;

M-4: 491.1-2;

Remarks:

No remarks

GEO OBJECT CLASSES

Object Class: Pingo

DELETED - DO NOT USE

Acronym: PINGOS

INT 1: not specified

M-4: not specified

Set Attribute_A: CONRAD; CONVIS; EXPSOU; HEIGHT; NATQUA; NATSUR; NOBJNM; OBJNAM; QUASOU; QUAVEM; TECSOU; VALSOU; VERDAT; VERLEN; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point, Area;

Definition:

Small conical hills having a large central core of ice formed from the encroachment of permafrost and the resulting hydrostatic pressure. (IHO Dictionary, S-32, 4th Edition)

Remarks:

Distinction: hill;

This object is obsolete. It is only shown here for reasons of backward compatibility. A pingo should be encoded as sloping ground (SLOGRD) with a category of slope (CATSLO) value 5.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Pipeline area**

Acronym: **PIPARE** Code: **92**

Set Attribute_A: CATPIP; CONDTN; DATEND; DATSTA; NOBJNM; OBJNAM; PRODCT; RESTRN; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area containing one or more pipelines.

References:

INT 1: IL 40.2, 41.2;

M-4: 439.3; 444.2;

Remarks:

Distinction: pipeline, overhead; pipeline, submarine/on land;

GEO OBJECT CLASSES

Object Class: **Pipeline, overhead**

Acronym: **PIPOHD** Code: **93**

Set Attribute_A: CATPIP; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; NOBJNM; OBJNAM; PRODCT; STATUS; VERACC; VERCLR; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A pipeline is a string of interconnected pipes used for the transport of matter, nowadays mainly oil or gas. (IHO Dictionary, S-32, 5th Edition, 3857)

An overhead pipeline is a pipeline supported by pylons and passing over or nearby navigable waters.

References:

INT 1: ID 28;

M-4: 383;

Remarks:

Distinction: pipeline area; pipeline, submarine/on land;

GEO OBJECT CLASSES

Object Class: **Pipeline, submarine/on land**

Acronym: **PIPSOL** Code: **94**

Set Attribute_A: BURDEP; CATPIP; CONDTN; DATEND; DATSTA; DRVAL1; DRVAL2; NOBJNM; OBJNAM; PRODCT; STATUS; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A pipeline is a string of interconnected pipes used for the transport of matter, nowadays mainly oil or gas. (IHO Dictionary, S-32, 5th Edition, 3857)

A submarine or land pipeline is a pipeline lying on or buried under the seabed or the land.

References:

INT 1: ID 29; IL 40.1, 41.1, 42, 44;

M-4: 377; 444.1; 444.4-5; 444.7;

Remarks:

It must be assumed that the pipes are vulnerable to damage from anchoring or trawling.... They may be a potential danger to navigation. (IHO Chart Specifications, M-4)

Distinction: pipeline area; pipeline, overhead;

GEO OBJECT CLASSES

Object Class: **Pontoon**

Acronym: **PONTON** Code: **95**

Set Attribute_A: CONDTN; CONRAD; CONVIS; DATEND; DATSTA; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS; VERACC; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A floating structure, usually rectangular in shape which serves as landing, pier head or bridge support. (IHO Dictionary, S-32, 5th Edition, 3947)

References:

INT 1: IF 16;

M-4: 326.9;

Remarks:

Distinction: bridge; mooring/warping facility; shoreline construction;

GEO OBJECT CLASSES

Object Class: **Precautionary area**

Acronym: **PRCARE** Code: **96**

Set Attribute_A: DATEND; DATSTA; RESTRN; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A routeing measure comprising an area within defined limits where ships must navigate with particular caution and within which the direction of traffic flow may be recommended. (IHO Dictionary, S-32, 5th Edition, 3982)

References:

INT 1: IM 16, 24;

M-4: 435.2;

Remarks:

Distinction: caution area; inshore traffic zone; restricted area; all traffic separation scheme elements;

GEO OBJECT CLASSES

Object Class: Production installation

DELETED - DO NOT USE

Acronym: PRDINS

INT 1 Reference: IL 20, 21.1-3;

Chart Specification: 445; 445.1; 445.5;

Set Attribute_A: CATPRI; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; EXPSOU; HEIGHT; NOBJNM; OBJNAM; PRODCT; QUASOU; QUAVEM; STATUS; TECSOU; VALSOU; VERDAT; WATLEV;

Set Attribute_B: INFORM; NINFOM; PICREP; SCAMAX; SCAMIN;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point; Area;

Definition:

An installation for the exploitation of natural resources.

Remarks:

Distinction: offshore platform; Exclusive Economic Zone;

This object is obsolete. It is only shown here for reasons of backward compatibility. A production installation should be encoded as either an obstruction (OBSTRN) with an appropriate category of obstruction (CATOBS) value, or as a production area (PRDARE) with an appropriate category of production area (CATPRA) value.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Production/storage area**

Acronym: **PRDARE** Code: **97**

Set Attribute_A: CATPRA; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; ELEVAT; HEIGHT; NOBJNM; OBJNAM; PRODCT; STATUS; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area on land for the exploitation or storage of natural resources.

References:

INT 1: IE 35.1-2, 36; IF 52

M-4: 367.1-2;

Remarks:

Distinction: free port area; offshore production area;

GEO OBJECT CLASSES

Object Class: **Pylon/bridge support**

Acronym: **PYLONS** Code: **98**

Set Attribute_A: CATPYL; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; HEIGHT; NATCON; NOBJNM; OBJNAM; VERACC; VERDAT; VERLEN; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A vertical construction consisting, for example, of a steel framework or pre-stressed concrete to carry cables, a bridge, etc.

References:

INT 1: ID 26;

M-4: 382.1;

Remarks:

No remarks.

GEO OBJECT CLASSES

Object Class: Radar dome

DELETED - DO NOT USE

Acronym: RADDOM

INT 1: IE 30.4;

M-4: 487.3;

Set Attribute_A: COLOUR; CONDTN; CONRAD; CONVIS; HEIGHT; NOBJNM; OBJNAM; QUAVEM; RADIUS; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point;

Definition:

A dome shaped structure used to protect the antenna of a radar installation. (IHO Dictionary, S-32, 4th Edition)

Remarks:

Distinction: radar station;

This object is obsolete. It is only shown here for reasons of backward compatibility. A radar dome should be encoded as a landmark (LNDMRK) with a category of landmark (CATLMK) value 15.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Radar line**

Acronym: **RADLNE** Code: **99**

Set Attribute_A: NOBJNM; OBJNAM; ORIENT; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A track along which ships may be guided by coastal radar stations in the event of bad visibility. Also known as a radar guided track. (IHO Dictionary, S-32, 5th Edition, 4146).

References:

INT 1: IM 32.1-2;

M-4: 487.2;

Remarks:

Distinction: radar range; recommended track;

GEO OBJECT CLASSES

Object Class: **Radar range**

Acronym: **RADRNG** Code: **100**

Set Attribute_A: COMCHA; DATEND; DATSTA; NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Indicates the coverage of a sea area by a radar surveillance station. Inside this area a vessel may request shore-based radar assistance, particularly in poor visibility.

References:

INT 1: IM 31;

M-4: 487.1;

Remarks:

Many large ports have a radar surveillance system covering their approaches to provide guidance for vessels, particularly in poor visibility...

The maximum range of the system forms an arc or series of overlapping arcs... (IHO Chart Specifications, M-4)

Distinction: radar line;

GEO OBJECT CLASSES

Object Class: **Radar reflector**

Acronym: **RADRFL** Code: **101**

Set Attribute_A: HEIGHT; STATUS; VERACC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A device capable of, or intended for, reflecting radar signals. (IHO Dictionary, S-32, 5th Edition, 4147)

A radar reflector is usually a 'tetrahedron or pentagonal corner reflector (...) to facilitate reflection towards the sender'. (International Maritime Dictionary, 2nd Ed.)

References:

INT 1: IS 4;

M-4: 465.1-2;

Remarks:

The object 'radar reflector' is only used to encode a device specifically intended to reflect radar signals. If any other object, e.g. topmark, buoy, beacon etc.. is radar conspicuous, because of its construction, the attribute 'CONRAD' must be used.

Distinction: retro-reflector;

GEO OBJECT CLASSES

Object Class: **Radar station**

Acronym: **RADSTA** Code: **102**

Set Attribute_A: CATRAS; COMCHA; DATEND; DATSTA; HEIGHT; NOBJNM; OBJNAM; STATUS; VALMXR; VERACC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A station with a transmitter emitting pulses of ultra-high frequency radio waves which are reflected by solid objects and are detected upon their return to the sending station. (International Maritime Dictionary, 2nd Ed.)

References:

INT 1: IM 30; IS 1;

M-4: 485.1; 487.3;

Remarks:

The object 'radar station' is used to encode the technical equipment itself independent of the building or structure where it is installed. This building or structure, e.g. mast, tower, building, radar dome is a different object.

Distinction: radar line; radar range; radar transponder beacon;

GEO OBJECT CLASSES

Object Class: **Radar transponder beacon**

Acronym: **RTPBCN** Code: **103**

Set Attribute_A: CATRTB; DATEND; DATSTA; NOBJNM; OBJNAM; RADWAL; SECTR1; SECTR2; SIGGRP; SIGSEQ; STATUS; VALMXR;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A transponder beacon transmitting a coded signal on radar frequency, permitting an interrogating craft to determine the bearing and range of the transponder. Also called racon. (IHO Dictionary, S-32, 5th Edition, 4137)

References:

INT 1: IS 2-3;

M-4: 486.1-3;

Remarks:

The object class ‘radar transponder beacon’ is only used to encode the technical equipment independent of the structure on which it is located (e.g. a beacon, light-vessel or tower).

Distinction: radar line; radar range; radar station;

GEO OBJECT CLASSES

Object Class: **Radio calling-in point**

Acronym: **RDOCAL** Code: **104**

Set Attribute_A: COMCHA; DATEND; DATSTA; NOBJNM; OBJNAM; ORIENT; PEREND; PERSTA; STATUS; TRAFIC;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Also called radio reporting points, they have been established in certain busy waterways and port approaches to assist traffic control. On passing these points or crossing a defined line vessels are required to report on VHF to a Traffic Control Centre. (adapted from IHO Chart Specifications, M-4)

References:

INT 1: IM 40;

M-4: 488;

Remarks:

The attribute ‘orientation’ (ORIENT) encodes the orientation of the traffic flow at that point.

Distinction: radio station; pilot boarding place;

GEO OBJECT CLASSES

Object Class: **Radio station**

Acronym: **RDOSTA** Code: **105**

Set Attribute_A: CALSGN; CATROS; COMCHA; DATEND; DATSTA; ESTRNG; NOBJNM; OBJNAM; ORIENT; PEREND; PERSTA; SIGFRQ; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A place equipped to transmit radio waves. Such a station may be either stationary or mobile, and may also be provided with a radio receiver. In British terminology, also called w/t station. (IHO Dictionary, S-32, 5th Edition, 4191)

References:

INT 1: IS 10-16;

M-4: 480.1; 481.1-3; 482; 483; 484;

Remarks:

The transmission of a radio station may serve to provide mariners with a line of position. (IHO Chart Specifications, M-4)

The object “radio station” is used to encode the point of transmission of the signal.

Distinction: radio calling in point; radar station;

GEO OBJECT CLASSES

Object Class: **Railway**

Acronym: **RAILWY** Code: **106**

Set Attribute_A: CONDTN; HEIGHT; NOBJNM; OBJNAM; STATUS; VERACC;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A rail or set of parallel rails on which a train or tram runs. (Digital Geographic Information Working Group, Oct.87)

References:

INT 1: ID 13;

M-4: 328.4; 362.1-2;

Remarks:

Distinction: road; tunnel;

GEO OBJECT CLASSES

Object Class: Ramp

DELETED - DO NOT USE

Acronym: RMPARE

INT 1: IF 23;

M-4: not specified

Set Attribute_A: CONDTN; HORCLR; HORLEN; HORWID; NATCON; NOBJNM; OBJNAM; STATUS; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Line; Area;

Definition:

A sloping structure that can either be used as a landing place at variable water levels, for small vessels, landing ships, or a ferry boat, or for hauling a cradle carrying a vessel. (IHO Dictionary, S-32, 4th Edition)

Remarks:

Distinction: slipway;

This object is obsolete. It is only shown here for reasons of backward compatibility. A ramp should be encoded as a shoreline construction (SLCONS) with a category of shoreline construction (CATSLC) value 12.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Rapids**

Acronym: **RAPIDS** Code: **107**

Set Attribute_A: NOBJNM; OBJNAM; VERACC; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Portions of a stream with accelerated current where it descends rapidly but without a break in the slope of the bed sufficient to form a waterfall. Usually used in the plural. (IHO Dictionary, S-32, 5th Edition, 4228)

References:

INT 1: IC 22;

M-4: 353.5;

Remarks:

Distinction: current - non-gravitational; tidal stream - harmonic prediction; tidal stream - non-harmonic prediction; tidal stream panel data; tidal stream - time series; water turbulence; waterfall;

GEO OBJECT CLASSES

Object Class: **Recommended route centerline**

Acronym: **RCRTCL** Code: **108**

Set Attribute_A: CATTRK; DATEND; DATSTA; DRVAL1; DRVAL2; NOBJNM; OBJNAM; ORIENT; PEREND; PERSTA; QUASOU; SOUACC; STATUS; TECSOU; TRAFIC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A recommended route is a route of undefined width, for the convenience of ships in transit, which is often marked by centerline buoys. (IHO Dictionary, S-32, 5th Edition, 4448)

The recommended route centerline indicates the ‘centerline’ of a recommended route.

References:

INT 1: IM 28.1;

M-4: 435.4;

Remarks:

A recommended route describes the regulation of navigation for non-hydrographic reasons such as the prevention of collision or the avoidance of pollution risks. It is generally laid down by a national or international authority other than the hydrographic authority. (IHO Chart Specifications, M-4)

Distinction: recommended traffic lane part; recommended track;

GEO OBJECT CLASSES

Object Class: **Recommended track**

Acronym: **RECTRC** Code: **109**

Set Attribute_A: CATTRK; DATEND; DATSTA; DRVAL1; DRVAL2; NOBJNM; OBJNAM; ORIENT; PEREND; PERSTA; QUASOU; SOUACC; STATUS; TECSOU; TRAFIC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A track recommended to all or only certain vessels. (IHO Dictionary, S-32, 5th Edition, 5576)

References:

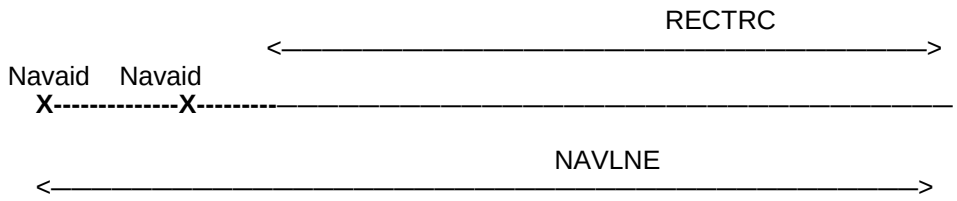
INT 1: IM 3-4, 5.1, 5.2, 6;

M-4: 432.1; 434;

Remarks:

Recommended tracks include all channels recommended for hydrographic reasons to lead safely between shoal depths. The use of such tracks is generally left to the discretion of the mariner and will depend on the vessel's draught, the state of the tide, adequacy of navigational aids and so on. (IHO Chart Specifications, M-4)

The recommended track is that portion of a 'navigation line' that a ship should use for navigation. (see below)



In the case of a two-way recommended track, only one value of orientation is encoded (in the attribute ORIENT); the other value can be deduced (i.e. the value in ORIENT + 180 degrees) .

Distinction: navigation line; recommended route centerline; recommended traffic lane part;

GEO OBJECT CLASSES

Object Class: **Recommended traffic lane part**

Acronym: **RCTLPT** Code: **110**

Set Attribute_A: DATEND; DATSTA; ORIENT; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An optional part of an IMO-adopted routing measure.... Several Hydrographic Offices, in consultation with their Ministries of Transport, have added recommended directions in areas such as the outer approaches to major ports in order to show the best routes for crossing traffic or to minimize head-on encounters.(...) (IHO Chart Specifications, M-4)

References:

INT 1: IM 26.1-2;

M-4: 435.5;

Remarks:

The object ‘recommended traffic lane part’ indicates the recommended traffic flow e.g.

- between two TSS
- in the entrance areas of a TSS
- beside a deep water route.

The complete recommended traffic lane consists of one or more parts depending on the various shapes of the recommended traffic lane.

The orientation of the recommended traffic lane part is defined by the middle-line of the recommended traffic lane part relating to the general direction of the recommended traffic lane part.

GEO OBJECT CLASSES

Object Class: **Rescue station**

Acronym: **RSCSTA** Code: **111**

Set Attribute_A: CATRSC; DATEND; DATSTA; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A place at which life saving equipment is held. (IHO Chart Specifications, M-4)

References:

INT 1: IT 12-14; IQ 124;

M-4: 493; 493.1-2;

Remarks:

This object encodes the service available at this location. The structure housing the service should be coded separately.

Distinction: beacon special purpose/general; building single; coastguard station;

GEO OBJECT CLASSES

Object Class: **Restricted area**

Acronym: **RESARE** Code: **112**

Set Attribute_A: CATREA; DATEND; DATSTA; NOBJNM; OBJNAM; PEREND; PERSTA; RESTRN; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A specified area designated by an appropriate authority within which navigation is restricted in accordance with certain specified conditions. (adapted from IHO Dictionary, S-32, 5th Edition, 4366)

References:

INT 1: IL 3; IN 2.1-2, 20-22, 25-26, 31, 34;

M-4: 431.4; 439.2-4; 441.8; 445.2; 448.1-2; 449.5;

Remarks:

Distinction: anchorage area; cable area; caution area; dumping ground; depth area; fairway; dredged area; deep water route; military practice area; pipeline area; swept area;

GEO OBJECT CLASSES

Object Class: **Retro-reflector**

Acronym: **RETRFL** Code: **113**

Set Attribute_A: COLOUR; COLPAT; HEIGHT; MARSYS; STATUS; VERACC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A means of distinguishing unlighted marks at night. Retro-reflective material is secured to the mark in a particular pattern to reflect back light. (Adapted from the UKHO NP735, 5th Edition).

References:

INT 1: not specified;

M-4: not specified;

Remarks:

The body carrying the retro-reflector is a separate object.

Distinction: beacon, cardinal; beacon, isolated danger; beacon, lateral; beacon, safe water; beacon special purpose/general; buoy, cardinal; buoy, installation; buoy, isolated danger; buoy, lateral; buoy, safe water; buoy, special purpose/general; radar reflector;

GEO OBJECT CLASSES

Object Class: **River**

Acronym: **RIVERS** Code: **114**

Set Attribute_A: NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A relatively large natural stream of water. (IHO Dictionary, S-32, 5th Edition, 4405)

References:

INT 1: IC 20, 21;

M-4: 353.1-4;

Remarks:

The object ‘river’ describes the area of the river, the object ‘river bank’ its banks.

Distinction: canal; lake; river bank; sea area/named water area; tideway;

GEO OBJECT CLASSES

Object Class: **River bank**

Acronym: **RIVBNK** Code: **115**

Set Attribute_A: NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The limit line between the water area of a river and the area of land.

References:

INT 1: IC 20, 21;

M-4: 353.1-4;

Remarks:

Distinction: canal bank; coastline; lake shore; river; shoreline construction;

GEO OBJECT CLASSES

Object Class: **Road**

Acronym: **ROADWY** Code: **116**

Set Attribute_A: CATROD; CONDTN; NATCON; NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A road is an open way for the passage of vehicles. (United States Geological Survey, Jan.89)

References:

INT 1: ID 10-12;

M-4: 365.1-3;

Remarks:

Distinction: causeway; railway; square;

GEO OBJECT CLASSES

Object Class: Road crossing

DELETED - DO NOT USE

Acronym: RODCRS

INT 1: ID 10-12;

M-4: 465.1-3;

Set Attribute_A: CATROD; CONDTN; NATCON; NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point; Area;

Definition:

The area where two roads are crossing.

Remark:

Distinction: road part; square; built-up area;

This object is obsolete. It is only shown here for reasons of backward compatibility. A road crossing should be encoded as a road (ROADWY) with a category of road (CATROD) value 7.

DELETED - DO NOT USE

GEO OBJECT CLASSES

DELETED - DO NOT USE

Object Class: Road part

Acronym: ROADPT

Set Attribute_A: CATROD; CONDTN; NATCON; NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A road is an open way for passage of vehicles. (United States Geological Survey, Jan.89)

References:

INT 1: ID 10-12;

M-4: 365.1-3;

Remarks:

The symbolization for paper chart presentation in small scales is related to the category of road (attribute 'CATROD').

Distinction: square; built-up area; road crossing;

This object class is obsolete. It is only shown here for reasons of backward compatibility. Roads should be encoded using the object class road (ROADWY).

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Runway**

Acronym: **RUNWAY** Code: **117**

Set Attribute_A: CATRUN; CONDTN; CONVIS; NATCON; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A defined rectangular area, on a land aerodrome, prepared for the landing and take-off run of aircraft along its length. (IHO Dictionary, S-32, 5th Edition, 4465)

A site on which helicopters may land and take off. (IHO Dictionary, S-32, 5th Edition, 2232)

References:

INT 1: ID 17;

M-4: 366;

Remarks:

Distinction: airport area;

GEO OBJECT CLASSES

Object Class: Salt pan

DELETED - DO NOT USE

Acronym: SLTPAN

INT 1: IC 24;

M-4: 353.7;

Set Attribute_A: NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Area;

Definition:

A flat area of the natural surface covered with salt deposits which result from the evaporation of sea water. (Digital Geographic Information Working Group, Oct 1987)

Remarks:

No remarks

This object is obsolete. It is only shown here for reasons of backward compatibility. A salt pan should be encoded as a land region (LNDRGN) with a category of land region (CATLND) value 15.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Sand waves**

Acronym: **SNDWAV** Code: **118**

Set Attribute_A: VERACC; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A large mobile wave-like sediment feature in shallow water and composed of sand. The wavelength may reach 100 metres, the amplitude may be up to 20 metres.

References:

INT 1: IJ 14;

M-4: 428.1;

Remarks:

Distinction: seabed area;

GEO OBJECT CLASSES

Object Class: **Sea area/named water area**

Acronym: **SEAARE** Code: **119**

Set Attribute_A: CATSEA; NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A geographically defined part of the sea or other navigable waters. It may be specified within its limits by its proper name.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

Each sea area is defined independent of any other. Smaller sea areas may be located within larger sea areas.

Distinction: depth area; seabed area;

GEO OBJECT CLASSES

Object Class: **Sea-plane landing area**

Acronym: **SPLARE** Code: **120**

Set Attribute_A: NOBJNM; OBJNAM; PEREND; PERSTA; RESTRN; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A designated portion of water for the landing and take-off of sea-planes.

References:

INT 1: IN 13;

M-4: 449.6;

Remarks:

Distinction: airport area;

GEO OBJECT CLASSES

Object Class: **Seabed area**

Acronym: **SBDARE** Code: **121**

Set Attribute_A: COLOUR; NATQUA; NATSUR; NOBJNM; OBJNAM; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area of the sea where the nature of bottom is homogeneous.

The nature of bottom includes the material of which it is composed and its physical characteristics. Also called character (or characteristics) of the bottom, or quality of the bottom. (IHO Dictionary, S-32, 5th Edition, 515).

References:

INT 1: IJ 1-11, 30-39;

M-4: 425.5-6; 426; 427;

Remarks:

Generally, it is not possible to define a seabed area by its real extent. For that reason, the characteristics of the seabed area may be represented at one single position.

Distinction: sand wave; sea area/named water area; weed/kelp;

GEO OBJECT CLASSES

Object Class: **Shoreline construction**

Acronym: **SLCONS** Code: **122**

Set Attribute_A: CATSLC; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; DATEND; DATSTA; HEIGHT; HORACC; HORCLR; HORLEN; HORWID; NATCON; NOBJNM; OBJNAM; STATUS; VERACC; VERDAT; VERLEN; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A fixed (not afloat) artificial structure between the water and the land, i.e. a man-made coastline.

References:

INT 1: IF 2, 4, 5, 6, 12-15, 18,23, 33;

M-4: 313.2, 4; 321.1-4; 322.1-2; 324.1;

Remarks:

Distinction: canal bank; coastline; lake shore; land area; pontoon; river bank;

GEO OBJECT CLASSES

Object Class: **Signal station, traffic**

Acronym: **SISTAT** Code: **123**

Set Attribute_A: CATSIT; COMCHA; DATEND; DATSTA; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A signal station is a place on shore from which signals are made to ships at sea. (IHO Dictionary, S-32, 5th Edition, 4742)

Traffic signal stations regulate the movement of traffic. (IHO Chart Specifications, M-4)

References:

INT 1: IT 21-25.2;

M-4: 495.1-5;

Remarks:

This object class is used to describe the function of the signal station rather than the structure on which the station is sited.

Distinction: signal station, warning;

GEO OBJECT CLASSES

Object Class: **Signal station, warning**

Acronym: **SISTAW** Code: **124**

Set Attribute_A: CATSIW; COMCHA; DATEND; DATSTA; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A signal station is a place on shore from which signals are made to ships at sea. (IHO Dictionary, S-32, 5th Edition, 4742)

References:

INT 1: IT 20, 26, 28-36;

M-4: 490.3; 494.1-2; 496.1-3; 497;

Remarks:

This object class is used to describe the function of the signal station rather than the structure on which the station is sited.

Distinction: signal station, traffic;

GEO OBJECT CLASSES

Object Class: Silo

DELETED - DO NOT USE

Acronym: SILBUI

INT 1 Reference: IE 33;

Chart Specification: 376.3;

Set Attribute_A: BUISHP; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; HEIGHT; NATCON; NOBJNM; OBJNAM; PRODCT; QUAVEM; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; PICREP; SCAMAX; SCAMIN;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point; Area;

Definition:

An enclosed container, used for storing grain or fodder. (Digital Geographic Information Working Group, Oct.87)

Remarks:

Distinction: tank;

This object is obsolete. It is only shown here for reasons of backward compatibility. A silo should be encoded as a silo/tank (SILTNK) with a category of silo (CATSIL) value 1.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Silo/tank**

Acronym: **SILTNK** Code: **125**

Set Attribute_A: BUISHP; CATSIL; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; ELEVAT; HEIGHT; NATCON; NOBJNM; OBJNAM; PRODCT; STATUS; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An enclosed container, used for storage (Digital Geographic Information Working Group, Oct.87)

References:

INT 1: IE 2, 32-33;

M-4: 340.2; 376.2-3;

Remarks:

Distinction: landmark; production/storage area;

GEO OBJECT CLASSES

Object Class: Slipway

DELETED - DO NOT USE

Acronym: SLIPWY

INT 1: IF 23

M-4: 324,1;

Set Attribute_A: CONDTN; HORCLR; HORLEN; HORWID; NATCON; NOBJNM; OBJNAM; STATUS; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Line; Area;

Definition:

The prepared, and usually reinforced, inclined surface on which keel- and bilge-blocks are laid for supporting a vessel under construction. (IHO Dictionary, S-32, 4th Edition)

Remarks:

Distinction: ramp;

This object is obsolete. It is only shown here for reasons of backward compatibility. A slipway should be encoded as a shoreline construction (SLCONS) with a category of shoreline construction (CATSLC) value 13.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Slope topline**

Acronym: **SLOTOP** Code: **126**

Set Attribute_A: CATSLO; COLOUR; CONRAD; CONVIS; ELEVAT; NATCON; NATQUA; NATSUR; NOBJNM; OBJNAM; VERACC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The upper marking of a slope, e.g. the ridge line or the separation line between two different gradients.

References:

INT 1: IC 3; ID 14, 15;

M-4: 312.1; 363.2; 364.1;

Remarks:

no remark.

Distinction: land elevation; sloping ground;

GEO OBJECT CLASSES

Object Class: **Sloping ground**

Acronym: **SLOGRD** Code: **127**

Set Attribute_A: CATSLO; COLOUR; CONRAD; CONVIS; NATCON; NATQUA; NATSUR; NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An inclined surface (adapted from IHO Dictionary, S-32, 5th Edition, 4776).

References:

INT 1: IC 3, 4, 8; ID 14, 15; IF 1;

M-4: 312.1; 312.3; 313.1; 313.2;

Remarks:

Distinction: slope topline;

GEO OBJECT CLASSES

Object Class: **Small craft facility**

Acronym: **SMCFAC** Code: **128**

Set Attribute_A: CATSCF; NOBJNM; OBJNAM; PEREND; PERSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A place at which a service generally of interest to small craft or pleasure boats is available.

References:

INT 1: IU 2, 3-4, 6-13, 15-31;

M-4: not specified;

Remarks:

This object class encodes the service available at this location. The structure housing the service should be encoded separately.

Distinction: building, single; harbour facility; shoreline construction.

GEO OBJECT CLASSES

Object Class: **Sounding**

Acronym: **SOUNDG** Code: **129**

Set Attribute_A: EXPSOU; NOBJNM; OBJNAM; QUASOU; SOUACC; STATUS; TECSOU; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A measured water depth or spot which has been reduced to a vertical datum (may be a drying height).

References:

INT 1: II 10-15;

M-4: 403.1; 410; 412-412.4; 413.1; 417.3;

Remarks:

The value of the sounding is encoded in the 3-D Coordinate field of the Spatial Record Structure (see S-57 Part 3).

Drying heights (drying soundings) are indicated by a negative value.

Distinction: depth area; wreck; underwater/awash rock; obstruction;

GEO OBJECT CLASSES

Object Class: Spoil ground

DELETED - DO NOT USE

Acronym: SPOGRD

INT 1: IN 62.1-2;

M-4: 446.1-2;

Set Attribute_A: NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point; Area;

Definition:

A sea area where dredged material is deposited. (IHO Dictionary, S-32, 4th Edition)

Remarks:

The significance of spoil grounds to the mariner is that very large quantities of material may be dumped, decreasing the depth of water available. (IHO Chart Specifications, M-4)

Distinction: dumping ground; dredged area;

This object is obsolete. It is only shown here for reasons of backward compatibility. A spoil ground should be encoded as a dumping ground (DMPGRD) with a category of dumping ground (CATDPG) value 5.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Spring**

Acronym: **SPRING** Code: **130**

Set Attribute_A: NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A natural issue of water or other substances from the earth. One on the bottom of the sea is called a submarine spring. (IHO Dictionary, S-32, 5th Edition, 4939)

References:

INT 1: IJ 15;

M-4: 428.3;

Remarks:

No remarks.

GEO OBJECT CLASSES

Object Class: **Square**

Acronym: **SQUARE** Code: **131**

Set Attribute_A: CONDTN; NATCON; NOBJNM; OBJNAM; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An open area within a built-up area surrounded by roads.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

Distinction: road; built-up area; building, single;

GEO OBJECT CLASSES

Object Class: **Straight territorial sea baseline**

Acronym: **STSLNE** Code: **132**

Set Attribute_A: NATION;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A baseline is the line from which the outer limits of the territorial sea and certain other outer limits are measured. (IHO Dictionary, S-32, 5th Edition, 390)

Straight baselines are a system of straight lines joining specified or discrete points on the low-water line, usually known as straight baseline turning points. (IHO Dictionary, S-32, 5th Edition, 393)

References:

INT 1: IN 42;

M-4: 440.4;

Remarks:

No remarks.

GEO OBJECT CLASSES

Object Class: **Submarine transit lane**

Acronym: **SUBTLN** Code: **133**

Set Attribute_A: NOBJNM; OBJNAM; RESTRN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area where submarines may navigate under water or at the surface.

References:

INT 1: IN 33;

M-4: 441.5;

Remarks:

Distinction: military practice area;

GEO OBJECT CLASSES

Object Class: **Swept Area**

Acronym: **SWPARE** Code: **134**

Set Attribute_A: DRVAL1; QUASOU; SOUACC; TECSOU; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area that has been determined to be clear of navigational dangers to a specified depth (adapted from IHO Dictionary, S-32, 5th Edition, 5248).

References:

INT 1: II 24;

M-4: 415.1; 415.2;

Remarks:

Distinction: depth area; dredged area; unsurveyed area;

GEO OBJECT CLASSES

Object Class: Tank

DELETED - DO NOT USE

Acronym: TNKCON

Set Attribute_A: COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; HEIGHT; NATCON; NOBJNM; OBJNAM; PRODCT; QUAVEM; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point; Area;

Definition:

A fixed structure for storing liquids or gases. (Derived from IHO Dictionary, S-32, 4th Edition)

References:

INT 1: IE 32;

M-4: 376.1-2;

Remarks:

Distinction: silo;

This object is obsolete. It is only shown here for reasons of backward compatibility. A tank should be encoded as a silo/tank (SILTNK) with a category of silo (CATSIL) value 2.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: Telepheric

DELETED - DO NOT USE

Acronym: TELPHC

INT 1: ID 25;

M-4: 382.3;

Set Attribute_A: CONDTN; CONRAD; CONVIS; DATEND; DATSTA; LIFCAP; NOBJNM; OBJNAM; QUAVEM; STATUS; VERCLR;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Line;

Definition:

A construction of cables strung between elevated supports on which carrier units are suspended.

Remarks:

The elevated supports are separate objects.

Distinction: cable, overhead;

This object is obsolete. It is only shown here for reasons of backward compatibility. A telepheric should be encoded as a conveyor (CONVYR) with a category of conveyor (CATCON) value 1.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Territorial sea area**

Acronym: **TESARE** Code: **135**

Set Attribute_A: NATION; RESTRN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The territorial sea is a belt of water of a defined breadth but not exceeding 12 nautical miles measured seaward from the territorial sea baseline. (IHO Dictionary, S-32, 5th Edition, 5360)

References:

INT 1: IN 43;

M-4: 440.5;

Remarks:

Distinction: administrative area; contiguous zone; continental shelf area; exclusive economic zone; fishery zone; restricted area;

GEO OBJECT CLASSES

Object Class: **Tidal stream - flood/ebb**

Acronym: **TS_FEB** Code: **160**

Set Attribute_A: CAT_TS; CURVEL; DATEND; DATSTA; NOBJNM; OBJNAM; ORIENT; PEREND; PERSTA;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A tidal stream (or tidal current) is a horizontal movement of water associated with the rise and fall of the tide caused by tide-producing forces. (Adapted from IHO Dictionary, S-32, 5th Edition)

Approximate tidal stream rates may be given as discrete rate values for flood and ebb flow during springs.

References:

INT 1: IH 40-41;

M-4: 407.4;

Remarks:

Distinction: tidal stream - harmonic prediction; tidal stream - non harmonic prediction; tidal stream panel data; tidal stream - time series;

GEO OBJECT CLASSES

Object Class: **Tidal stream - harmonic prediction**

Acronym: **TS_PRH** Code: **136**

Set Attribute_A: NOBJNM; OBJNAM; T_MTOD; T_VAHC; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A tidal stream (or tidal current) is an alternating horizontal movement of water associated with the rise and fall of the tide caused by tide-producing forces. (IHO Dictionary, S-32, 5th Edition, 1169)

Predicted tidal stream rates may be calculated using parameters (harmonic constituents) and an appropriate harmonic calculation algorithm.

References:

INT 1: IH 40-41;

M-4: 407.4; 408.2;

Remarks:

The object ‘tidal stream - harmonic prediction’ encodes parameters for use when predicting tidal streams by harmonic methods.

The supplier of any parameters must be consulted on how to use data provided using this object class, and which calculation algorithms to use with the data.

Distinction: current - non-gravitational; tidal stream - non-harmonic prediction; tidal stream panel data; tidal stream - time series;

GEO OBJECT CLASSES

Object Class: **Tidal stream - non-harmonic prediction**

Acronym: **TS_PNH** Code: **137**

Set Attribute_A: NOBJNM; OBJNAM; T_THDF; T_MTOD; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A tidal stream (or tidal current) is an alternating horizontal movement of water associated with the rise and fall of the tide caused by tide-producing forces. (IHO Dictionary, S-32, 5th Edition, 1169)

Predicted tidal stream rates may be calculated using time and rate differences with respect to a reference station (and associated tidal stream predictions).

References:

INT 1: IH 40-41;

M-4: 407.4; 408.2;

Remarks:

The object ‘tidal stream - non-harmonic prediction’ encodes information for use when predicting times and rates for tidal streams by non-harmonic methods.

The supplier of any parameters must be consulted on how to use this data, and which calculation algorithms to use with the data.

Distinction: current - non-gravitational; tidal stream - harmonic prediction; tidal stream panel data; tidal stream - time series;

GEO OBJECT CLASSES

Object Class: **Tidal stream panel data**

Acronym: **TS_PAD** Code: **138**

Set Attribute_A: NOBJNM; OBJNAM; TS_TSP;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A tidal stream (or tidal current) is an alternating horizontal movement of water associated with the rise and fall of the tide caused by tide-producing forces. (IHO Dictionary, S-32, 5th Edition, 1169)

Approximate tidal stream rates may be given as discrete rate values at a specified interval before or after a high water.

References:

INT 1: IH 40-41;

M-4: 407.4; 408.2;

Remarks:

The object ‘tidal stream panel data’ encodes data for use in a tidal panel.

Distinction: current - non-gravitational; tidal stream - harmonic prediction; tidal stream - non-harmonic prediction; tidal stream - time series;

GEO OBJECT CLASSES

Object Class: **Tidal stream - time series**

Acronym: **TS_TIS** Code: **139**

Set Attribute_A: NOBJNM; OBJNAM; TIMEND; TIMSTA; T_TINT; TS_TSV; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A tidal stream (or tidal current) is an alternating horizontal movement of water associated with the rise and fall of the tide caused by tide-producing forces. (IHO Dictionary, S-32, 5th Edition, 1169)

Tidal stream rates over time may be approximated by a series of rate values given at regular time intervals, starting from a specified moment in time.

References:

INT 1: IH 40-41;

M-4: 407.4; 408.2;

Remarks:

The object ‘tidal stream - time series’ encodes rates of tidal stream at equal time intervals.

Distinction: current - non-gravitational;tidal stream - harmonic prediction; tidal stream - non-harmonic prediction; tidal stream panel data;

GEO OBJECT CLASSES

Object Class: **Tide - harmonic prediction**

Acronym: **T_HMON** Code: **140**

Set Attribute_A: NOBJNM; OBJNAM; T_ACWL; T_MTOD; T_VAHC; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Tide - the periodic rise and fall of the surface of the sea, due principally to the gravitational interaction between moon, sun and earth. (adopted from IHO Dictionary, S-32, 5th Edition, 5429)

Predicted tidal heights may be calculated using parameters (harmonic constituents) and an appropriate harmonic calculation algorithm.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

The object ‘tide - harmonic predictions’ encodes parameters for use when predicting tidal heights by harmonic methods.

The supplier of any parameters must be consulted on how to use this data, and which calculation algorithms to use with the data.

Distinction: tide - non-harmonic prediction; tide - time series;

GEO OBJECT CLASSES

Object Class: **Tide - non-harmonic prediction**

Acronym: **T_NHMN** Code: **141**

Set Attribute_A: NOBJNM; OBJNAM; T_ACWL; T_MTOD; T_THDF; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Tide - the periodic rise and fall of the surface of the sea, due principally to the gravitational interaction between moon, sun and earth. (adopted from IHO Dictionary, S-32, 5th Edition, 5429)

Predicted tidal heights may be calculated using time and height differences with respect to a reference port (and associated tidal predictions).

References:

INT 1: not specified;

M-4: not specified;

Remarks:

The object ‘tide - non-harmonic prediction’ encodes information for use when predicting times and heights for high and low waters by non-harmonic methods.

The supplier of any parameters must be consulted on how to use data provided using this object class, and which calculation algorithms to use with the data.

Distinction: tide - harmonic prediction; tide - time series;

GEO OBJECT CLASSES

Object Class: **Tide - time series**

Acronym: **T_TIMS** Code: **142**

Set Attribute_A: NOBJNM; OBJNAM; T_ACWL; T_HWLW; T_TINT; T_TSVL; TIMEND; TIMSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Tide - the periodic rise and fall of the surface of the sea, due principally to the gravitational interaction between moon, sun and earth. (adopted from IHO Dictionary, S-32, 5th Edition, 5429)

Tidal heights over time may be approximated by a series of height values given at regular time intervals, starting from a specified moment in time.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

The object ‘tide - time series’ encodes tidal heights at equal time intervals and times and heights of high waters and low waters.

Distinction: tide - harmonic prediction; tide - non-harmonic prediction;

GEO OBJECT CLASSES

Object Class: **Tideway**

Acronym: **TIDEWY** Code: **143**

Set Attribute_A: NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A natural water course in intertidal areas where water flows during the ebb or flow.

A channel through which a tidal current runs. (IHO Dictionary, S-32, 5th Edition, 5502)

References:

INT 1: not specified;

M-4: not specified;

Remarks:

Distinction: canal; river; sea area/named water area

GEO OBJECT CLASSES

Object Class: **Topmark**

Acronym: **TOPMAR** Code: **144**

Set Attribute_A: COLOUR; COLPAT; HEIGHT; MARSYS; STATUS; TOPSHP; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A characteristic shape secured at the top of a buoy or beacon to aid in its identification. (IHO Dictionary, S-32, 5th Edition, 5548)

References:

INT 1: IQ 9;

M-4: 463.1;

Remarks:

The body carrying the topmark is a separate object.

Distinction: beacon, cardinal; beacon, isolated danger; beacon, lateral; beacon, safe water; beacon special purpose/general; buoy, cardinal; buoy, installation; buoy, isolated danger; buoy, lateral; buoy, safe water; buoy, special purpose/general; daymark;

GEO OBJECT CLASSES

Object Class: Tower

DELETED - DO NOT USE

Acronym: TOWERS

Set Attribute_A: CATTOW; COLOUR; COLPAT; CONDTN; CONRAD; CONVIS; HEIGHT; NATCON; NOBJNM; OBJNAM; QUAVEM; STATUS; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A relatively tall structure which may be used for observation, support, storage or communication etc.. (Digital Geographic Information Working Group, Oct.87)

References:

INT 1: IE 20-21, 29, 30.2;

M-4: 374,2-3; 375,2-3; 487;

Remarks:

The object ‘tower’ is independent of any equipment carried upon it. This is specified by other objects. e.g. radar station, light.

This object is obsolete. It is only shown here for reasons of backward compatibility. A tower should be encoded as a landmark (LNDMRK) with category of landmark (CATLMK) value 17.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Traffic separation line**

Acronym: **TSELNE** Code: **145**

Set Attribute_A: CATTSS; DATEND; DATSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A traffic separation scheme is a scheme which aims to reduce the risk of collision in congested and/or converging areas by separating traffic moving in opposite, or nearly opposite, directions. (IHO Dictionary, S-32, 5th Edition, 5585)

A traffic separation line is a line separating traffic lanes in which ships are travelling in opposite or nearly opposite directions; or separating traffic lanes designated for particular classes of ships proceeding in the same direction (IMO Ships Routeing, 6th Edition).

References:

INT 1: IM 12;

M-4: 435.1;

Remarks:

Distinction: traffic separation scheme boundary; traffic separation scheme crossing; traffic separation scheme lane part; traffic separation scheme roundabout; traffic separation zone;

GEO OBJECT CLASSES

Object Class: **Traffic separation scheme boundary**

Acronym: **TSSBND** Code: **146**

Set Attribute_A: CATTSS; DATEND; DATSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A traffic separation scheme is a scheme which aims to reduce the risk of collision in congested and/or converging areas by separating traffic moving in opposite, or nearly opposite, directions. (IHO Dictionary, S-32, 5th Edition, 5585)

The boundary of a traffic separation scheme is the outer limit of a traffic lane part or a traffic separation scheme roundabout.

References:

INT 1: not specified;

M-4: 436;

Remarks:

Distinction: traffic separation line; traffic separation scheme crossing; traffic separation scheme lane part; traffic separation scheme roundabout; traffic separation zone;

GEO OBJECT CLASSES

Object Class: **Traffic separation scheme crossing**

Acronym: **TSSCRS** Code: **147**

Set Attribute_A: CATTSS; DATEND; DATSTA; RESTRN; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A traffic separation scheme is a scheme which aims to reduce the risk of collision in congested and/or converging areas by separating traffic moving in opposite, or nearly opposite, directions. (IHO Dictionary, S-32, 5th Edition, 5585)

A traffic separation scheme crossing is a defined area where traffic lanes cross.

References:

INT 1: IM 23;

M-4: 435.1;

Remarks:

Distinction: traffic separation line; traffic separation scheme boundary; traffic separation scheme lane part; traffic separation scheme roundabout; traffic separation zone;

GEO OBJECT CLASSES

Object Class: **Traffic separation scheme lane part**

Acronym: **TSSLPT** Code: **148**

Set Attribute_A: CATTSS; DATEND; DATSTA; ORIENT; RESTRN; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A traffic separation scheme is a scheme which aims to reduce the risk of collision in congested and/or converging areas by separating traffic moving in opposite, or nearly opposite, directions. (IHO Dictionary, S-32, 5th Edition, 5585)

A traffic lane is an area within defined limits in which one-way traffic flow is established (IMO Ships Routeing, 6th Edition).

A traffic separation scheme lane part is an area of a traffic lane in which the direction of flow of traffic is uniform.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

The complete traffic lane may consist of one or more lane parts depending on the shape of the lane.

Distinction: recommended traffic lane part; traffic separation line; traffic separation scheme boundary; traffic separation scheme crossing; traffic separation scheme roundabout; traffic separation zone;

GEO OBJECT CLASSES

Object Class: **Traffic separation scheme roundabout**

Acronym: **TSSRON** Code: **149**

Set Attribute_A: CATTSS; DATEND; DATSTA; RESTRN; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A traffic separation scheme is a scheme which aims to reduce the risk of collision in congested and/or converging areas by separating traffic moving in opposite, or nearly opposite, directions. (IHO Dictionary, S-32, 5th Edition, 5585)

A roundabout is a traffic separation scheme in which traffic moves in a counter-clockwise direction around a specified point or zone. (IHO Dictionary, S-32, 5th Edition, 4448)

References:

INT 1: IM 21;

M-4: 435.1;

Remarks:

Distinction: traffic separation line; traffic separation scheme boundary; traffic separation scheme crossing; traffic separation scheme lane part; traffic separation zone;

GEO OBJECT CLASSES

Object Class: **Traffic separation zone**

Acronym: **TSEZNE** Code: **150**

Set Attribute_A: CATTSS; DATEND; DATSTA; STATUS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A traffic separation scheme is a scheme which aims to reduce the risk of collision in congested and/or converging areas by separating traffic moving in opposite, or nearly opposite, directions. (IHO Dictionary, S-32, 5th Edition, 5585)

A traffic separation zone is a zone separating the lanes in which ships are proceeding in opposite or nearly opposite directions; or separating traffic lanes designated for particular classes of ships proceeding in the same direction (IMO Ships Routeing, 6th Edition).

References:

INT 1: IM 13, 20.1;

M-4: 435.1;

Remarks:

Distinction: traffic separation line; traffic separation scheme boundary; traffic separation scheme crossing; traffic separation scheme lane part; traffic separation scheme roundabout;

GEO OBJECT CLASSES

Object Class: Tree

DELETED - DO NOT USE

Acronym: TREPNT

INT 1: IC 31-31.8;

M-4: 354.2;

Set Attribute_A: CATTRE; CONVIS; HEIGHT; NOBJNM; OBJNAM; QUAVEM; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point;

Definition:

A woody perennial plant having a self supporting main stem or trunk and a definite crown. (United States Geological Survey, Jan.89)

Remarks:

Distinction: vegetation;

This object is obsolete. It is only shown here for reasons of backward compatibility. A tree should be encoded as vegetation (VEGATN) with an appropriate category of vegetation (CATVEG) value.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Tunnel**

Acronym: **TUNNEL** Code: **151**

Set Attribute_A: BURDEP; CONDTN; HORACC; HORCLR; NOBJNM; OBJNAM; STATUS; VERACC; VERCLR;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A passage that is open to the atmosphere at both ends, buried under the sea bed or laid over the sea floor or bored under the ground or through mountains.

References:

INT 1: ID 16;

M-4: 363.1;

Remarks:

Distinction: railway; road;

GEO OBJECT CLASSES

Object Class: Tunnel entrance

DELETED - DO NOT USE

Acronym: TNLENT

INT 1: ID 16;

M-4: 363.1;

Set Attribute_A: HORCLR; NOBJNM; OBJNAM; VERCLR;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point; Line;

Definition:

An opening that affords entry to an underground or underwater passage. (United States Geological Survey, Jan.89)

Remarks:

No remarks

This object is obsolete. It is only shown here for reasons of backward compatibility. A tunnel should be encoded using the object class tunnel (TUNNEL).

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Two-way route part**

Acronym: **TWRTPT** Code: **152**

Set Attribute_A: CATTRK; DATEND; DATSTA; DRVAL1; DRVAL2; ORIENT; QUASOU; SOUACC; STATUS; TECSOU; TRAFIC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A two-way route is a route within defined limits inside which two-way traffic is established, aimed at providing safe passage of ships through waters where navigation is difficult or dangerous. (IHO Dictionary, S-32, 5th Edition, 5712)

A two-way route part is an area of a two-way route within which traffic flow is generally along one bearing (and possibly its reciprocal).

References:

INT 1: IM 28.2;

M-4: 435.6;

Remarks:

The complete two-way route consists of one or more parts depending on the shape of the two-way route.

The orientation of the two-way route part is defined by its centerline and is related to the general direction of the two-way route.

Distinction: deep water route part; recommended traffic lane part; traffic separation scheme lane part;

GEO OBJECT CLASSES

Object Class: **Underwater/awash rock**

Acronym: **UWTROC** Code: **153**

Set Attribute_A: EXPSOU; NATQUA; NATSUR; NOBJNM; OBJNAM; QUASOU; SOUACC; STATUS; TECSOU; VALSOU; VERDAT; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A concreted mass of stony material or coral which dries, is awash or is below the water surface.

References:

INT 1: IK 12, 13, 14-16;

M-4: 421.3-5;

Remarks:

Distinction: obstruction; sounding; wreck;

GEO OBJECT CLASSES

Object Class: **Unsurveyed area**

Acronym: **UNSARE** Code: **154**

Set Attribute_A:

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area for which no bathymetric survey information is available.

References:

INT 1: not specified;

M-4: 417.8;

Remarks:

No remarks.

GEO OBJECT CLASSES

Object Class: **Vegetation**

Acronym: **VEGATN** Code: **155**

Set Attribute_A: CATVEG; CONVIS; ELEVAT; HEIGHT, NOBJNM; OBJNAM; VERACC; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Collections of, or individual plants.

References:

INT 1: IC 14, 30, 31.1-8, 32;

M-4: 312.4; 354.1-2,4;

Remarks:

Distinction: seabed area; weed/kelp;

GEO OBJECT CLASSES

DELETED - DO NOT USE

Object Class: Vegetation area

Acronym: VEGARE

Set Attribute_A: CATVEG; CONVIS; HEIGHT, NOBJNM; OBJNAM; VERACC; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A land area or an intertidal area, covered by any kind of plants.

References:

INT 1: IC 14, 30, 32;

M-4: 312.4; 354;

Remarks:

Distinction: coastline; seabed area; tree; weed/kelp;

This object class is obsolete. It is only included here for reasons of backward compatibility. Vegetation areas should be encoded as vegetation (VEGATN).

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Water turbulence**

Acronym: **WATTUR** Code: **156**

Set Attribute_A: CATWAT; NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The disturbance of water caused by the interaction of any combination of waves, currents, tidal streams, wind, shoal patches and obstructions.

References:

INT 1: IH 44, 45; IK 17;

M-4: 423.1; 423.2; 423.3;

Remarks:

No remarks.

GEO OBJECT CLASSES

Object Class: **Waterfall**

Acronym: **WATFAL** Code: **157**

Set Attribute_A: CONVIS; NOBJNM; OBJNAM; VERACC; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A sudden descent of water over a step in the bed of a river. In place names commonly shortened to fall or falls, e.g. Niagara Falls.

References:

INT 1: IC 22;

M-4: 353.5;

Remarks:

Distinction: rapids;

GEO OBJECT CLASSES

Object Class: **Weed/Kelp**

Acronym: **WEDKLP** Code: **158**

Set Attribute_A: CATWED; NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Seaweed is the general name for marine plants of the Algae class which grow in long narrow ribbons. (International Maritime Dictionary, 2nd Ed.)

Kelp is one of an order (laminariales) of usually large, blade-shaped or vine-like brown algae. (IHO Dictionary, S-32, 5th Edition, 2611)

References:

INT 1: IJ 13.1, 13.2;

M-4: 428.2;

Remarks:

Kelp is often an indication of the presence of submerged rocks. (IHO Chart Specifications M-4)

Distinction: seabed area; vegetation;

GEO OBJECT CLASSES

Object Class: Weir

DELETED - DO NOT USE

Acronym: WIRLNE

Set Attribute_A: CONDTN; DATEND; DATSTA; NATCON; NOBJNM; OBJNAM; QUAVEM; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A dam erected across a river to raise the level of the water. The word is now restricted to smaller works, the larger are called dams. (IHO Dictionary, S-32, 5th Edition, 5967)

References:

INT 1: IF 44;

M-4: 364.2;

Remarks:

Distinction: causeway; dam;

This object is obsolete. It is only shown here for reasons of backward compatibility. A weir should be encoded as a dam (DAMCON) with a category of dam (CATDAM) value 1.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: Windmill

DELETED - DO NOT USE

Acronym: WNDMIL

INT 1: IE 25.1, 25.2;

M-4: 374.5;

Set Attribute_A: COLOUR; CONDTN; CONRAD; CONVIS; HEIGHT; NATCON; NOBJNM; OBJNAM; QUAVEM; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point; Area;

Definition:

A mill that runs on the energy generated by a wheel of adjustable blades or flats rotated by the wind. (United States Geological Survey, Jan.89)

Remarks:

Distinction: windmotor;

This object is obsolete. It is only shown here for reasons of backward compatibility. A windmill should be encoded as a landmark (LNDMRK) with a category of landmark (CATLMK) value 18.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: Windmotor

DELETED - DO NOT USE

Acronym: WIMCON

INT 1: IE 26;

M-4: 374.6;

Set Attribute_A: COLOUR; CONDTN; CONRAD; CONVIS; HEIGHT; NOBJNM; OBJNAM; QUAVEM; VERDAT; VERLEN;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Point;

Definition:

A modern structure for use of wind power. (IHO Chart Specifications, M-4)

Remarks:

Distinction: windmill;

This object is obsolete. It is only shown here for reasons of backward compatibility. A windmotor should be encoded as a landmark (LNDMRK) with a category of landmark (CATLMK) value 19.

DELETED - DO NOT USE

GEO OBJECT CLASSES

Object Class: **Wreck**

Acronym: **WRECKS** Code: **159**

Set Attribute_A: CATWRK; CONRAD; CONVIS; EXPSOU; HEIGHT; NOBJNM; OBJNAM; QUASOU; SOUACC; STATUS; TECSOU; VALSOU; VERACC; VERDAT; VERLEN; WATLEV;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

The ruined remains of a stranded or sunken vessel which has been rendered useless. (IHO Dictionary, S-32, 5th Edition, 6027)

References:

INT 1: IK 20-30;

M-4: 422-422.8;

Remarks:

Distinction: depth area; hulk; obstruction; sounding; underwater/awash rock;

GEO OBJECT CLASSES

Object Class: Zero metre - contour

DELETED - DO NOT USE

Acronym: ZEMCNT

INT 1: II 30;

M-4: 404.2; 410-411;

Set Attribute_A: VERDAT;

Set Attribute_B: INFORM; NINFOM; SCAMAX; SCAMIN;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Geometric Primitive: Line;

Definition:

The limit line between an area permanently covered by water and an intertidal area.

Remarks:

Distinction: coastline; depth contour;

This object is obsolete. It is only shown here for reasons of backward compatibility. A zero metre contour should be encoded as a depth contour (DEPCNT) with a value of depth contour (VALDCO) of zero.

DELETED - DO NOT USE

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1.3 Meta Object Classes

META OBJECT CLASSES

Object Class: **Accuracy of data**

Acronym: **M_ACCY** Code: **300**

Set Attribute_A: HORACC; POSACC; SOUACC; VERACC;

Set Attribute_B: INFORM; NINFOM; NTXTDS; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area within which the best estimate of the overall accuracy of the data is uniform. The overall accuracy takes into account for example the source accuracy, chart scale, digitising accuracy etc.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

Distinction: quality of data; survey reliability;

META OBJECT CLASSES

Object Class: **Compilation scale of data**

Acronym: **M_CSCL** Code: **301**

Set Attribute_A: CSCALE;

Set Attribute_B: INFORM; NINFOM; NTXTDS; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area within which the data was originally compiled at a uniform scale. For example, it may define the scale of the paper chart from which the data was digitised.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

No remarks.

META OBJECT CLASSES

Object Class: **Coverage**

Acronym: **M_COVR** Code: **302**

Set Attribute_A: CATCOV;

Set Attribute_B: INFORM; NINFOM;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A geographical area that describes the coverage and extent of spatial objects.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

This object class is intended to support an indication of coverage.

META OBJECT CLASSES

Object Class: **Horizontal datum of data**

Acronym: **M_HDAT** Code: **303**

Set Attribute_A: HORDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area of uniform horizontal datum.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

Distinction: horizontal datum shift parameters;

META OBJECT CLASSES

Object Class: **Horizontal datum shift parameters**

Acronym: **M_HOPA** Code: **304**

Set Attribute_A: HORDAT; SHIPAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area within which a uniform shift exists between a specific geodetic datum and the datum of the data within this area.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

Distinction: horizontal datum of data;

META OBJECT CLASSES

Object Class: **Nautical publication information**

Acronym: **M_NPUB** Code: **305**

Set Attribute_A:

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; PUBREF; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Used to relate additional nautical information or publications to the data.

References:

INT 1: not specified

M-4: not specified

Remarks:

For example, geographic areas may be defined that relate to sections in Sailing Directions (Coast Pilots).

META OBJECT CLASSES

Object Class: **Navigational system of marks**

Acronym: **M_NSYS** Code: **306**

Set Attribute_A: MARSYS; ORIENT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; SCAMIN; SCAMAX; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area within which a specific system of navigational marks applies and/or a common direction of buoyage.

References:

INT 1: IQ 130-130.6;

M-4: 461.1-4;

Remarks:

No remarks.

META OBJECT CLASSES

Object Class: **Production information**

Acronym: **M_PROD** Code: **307**

Set Attribute_A: AGENCY; CPDATE; NATION; NMDATE; PRCTRY;

Set Attribute_B: INFORM; NINFOM; NTXTDS; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area within which uniform data production parameters apply.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

No remarks.

META OBJECT CLASSES

Object Class: **Quality of data**

Acronym: **M_QUAL** Code: **308**

Set Attribute_A: CATQUA; CATZOC; DRVAL1; DRVAL2; POSACC; SOUACC; SUREND; SURSTA; TECSOU; VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area within which a uniform assessment of the quality of the data exists.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

Distinction: accuracy of data; survey reliability;

META OBJECT CLASSES

Object Class: **Sounding datum**

Acronym: **M_SDAT** Code: **309**

Set Attribute_A: VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area of uniform sounding datum.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

Distinction: vertical datum;

META OBJECT CLASSES

Object Class: **Survey reliability**

Acronym: **M_SREL** Code: **310**

Set Attribute_A: QUAPOS; QUASOU; SCVAL1; SCVAL2; SDISMN; SDISMX; SURATH; SUREND; SURSTA; SURTYP; TECSOU;

Set Attribute_B: INFORM; NINFOM; NTXTDS; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area within which a uniform assessment of the reliability of source survey information exists.

References:

INT 1: not specified;

M-4: 170.2; 178;

Remarks:

Distinction: accuracy of data; quality of data;

META OBJECT CLASSES

Object Class: Survey source

DELETED - DO NOT USE

Acronym: M_SSOR

Set Attribute_A: DATEND; DATSTA; SCVAL1; SCVAL2; SURATH; SUREND; SURSTA; SURTYP; TECSOU;

Set Attribute_B: INFORM; NINFOM;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

This object class defines an area within which the details of the source survey(s) used for chart compilation are uniform.

References:

INT 1: Not specified

M-4: 170; 171; 174; 175; 176; 177; 178;

Remarks:

The source data provides a guide to the degree of confidence a mariner should have in the adequacy and accuracy of charted depths and positions.

This object is obsolete. It is only shown here for reasons of backward compatibility. Survey source should be encoded under survey reliability (M_SREL).

DELETED - DO NOT USE

META OBJECT CLASSES

Object Class: **Units of measurement of data**

Acronym: **M_UNIT** Code: **311**

Set Attribute_A: DUNITS; HUNITS; PUNITS;

Set Attribute_B: INFORM; NINFOM; NTXTDS; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area of uniform units of depth and/or height measurement.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

No remarks;

META OBJECT CLASSES

Object Class: **Vertical datum of data**

Acronym: **M_VDAT** Code: **312**

Set Attribute_A: VERDAT;

Set Attribute_B: INFORM; NINFOM; NTXTDS; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area of uniform vertical datum.

References:

INT 1: not specified;

M-4: not specified;

Remarks:

Distinction: sounding datum;

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1.4 Collection Object Classes

COLLECTION OBJECT CLASSES

Object Class: **Aggregation**

Acronym: **C_AGGR** Code: **400**

Set Attribute_A: NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Used to identify an aggregation of two or more objects. This aggregation may be named.

Remarks:

An aggregation could be used to combine objects that are related in some way (is-a-part-of, is-a-component-of) into a higher level object.

For example: an aggregation relationship may be used to form a traffic separation scheme from traffic separation lane parts, boundaries, etc.

Distinction : association; stacked on/stacked under;

COLLECTION OBJECT CLASSES

Object Class: **Association**

Acronym: **C_ASSO** Code: **401**

Set Attribute_A: NOBJNM; OBJNAM;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Used to identify an association between two or more objects. The association may be named.

Remarks:

For example: an association relationship may be used to indicate that a buoy marks a wreck.

Distinction : aggregation; stacked on/stacked under;

COLLECTION OBJECT CLASSES

Object Class: **Stacked on/stacked under**

Acronym: **C_STAC** Code: **402**

Set Attribute_A:

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

Used to identify the order of stacking of objects (eg. bridge on top of road).

Remarks:

The order in which objects are stacked is indicated in the Feature Record to Feature Object Pointer field (FFPT, refer to S-57 Part 3).

Distinction: aggregation; association;

1.5 Cartographic Object Classes

CARTOGRAPHIC OBJECT CLASSES

Object Class: **Cartographic area**

Acronym: **$AREAS** Code: **500**

Set Attribute_A:	COLOUR; ORIENT; $SCODE; $TINTS;
Set Attribute_B:	INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;
Set Attribute_C:	RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area in which a certain cartographic symbolization is required.

Remarks:

No remarks.

CARTOGRAPHIC OBJECT CLASSES

Object Class: **Cartographic line**

Acronym: **$LINES** Code: **501**

Set Attribute_A: $SCODE;

Set Attribute_B: INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;

Set Attribute_C: RECDAT; RECIND; SORDAT; SORIND;

Definition:

A line with a certain cartographic symbolization.

Remarks:

No remarks.

CARTOGRAPHIC OBJECT CLASSES

Object Class: **Cartographic symbol**

Acronym: **$CSYMB** Code: **502**

Set Attribute_A:	ORIENT; $SCALE; $SCODE;
Set Attribute_B:	INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;
Set Attribute_C:	RECDAT; RECIND; SORDAT; SORIND;

Definition:

A point with a certain cartographic symbolization.

Remarks:

No remarks.

CARTOGRAPHIC OBJECT CLASSES

Object Class: Closing line

DELETED - DO NOT USE

Acronym: $CLOLN

Set Attribute_A:

Set Attribute_B: SCAMAX; SCAMIN;

Set Attribute_C:

Definition:

Remarks:

This object is obsolete. It is only shown here for reasons of backward compatibility. Closing lines should be encoded using the Masking indicator subfield (MASK) of the Feature Record to Spatial Record Pointer field (FSPT, refer to S-57 Part 3).

DELETED - DO NOT USE

CARTOGRAPHIC OBJECT CLASSES

Object Class: **Compass**

Acronym: **$COMPS** Code: **503**

Set Attribute_A:	$CSIZE; RYRMGV; VALACM; VALMAG;
Set Attribute_B:	INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;
Set Attribute_C:	RECDAT; RECIND; SORDAT; SORIND;

Definition:

A circle graduated in degrees clockwise form 0 (north) to 360 used to facilitate measurements of direction. May be oriented to true or magnetic north. (adapted from IHO Dictionary, S-32, 5th Edition, 942)

Remarks:

This object is used to transfer the parameters required to represent the magnetic and/or true compass cartographically.

CARTOGRAPHIC OBJECT CLASSES

Object Class: Shallow water blue

DELETED - DO NOT USE

Acronym: $SHABL

Set Attribute_A:	$TINTS
Set Attribute_B:	INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;
Set Attribute_C:	RECDAT; RECIND; SORDAT; SORIND;

Definition:

An area that is to be cartographically represented by a ‘shallow water blue’ tint.

Remarks:

To be used to define depth areas which need to be coloured blue (since the limits of the shallow water blue areas on paper charts are not universally standardised). Corresponding cartographic objects are not required for land area (buff tint) and intertidal area (green tint), since these can be deduced from existing real world objects.

This object class is obsolete. It is only included here for reasons of backward compatibility. Shallow water blue areas should be encoded using the object class cartographic area ($AREAS).

DELETED - DO NOT USE

CARTOGRAPHIC OBJECT CLASSES

Object Class: **Text**

Acronym: **$TEXTS** Code: **504**

Set Attribute_A:	$CHARS; COLOUR; $JUSTH; $JUSTV; $NTXST; $SPACE; $TXSTR;
Set Attribute_B:	INFORM; NINFOM; NTXTDS; PICREP; SCAMAX; SCAMIN; TXTDSC;
Set Attribute_C:	RECDAT; RECIND; SORDAT; SORIND;

Definition:

A text string that is to be represented using a certain cartographic symbolization.

Remarks:

May be used for all text strings which are required to be represented in graphical form with particular positioning and display characteristics.

Rotation and curving of text can be handled by the use of 2 or more x,y coordinate pairs in the associated spatial object.